Incorporating and Contesting the Corporate Food Regime in Colombia: Agri-food Dynamics in Two Zonas de Reserva Campesina (Peasant Reserve Zones)

Jaskiran Kaur Chohan

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I, Jaskiran Kaur Chohan confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Abstract

This thesis explores how the Colombian nation and local, particularly municipal, spaces integrate with and resist the corporate food regime (CFR), which consists of corporate control over all aspects of agriculture from seed to finished product. The research identifies agroecology as the key oppositional movement, science and practice to the CFR. It analyses contingent agroecological expressions to understand differentiation among the peasantry and the conditions that shape the emergence of resistance to the industrial model. Colombia is illustrative because smallholder land access is a historic issue. The need for pro-campesino farming has been re-emphasised with the cessation of civil war, subsequent peace negotiations in Havana and the 2016 agreement between the government and FARC-EP.

The thesis explores global CFR integration in two Zonas de Reserva Campesina (ZRC) or Peasant Reserve Zones- Colombia's only pro-campesino development model, first established in 1994, which was also identified in the 2016 peace agreement as a rural reform mechanism. Data collection consisted of secondary sources, over 100 interviews from public policy figures to campesinos and participant observation. The research finds both integration and resistance, resulting in hybrid agricultural systems. In both cases, CFR integration takes place through economic and violent dispossession of smallholder lands- by agribusiness and armed actors respectively, (New) Green Revolution technologies that engender dependence on agribusiness inputs, but also due to neoliberal deregulation and export-oriented economic policies formed by various governments, which have weakened smallholder economies over time. Nevertheless, smallholders in both cases present numerous practical examples of agroecology and are building successful alternative food networks in opposition to agribusiness food circuits. The Colombian cases reveal that it is crucial to place the CFR in national and local contexts to view how actors and circumstances, such as the civil war, hinder and help integration and resistance.

Impact Statement

After years of government underfunding, chronic land inequality and civil war, smallholder farming is struggling in Colombia, whilst industrial-scale farming and Green Revolution methods continue to expand across the countryside. Ongoing violence and agricultural industrialisation have further marginalised smallholder production. Nevertheless, Colombia presents important examples of agroecological farming, testament to the resilience of the campesino sector.

The research explores integration with, and resistance to corporate-led agriculture in Colombia, through the lens of food regime theory. It applies a radical approach to the historical global food regime approach, through place-based analysis in two case studies. Few scholars have used the case study approach in food regime analysis; thus, this research demonstrably contributes to the development of an innovative interdisciplinary methodology.

The chosen cases are two *Zonas de Reserva Campesina* (ZsRC) or Peasant Reserve Zones in Cabrera, Cundinamarca and Valle del Río Cimitarra, Middle Magdalena. ZsRC are a legal entity and development model first established in 1994, which provide guarantees to campesinos over access to land, they prioritise access to infrastructural development and programmes with state rural development agencies to strengthen smallholder farming and economies in areas of conflict. ZsRC are critical to peace in Colombia, as they are mentioned three times in the 2016 peace agreement in relation to implementing rural reform. Studying ZsRC is crucial as there is little academic research on material developments and farming practices in these zones, since scholars have focused on territorial ordering. Instead, this thesis explores farming practices in two ZsRC to analyse integration with global corporate agricultural processes and resistance through agroecological alternatives.

Leveraging research impact will involve a broad dissemination plan. Importantly, I will return to the communities involved in the study to present the findings, which could contribute to enhanced local planning around sustainable agriculture. Alongside this, I will produce a shorter Spanish policy document on my findings for rural development institutes in Colombia, with the aim of influencing public policy on rural reform and development related to ZsRC in the peace agreement.

Aspects of this research have already been disseminated in a peer-reviewed journal *Agroecology and Sustainable Food Systems*, in a peer-reviewed blog (*Alternautas: (Re)Searching Development* and *North American Congress on Latin America*) and journalistically (*Latin America Bureau*). Additionally, research has been shared in academic conferences: the Latin American Studies Association, Barcelona, and the UCL Americas Research Network, London, as well as in public talks in Colombia at the Banco de la República, Universidad Externado and Café de la Reserva. In the short-term, I plan to publish further articles in the following peer-reviewed journals: *Journal of Peasant Studies* and *Gender and Development*, as well as a regional, Spanish language journal such as *Enfoque Rural*. In the long-term, I will work on comparative studies of Colombia and other cases, as this study could provide critical information and insight for global agrarian scholarship in sites of conflict.

Acknowledgements

ਪਵਣੁ ਗੁਰੂ ਪਾਣੀ ਪਿਤਾ, ਮਾਤਾ ਧਰਤਿ ਮਹਤੁ।।

Air is the Guru, Water the father, And the Great Earth the mother

Sri Guru Granth Sahib

Despite living in London, all my life I have been strongly connected to the dusty green fields of Punjab, India. My ancestors expanded my horizons beyond immediate concrete jungles to the world's rivers and soils. This PhD is the fruit of that journey and it has truly been a life-changing experience for me.

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This thesis is dedicated to my grandparents who have encouraged me to learn every day and importantly my mum who kept up a steady supply of rotis to fill my stomach. I am eternally grateful for all the chats with Jatinder, Sindi, Jasmine, Jacinder, Japindar, Jaskirat and Mantej- thank you for listening to my doubts and carrying me through the storms. Thank you to Gábor for being there through each step of this journey, for mopping up the tears and and the unconditional support. Finally, to my beautiful friends Fran, Judith and Matti you have kept me sane and laughing.

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Abbreviations

ACVC- Asociación Campesina del Valle del Río Cimitarra

AFN- Alternative Food Network

AIS- Agro Ingreso Seguro

ANT- Agencia Nacional de Tierras

ANZORC- Asociación Nacional de Zonas de Reserva Campesina

APROCASUR- La Asociación de Productores de Cacao del Sur de Bolívar

CAR- Corporación Autónoma Regional

CIAT- International Centre for Tropical Agriculture

CFR- Corporate Food Regime

CGIAR- Consultative Group for International Agricultural Research

CP- Comunal Paz

CPDPMM- Middle Magdalena Development and Peace Corporation

COOPEMANTIOQUIA- Co-operative of Small and Medium Farmers of Antioquia

COP- Colombian Peso

CORPOICA- Colombian Agricultural Research Corporation

DPN- Departamento Nacional de Planificación

DRI- Desarrollo Rural Integrado

ELN- National Liberation Army

EPI- Environment Performance Index

ENCIN- National Nutrition Survey

EOT- Esquema de Ordenamiento Territorial

FAO- United Nation's Food and Agriculture Organisation

FARC-EP- Fuerzas Armadas Revolucionarias de Colombia- Ejército Popular

FEDEGAN- Federación Colombiana de Ganaderos

FEDEPALMA- National Federation of Oil Palm Growers

FENALCE- National Federation of Cereals and Oilseed Growers

FENSUAGRO- Federación Nacional Sindical Unitaria Agropecuaria

FS- Food Sovereignty

FTA- Free Trade Agreement

FUNDALLANURA- Foundation for the Development of the Colombian Altillanura

FUPAD- Pan-American Development Foundation

GATT- General Agreement on Tariffs and Trade

GM- Genetically Modified

GR- Green Revolution

IALA- Instituto Agroecologico Latinoamericano

ICA- Colombian Agricultural Institute

ICO- Organisational Capacity Index

IDEMA- Instituto de Mercadeo Agropecuario

IGAC- Instituto Geográfico Agustín Codazzi

ILSA- Instituto Latinoamericano para una Sociedad y un Derecho Alternativos

IMF- International Monetary Fund

INCODER- Colombian Institute for Rural Development

INCORA- Colombian Institute for Agrarian Reform

JAC- Community Action Groups

LVC- La Vía Campesina

MADR- Ministry of Agriculture and Rural Development

MCVD- Mesas Comunales por la Vida Digna

MM- Middle Magdalena

NGO- Non-governmental Organisation

NGR- New Green Revolution

OECD- The Organisation for Economic Co-operation and Development

PDS- Sustainable Development Plan

PDT- Territorial Development Plans

PTA- Preferential Trade Agreements

RIMISP- Centro Latinamericano para el Desarrollo Rural

RTA- Regional Trade Agreements

SAC- Sociedad de Agricultores de Colombia

SENA- Servicio Nacional de Aprendizaje

SINPEAGRICUN- Smallholder Farmers Union of Cundinamarca

SISBEN- El Sistema de Selección de Beneficiarios para Programas Sociales

TRIPS- Trade Related Aspects of Intellectual Property Rights

UNDP- United Nations Development Planning Unit

UAF- Family Agricultural Units

UMATA- Municipal Agricultural Technology Assistance Units

UNIMINUTO- University Corporación Universitaria Minuto de Dios

USA- United States of America

USDA- United States Department of Agriculture

VRC- Valle del Río Cimitarra

WB- World Bank

WHO- World Health Organisation

WTO- World Trade Organisation

WWF- World Wildlife Foundation

ZIDRES- Zonas de Interés de Desarrollo Rural, Económico y Social

ZRC- Zona de Reserva Campesina

ZRC-VRC- Zona de Reserva Campesina- Valle del Río Cimitarra

1 Introduction

1.1 The Research Problem and Questions

Agrarian conflict and struggles over landownership have endured over the majority of the 20th and 21st century in Colombia. The country has experienced an intense civil war exercised by numerous armed actors, who have sought territorial control of the countryside. Colombian peasants[1], indigenous groups and Afro-Carribbeans have been most affected by decades of violence, many of whom make up the 7.7 million people displaced due to internal armed conflict- making the country home to the world's second largest population of internally displaced people. Rural groups have also experienced land dispossession, coercion, sexual violence, all manner of injuries, disappearances and death. A historic turning point came in 2016, when the Colombian government signed a peace agreement with Latin America's oldest guerrilla group *Las Fuerzas Armadas Revolucionarias de Colombia- Ejército Popular*[2] (FARC-EP). The peace agreement has received international recognition for its holistic approach and attempts to overcome some of the key drivers of Colombia's conflict, such as rural inequality, which is addressed in point number one of the agreement.[3] Rural inequality is defined as unequal land distribution, poor infrastructure and limited socio-economic prospects for rural dwellers.

Academic and political discussions that fed into the 2016 peace agreement motivated this research, particularly those focused on the need to tackle the marginalisation of

[1] The thesis uses the terms peasant, campesino and smallholders interchangeably. In so doing, the thesis does not seek to override the numerous social, ethnic, political and gender differences that exist among the peasantry or *campesinado*. The terms refer to those who practice agriculture for subsistence, as petty-commodity producers and the semi-proletariat who sell their labour in off-farm work (Bernstein, 2010), as well as those who are unified by the political and productive goals of agroecology and food sovereignty (Van der Ploeg, 2008). The differentiation of the peasantry will be discussed at greater length in Chapter 2 and distinctions among the peasantry will be identified throughout the thesis, as well as how these differences impact forms of integration within, and resistance to corporate agriculture.

[2] The Revolutionary Armed Forces of Colombia-People's Army.

[3] The 2016 peace agreement has six key points: comprehensive rural reform; political participation; ending armed conflict; solving the problem of the drugs trade; victims; implementation, verification and a public referendum to ratify the agreement.

smallholder farmers as a key peace-building proposal. In light of this, the thesis explores how corporate or industrial agriculture has impacted smallholder farming and the construction of alternative agroecological [4] livelihood strategies during the neoliberal turn in Colombia. Corporate agriculture is defined as corporate monopolisation of the food system from production and sale of seeds, to the cultivation of crops, and the packaging and sale of food. It studies two cases located in conflict hotspots- Cabrera and Valle del Río Cimitarra. The locations were identified because of their designation as *Zonas de Reserva Campesina* or Peasant Reserve Zones (ZsRC). The ZRC model was established in 1994 to protect campesino access to land in areas of high intensity conflict, to promote sustainable smallholder agriculture through agroecology and operate as a buffer against the expansion of agriculture into significant areas of highly biodiverse natural vegetation. ZsRC are relevant to the intellectual objectives of the thesis because these areas discursively prioritise agroecological peasant production and were formed in direct response to the neoliberalisation of the agricultural sector.

ZsRC assumed greater political importance during the 2016 peace agreement, reflected by the fact that the document explicitly mentions the model three times, raising its political and developmental profile.[5] The fact that the ZRC model is referred to in the peace agreement highlights its importance as the first and only legally recognised development tool designed to protect and enhance campesino agriculture and access to land in Colombia.[6] The 2016 peace agreement has given renewed prominence to ZsRC, making it more important to understand how smallholder agriculture has developed in these areas- whether the model has facilitated

[4] This thesis uses the political definition of agroecology, which not only includes the transitioning of farms to organic systems that rely on on-farm rather than off-farm inputs but also a political vision of the food system that moves it away from industrial-scale production towards smallholder farming and local distribution networks. A more in-depth discussion of agroecology can be found in Chapter 2.

[5] The agreement first restates the government's support for the model, secondly it identifies the seven areas that have assumed ZRC legal status as priority sites for land titling and it backs the communities in these areas in their efforts to stop the expansion of the agricultural frontier.

[6] Indigenous and Afro-Colombian groups have their own legally recognised institutional mechanisms to defend land ownership, which were implemented alongside the new constitution in 1991.

smallholder access to land and enabled agroecological transitioning. The ZRC institutional framework is 25 years old now, therefore, the development of agriculture in these areas provides insight into the challenges agroecology faces and how different communities confront agricultural neoliberalisation. These questions are crucial to the country's future rural reform agenda.

The research also fills empirical gaps in the literature, as much of the scholarship on the ZRC model has studied campesino mobilisation for territorial ordering (Machado et al, 1999; Fajardo, 2000; Portuguez, 2011; Gutiérrez et al, 2013; Fajardo, 2014; Méndez Blanco, 2015), which consists of land use plans and a land distribution system. There remains insufficient contextual information on how this model has impacted agricultural development in these areas, what factors have influenced and shaped the choices made by campesinos regarding livelihood strategies in ZsRC (i.e. whether or not these have transitioned towards agroecological practices and why) and the ecological feedback of these agricultural systems on the delicate ecosystems that the model aims to protect. This helps draw some tentative conclusions about how effectively the ZRC model has supported alternative agroecological development in the two cases. The farming systems in both cases are analysed through their land tenure structures, technologies/practices used, agricultural markets and nutritional output, as well as the environmental feedback of these farming systems. In so doing, the thesis provides more contextual and fine-grained detail, which contributes information towards public policy intervention in ZsRC.

The thesis also makes a methodological contribution by employing a food regime lens in two local case studies, which has been identified as a gap in the literature by food regime scholars (Pechlaner & Otero, 2008, 2010; Otero, 2012; McMichael, 2013; Pritchard et al, 2016). The majority of food regime scholarship provides *longue durée,* global historical analyses of the international relations of food: the power structures shaping global food production and trade. This conveys food as a commodity and resource used to establish global hierarchies. Some scholars have looked at the impact of food regimes on specific ecosystems, people and knowledge systems (Pechlaner & Otero, 2008, 2010; Peine, 2009; Smith et al, 2010; Otero, 2012; Magnan, 2013; Plahe et al, 2013; Bergius, 2014; Dixon, 2014; Heis, 2015; Torrado, 2016; Wilson, 2016; von Oelreich & Milestad, 2017; Jakobson, 2018), but of these only three

have studied Latin American food regimes and none specifically in Colombia. These researchers have chosen to adopt national or regional levels of analysis, in contrast, this thesis uses a case study approach. It brings down the unit of analysis to the municipal level to illuminate the complex construction of the food regime in Colombia and importantly the impact this has on campesino farming in the two cases, thus, shining particular light on the agency of campesinos in food regimes. A local, place-based lens is essential to understanding how territorial conditions, actors and circumstances shape food regimes from the bottom-up. This research provides a conceptual framework for further studies of this kind.

The case study approach to the food regime framework enables closer analysis of smallholder agriculture in two ZsRC during the neoliberal period in Colombia, facilitating an exploration of integration with and resistance to corporate agriculture in these zones. It conceptually employs the third food regime identified by McMichael (2009)- the corporate food regime (CFR). The CFR has a wide-ranging definition, which will be developed in detail in Chapter 2. Briefly put, it represents the industrialisation, corporatisation and transnationalisation of agriculture, where corporations control all aspects of food production from seed to finished package. This economic and productive system supports the accumulation of profit by corporate entities often at the direct expense of campesinos (McMichael, 2016). The research considers the extent to which the two case studies are integrated with this agri-food dynamic, how diverse peasant groups and the ZRC model resist CFR penetration through agroecology. Integration is defined as communities incorporating aspects of global agricultural production by adopting and adapting industrial farming methods (mass produced chemical inputs, the move away from diverse crop-selection towards specialised crops for export, use of monocrop farming etc), through economic linkages with global food commodity chains and agribusiness. Resistance is defined in opposition to this, as the employment of agroecological farming practices and the sale of diverse produce to regional or national markets, reconnecting sites of production and consumption. Integration and resistance can happen dialectically, producing hybrid agricultures. The thesis also considers the socio-ecological implications of hybrid farming, as well as its relations to CFR integration and resistance. The CFR provides a conceptual framing to explore smallholder systems in the ZsRC Cabrera

and Valle del Río Cimitarra, as it illustrates the complex relationship between local farming systems and transnational agricultural trends. The thesis also adds an ecological dimension to food regime studies, which has been largely overlooked by political economists (Pechlaner & Otero, 2008, 2010; Peine, 2009; Smith et al, 2010; Otero, 2012; Magnan, 2013; Plahe et al, 2013; Bergius, 2014; Dixon, 2014; Heis, 2015; Torrado, 2016; Wilson, 2016; von Oelreich & Milestad, 2017; Jakobson, 2018).

The thesis has two main research questions that are provided in bold but various subsidiary research questions, which impart greater analytical precision, as they are rooted in the diverse theoretical frameworks the thesis employs.

How do the ZsRC Cabrera and Valle del Río Cimitarra integrate with and/ or resist the CFR?

This is relevant to food regime theorisation precisely because there remain theoretical disputes over the existence of the CFR, whether it is a solidified regime or whether corporate interests are indeed too diverse to constitute a coherent food regime (Friedmann, 2005). Differently to McMichael, Friedmann suggests that we are in the throes of an emergent 'corporate-environmental regime' (ibid), where corporations are transitioning to more sustainable forms of agriculture, as a result of pressure from consumers. Bearing in mind this discussion, this thesis also analyses how corporate involvement in agriculture has impacted campesino farming practices. What role do non-corporate actors play in the CFR, e.g. armed actors, campesinos, nation states? What does resistance to the CFR entail in the case studies? How does campesino differentiation shape CFR resistance? Are certain agroecological themes and expressions more prevalent than others and why? Are corporations pushing farming towards sustainable alternatives and, if so, do these alternatives strengthen or oppose agroecological transitioning?

Gliessman's (2016) agroecology transition scale provides more detail about the process of agroecological transitioning. It consists of four levels that range from reductions in the use of chemical inputs towards more significant, market-based shifts that reconnect urban consumers and producers through local food networks (see Chapter 2). The thesis asks whether the different levels or phases of the transition scale do in fact present alternatives to corporate agriculture and the CFR? What do hybrid farms mean for agroecological transitioning and resistance? Mier y Terán

Giménez Cacho et al (2018) also provide greater analytical clarity on how to qualify agroecology, which they suggest can be undertaken using the help of external allies, peasant to peasant knowledge exchange, public policy and social movement organisation among other factors (see Chapter 2). The thesis explores which driving factors identified by the scholars facilitate agroecology in the case study ZsRC and why?

The research also asks what impact does the CFR have on smallholder producers and the local environments they occupy?

This socio-ecological question can be further broken down using metabolic rift theory, which provides a focus on how human society changes nature and vice versa. Metabolic rift theorisation has developed significantly from its early conceptualisation by Marx (cited in Foster, 1999), which mainly analysed the impact of industrialisation on farming communities and soils. Schneider and McMichael (2010) along with numerous other scholars such as Clausen et al (2015) have found this to be reductive. Consequently, they expand the metabolic rift to include various other dimensions (Chapter 2). To dissect the above research question further, this thesis asks what causes the metabolic, socio-ecological rift in these cases and what additional dimensions are visible? How do GR technologies impact the social metabolism and the metabolic rift? Wittmann (2009) and Clausen et al (2015) suggest that agroecology has the tools to heal this rift. Thus, the thesis investigates if and in what ways agroecology contributes to healing various dimensions of the metabolic rift.

The intellectual objectives of the thesis and the above research questions are:

1) to explore the corporatisation of agriculture in the ZsRC and understand what this reveals about food regime theorisation;
2) to contribute to discussions about agroecological transitioning in the ZsRC;
3) to assess the socio-ecological rifts in the zones and contribute to metabolic rift theorisation;
4) to weigh up what the ZsRC model tells us about the challenges of sustainable development in Colombia's context of on-going conflict.

1.2 Thesis Structure

Before delving into how CFR integration and resistance has taken place in the two ZsRC case studies, the thesis critically engages in discussions about the agrarian question and who campesinos are in this neoliberal period. It locates food regimes within this theoretical context, as it discusses what food regimes are and why the CFR is particularly important to the modern agrarian question. Chapter 2 also engages with agroecology: what this is, how it presents alternatives to the CFR and how it can be scaled out. Chapter 3 explains case selection in more detail, as well as the wider thesis methodology and conceptual framework. It engages in a reflexive analysis of the research approach. Chapter 4 reviews Colombian public policy, particularly the macro-economic decisions bringing the country in line with global CFR structures and politics. It aims to convey the differing levels of political commitment to agricultural market neoliberalisation in the country and the sectoral sources of opposition to the globalising project. Chapter 5 and 6 respectively analyse CFR integration and resistance in the ZRC Cabrera and ZRC Valle del Río Cimitarra. Chapter 7 compares the processes of assimilation, resistance and hybridisation in both zones. Chapter 8 presents the final discussion and conclusions of this research, bringing together analyses from different chapters by providing general lessons and conclusions about the different theoretical framework, what development in the ZsRC teaches us and future avenues for research.

2 Theory

2.1 Introduction

This chapter develops a critical theoretical framework of CFR integration and resistance to answer the research questions outlined in the previous chapter. It does this by engaging with literature that considers the agrarian question and the socio-economic changes arising from agrarian capitalism particularly in Colombia. This includes themes such as peasant differentiation and how this has changed in the period of global neoliberalisation. The corporate food regime (CFR) is placed in the context of this debate, as theorists have identified this as one of a number of contemporary agrarian questions, i.e. how the peasantry has changed in global neoliberalisation. The chapter reflexively engages with the food regime concept, how it differs from previous agrarian theorisation and what it adds to peasant studies, as well as the analytical biases that may result from using the CFR as a framework. It then goes on to critically engage with agroecological theorisation, the idealism that is attached with peasant agriculture and how agroecology transitions take place. Finally, debates around the metabolic rift are weighed up, given agroecology is often posited as a rift healing practice.

2.2 The Peasantry, Agrarian Capitalism and Political Ecology

The earliest theoretical debates about the peasant condition- how capital penetrated agrarian settings and the socio-economic and political impacts of penetration on the peasant class- took place between Lenin and Chayanov in the Soviet period. Chayanov theorised about the lack of class differentiation among peasants, as he suggested they were tasked with 'simple reproduction', which excluded the 'capitalist imperative of accumulation' (Bernstein, 2009, p.61). Whereas, Lenin argued for class differentiation; the division of the peasantry into poor, middle and rich peasants (ibid, p.58). Bernstein similarly argues that blurring these class divisions among petty-commodity producers, a term he finds more analytically precise than peasants, has resulted in many scholars overlooking intense class struggles among rural dwellers (ibid, p.32). This debate was renewed in Latin America in the context of revolutionary peasant movements and land reform projects in the 1960s and 70s that reacted against highly unequal land tenure systems (Sankey, 2019). The discussion here was led between *campesinistas* and *descampesinistas*. The former argued that the peasantry could withstand the incursion of capital and provide alternative routes to

development, whilst the latter followed a Leninist position by underlining peasant differentiation, into small-scale capitalist farmers and rural proletarians (ibid).

In Colombia, Zamosc (1986) reinterprets this with a regional and historically conjunctural lens by distinguishing between four different categories of peasants for the period 1967-1981: stable, precarious, landless and rural labourers. These class categories were defined by different regional agrarian structures. For instance, the first group was involved in traditional peasant economies and aspired to consolidate their access to state services and credit. They resided in areas such as Antioquia, Boyacá, Cundinamarca and Santander among others.[7] Precarious campesinos, on the other hand, participated in waves of colonisation of marginal areas[8] (see Chapter 4 for more on the history of the colonisation movement) and sought to stabilise their economic positions by accessing state services and credit for the first time. These precarious peasants lived in areas including Meta, Putumayo and the Amazonas.[9] Landless campesinos lived among traditional *latifundia* and sought land to establish their class position, whilst the rural labourers were akin to the urban proletariat due to their reliance on waged labour and mobilised for better employment conditions and wages. According to Zamosc (ibid), differentiation among the Colombian peasantry in this period undermined a unified class struggle, instead giving rise to conflicting demands and division. This analysis is persuasive in the Colombian context, due to the vastly different regional histories and developmental trajectories within the country. At the same time, it is important to note that class boundaries are rarely so distinct, especially among the peasantry where livelihood strategies are fluid.

Many scholars have asked whether the agrarian question is relevant to the globalised and neoliberal era of agricultural development, since transnational capital no longer

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[7] All these departments are either home to the two ZsRC case studies analysed in this thesis or neighbour them.

[8] In the early 1970s, peasants in Colombia were encouraged to colonise virgin forest and settle in marginal territories in an effort to avoid agrarian reform.

[9] Colonised areas are particularly relevant to the thesis, as ZsRC were principally established in areas of colonisation to formalise access to land.

requires ‘access to surplus agricultural resources in order to facilitate accumulation’ (Bernstein cited in Akram-Lodhi and Kay, 2010, p.264). However, this thesis finds Kay’s contrasting reasoning more convincing, as he points to the ‘array of liberalization policies in land, labour and capital markets’ in Latin America, including Colombia, which have led to a commodity export boom across the continent and consequently ‘a new process of land concentration’ or as some authors refer to this land grabbing (2015, p.74; Borras et al, 2012; Grajales, 2015). The result of this new phase of agrarian capitalism has been a boom in agro-export crops such as soya, fruit and other horticultural produce, which have transformed the agrarian landscape in many countries by increasing wage labour (particularly for women), introducing new land conflicts due to waves of land concentration that have shifted land structures away from the traditional *latifundio* to ‘competitive capitalist’ farms (Kay, 2015, p.75). This change is reflected in a plethora of political economy and political ecology literature on the proliferation of flex-crops[10], the expanded role of agribusiness and neo-extractivism in Latin America (Oliveira & Schneider, 2015; Kay, 2015; Hunsberger & Alonso-Fradejas, 2016; Vergara-Camus & Kay, 2017).

In light of the global changes in agriculture, Akram-Lodhi and Kay (2010) re-cast Lenin’s poor, middle and rich peasants as the export-oriented capitalist subsector that represent richer peasants, the petty commodity producers who farm for subsistence but also local/regional markets, and finally the semi-proletarianised who produce for food security/ subsistence but mainly sell their labour power. Although Akram-Lodhi & Kay’s (2010) categorisation of the modern day global peasantry is highly persuasive, arguably, it does not fully capture the peasant condition in Colombia, as it does not reflect the continued precarity that many peasants face around access to land and state services. This underlines the fact that global categories must be situated in national contexts. For this reason, the thesis combines Akram-Lodhi & Kay’s (ibid) categorisation with the historical categories devised by Zamosc (1986). Although, the period for which Zamosc theorises largely pre-dates that which is relevant to the thesis

[10] Flex crops and commodities' have multiple uses (food, feed, fuel, fibre, industrial material, etc.) ... Current examples include soya (feed, food, biodiesel), sugarcane (food, ethanol), oil palm (food, biodiesel, commercial/industrial uses) and corn (food, feed, ethanol) (Borras, et al, 2015, p.94).

(late 1980s onwards), his categories reveal important insights into landholding structures, levels of infrastructural development and the availability of state technical or credit services. In turn, combining Zamosc's class categories with Akram-Lodhi & Kay's (2010) caters for the emergence of new classes during the neoliberal turn in Colombia.

According to Kay (2015), neoliberalisation of Latin American agriculture has continued the proletarianisation of peasants, as more rely on precarious wage labour and off-farm work. In this context of neoliberal globalisation, Akram-Lodhi and Kay (2010) suggest that the corporate food regime poses another agrarian question. This agrarian question is about 'the terms and conditions by which peasant households and rural labour are reproduced when increasingly excluded from the corporate food regime' (ibid, p.268). Different to theorists who stress the differentiation of the peasantry, CFR and re-peasantisation scholars emphasise the importance of global peasant resistance. Academics such as Van der Ploeg, McMichael, Altieri and Gliessman define the modern transnational peasantry by their ecological relations: their 'self-controlled and self-managed resource base' that can be accompanied by pluriactivity or other non-agrarian occupations (cited in McMichael, 2013, p.145); modern peasant farming is 'the production and growth of as much value added as possible' (Van der Ploeg cited in ibid, p.146). Van der Ploeg (2008) argues that this unit of analysis differs from the Marxist peasant condition, as it instead explores the peasant mode of farming. This thesis, however, finds that both analytical positions inform the other and applying a more differentiated lens could reveal possible motivations behind different modes of farming employed by campesinos.

McMichael suggests that this alternative definition 'universalises the peasant condition', placing the peasantry 'in modern ontologies that erase the peasant condition as backward or pre-modern' (2013, p.146). This argument, however, could lead to an oversimplified analysis that flattens out key socio-economic differences. For instance, Kay suggests that this theoretical position fails to note the differences that emerge between campesinos depending on levels of market integration, as it does not 'incorporate rural wage workers or represent their interests' (2015, p. 78). This is important in the context of the CFR because this thesis argues that differentiation among the peasantry impacts the diversity of resistance opted for by the peasantry, if

any at all. Other important distinctions this approach conflates are ethnic and gender divisions among the peasantry, and how the CFR differently impacts these groups. With this in mind, it is important to highlight the nuances that exist within peasant resistance through more context specific studies to gain a deeper appreciation of the conflicts that exist within campesino communities. Nevertheless, the CFR is useful in framing the issue of food in global terms, due to the transnationalisation of production and distribution, but it is equally necessary to deconstruct this to understand its composite parts.

2.3 Food Regimes: What are they?

Given the importance of the CFR framework to the modern peasant condition and modes of farming, it is essential to critically engage with the food regime concept itself. The simplest definition of a food regime is an economic and productive system that spans national spaces and time (McMichael & Friedmann, 1989; Friedmann, 2005; McMichael, 2009, 2013). Food regime analysis:

> 'brings a structured [historical] perspective to the understanding of agriculture and food's role in capital accumulation across time and space. In specifying patterns of circulation of food in the world economy it underlines the agrofood dimension of geo-politics' (McMichael, 2009, p.140).

According to McMichael and Friedmann, international food regimes began to emerge in the 19th century, as Europe industrialised and as its empires were established. In 'Agriculture and the State System' (1989), they look at the impact of agriculture on the state system and the capitalist world economy. They chart the historic emergence and collapse of stable regimes of accumulation in the food system, determining two food regimes. The first (1870-1914) saw British dominance in the world economy. This was premised on the export of cheap food and materials from periphery settler colonies with temperate or tropical climates to Europe, based on comparative advantage. This food regime drove industrialisation in Europe by feeding its working masses cheaply.

The second food regime emerged after the Second World War (1945-1973), when the USA rose to dominance. During this period a global framework of trade was constructed by the USA, whereby it had a regulated agricultural sector exempt from free-trade rules. This resulted in a 'surplus regime' (Pechlaner & Otero, 2010, p. 183), in which surplus food flowed from the North to the South through food aid programmes,

engendering a ‘southern dependency on cheap-food imports’ (ibid). The advanced industrialisation of agriculture supported this regime through the spread of fossil fuel-dependent, Green Revolution technologies, which introduced high-yield hybrid cereal varieties, fertilisers, pesticides, irrigation and agricultural machinery to those who could afford it through credit schemes for smallholders. Peasant lands were slowly concentrated in fewer hands and the division of labour in rural spaces rapidly changed, due to specialisation and mechanisation.

Subsequent to their initial paper (1989), McMichael (2009) departed from Friedmann (2005), suggesting that we are now in the midst of a third, 'Corporate' Food Regime (CFR), which ‘carries legacies of the previous food regimes’ (McMichael, 2009, p.151). It entails the mechanisation, industrialisation, massification and corporatisation of agricultural production, food processing and distribution, facilitating the accumulation of capital by multinational, corporate entities (ibid). Integral to this is globalised, neo-liberal and long-distance free trade, referred to as a system of ‘food from nowhere’ (McMichael, 2016). This third regime has built upon Green Revolution agriculture, in addition to which it uses New Green Revolution biotechnology, such as genetically modified seeds. Friedmann (2005), on the other hand, argues for an emergent ‘corporate-environmental’ regime, organised around the ideas of ‘green capitalism’. Green capitalism refers to ‘a shift in rules of economic activity so that profits are renewed through less depletion of resources’ (ibid, p.230). Here Friedmann is specifically referring to a change in agricultural practices by agribusinesses, as they move from industrial technologies to more organic methods and inputs. She argues that this process of ‘greening’ is motivated by pressure from social movements. It continues to be capitalist because agribusinesses selectively choose ‘demands that best fit with expanding market opportunities and profits’ (ibid, p.231). The results of this shift include more sustainable methods of food production and distribution, such as organic farming and fair-trade.

Each food regime presents a particular stable pattern or regime of capital accumulation but also has a central oppositional tension. The oppositional force in the food regime seeks to rupture the dominant regime of accumulation, as well as overturn the rules that govern and structure the given regime (mode of regulation). This is heavily influenced by Polanyi’s (1957) double movement theory, which suggests there is often a dialectical push for social protection against marketisation, i.e. social

movements arise in response to the expansion of capital's sphere of influence. With this in mind, the first regime of accumulation was structured around mainly British hegemony and the colonial settler state system. In the first regime the main social forces of opposition were the British or wider European working classes and also 'family farmers in settler states' (Bernstein, 2015, p.5). The second regime internationalised the nation state project and strengthened the hegemony of the US Fordist model, aided by the generation of a global dependency on US Food Aid. The oppositional force in the second regime was a plethora of social and environmental movements, as well as others pushing against US imperial expansion (ibid, p.10). Differently, the CFR is based on corporate accumulation, in which agribusinesses steadily monopolise all aspects of agricultural production and consequently push smallholder farmers into precarious wage labour. McMichael (2009) identifies the transnational peasant social movement for Food Sovereignty (FS)[11], led by La Vía Campesina (LVC) and other organisations, as the main oppositional force in the third food regime. This counter movement prioritises locally produced, ecologically friendly and culturally appropriate food production.

2.3.1 The Theoretical Origins of Food Regime Theory

Before exploring the main arguments and debates among food regime theorists, it is important to understand the origins of the theory. Regime theory studies regimes of accumulation, which are systems of production, consumption and accumulation. Krasner defines a regime as 'sets of implicit or explicit principles, norms, rules and decision-making procedures around which actors' expectations converge in a given area of international relations' (1982, p.186). Regimes of accumulation are governed by modes of regulation, which determine the form of the regime, providing the rules and norms that control it. According to this theory, regimes eventually reach a point of

[11] Food Sovereignty is a highly contested idea, which has significant definitional elasticity and is in many ways a concept 'under construction' (Van der Ploeg, 2014, p.1000). It is a political project that was begun in 1996, led by the peasant international LVC but today is not exclusive to it. It is related to issues including: 'food politics, agroecology, land reform, pastoralism, fisheries, biofuels, genetically modified organisms (GMOs), urban gardening, the patenting of life forms, labour migration…community initiatives and state policies, public health, climate change, ecological sustainability, and subsistence rights' (Alonso-Fradejas et al, 2015, p.433).

crisis, after which the existing mode of regulation no longer supports the given pattern of accumulation. At this point a new mode of regulation is needed- new rules, institutions and norms that have the potential to sustain another regime of accumulation. This explicitly suggests that state institutions are integral to the formation and exercise of the mode of regulation (ibid; Friedmann, 2005). The Gramscian theory of cultural hegemony helps to specify this process (in Forgacs & Hobsbawm, 2000). Gramsci argued that state institutions are central to shaping and maintaining the practices, beliefs and norms that assert the hegemony of the ruling classes and, in this case, their regime of accumulation (ibid). The policies formulated by governments and state institutions are crucial units of analysis in exploring the cultural, political, social and economic hegemony of the dominant regime, as well as how these are contested and who contests them.

The fissures in regimes of accumulation, their breakdown and the emergence of new ones opens up the possibility for resisting and changing the dominant paradigm, an area that this thesis examines. Van der Pijl refers to regime theory as a 'weak version of systems theory' because it still maintains 'a strong element of subjective rationality' (2009, p.150). This implies there is space for individual agency and rationale. However, he also suggests that once agents enter this system, they suspend 'freedom/ choice (apart from the choice of opting out)' (ibid, p.151), i.e. all actions are fundamentally conditioned by the regime. There is a tendency in food regime theorisation that suggests CFR logic dominates and determines the actions of all agricultural producers, even those that adhere to the Food Sovereignty (FS) paradigm (McMichael, 2016; Holt-Giménez & Shattuck, 2011). Scholarly writing on the differentiation of the peasantry underlines, however, that this is a mechanistic and simplified understanding of the global peasantry (Bernstein, 2010; Akram-Lodi & Kay, 2010; Kay 2015). This is because not all peasants are politically invested in the idea of FS, nor are all peasants committed to localised and ecological production alone. This binary understanding of smallholders suggests that campesinos either align themselves with the corporate sector or with the ideas of FS, an assumption that could bias the data collection process, as it dismisses all other campesinos who do not wholly fit in either category. Discussions around regime theory thus encourage reflection on regimes of accumulation, the modes of regulation that govern them, how

coherent these modes are and the extent to which agents can shape or influence their trajectory- particularly important for this thesis is the agency of campesinos.

Regulation theory is often viewed as an influential aspect of food regime theorisation. Similarly, it looks at the rules and regulations that create social, economic and political periods of stability in the global capitalist system. Arguably, regulation theory had most influence and importance in the foundational food regime article by McMichael & Friedmann (1989). According to McMichael (2013), regulation theory was more relevant to the two earlier regimes because they were charting distinct periods of state formation and forms of accumulation- one dominated by empire settler states and the other around an export protectionist model developed by the US. This article was ground-breaking for viewing agriculture not in terms of the class struggle (peasants against feudalism, imperialism or capitalism) but by analysing how agricultural processes enabled national development and how global state systems sought to mould or use the rural world to establish power (Bernstein, 2016).

On the other hand, Araghi (2003, 2010) argues that regime theory is better understood when distanced from regulation school narratives, placed instead in the framework of global value and labour relations. He suggests that the regulation school approach enables a 'dualistic' rather than 'dialectical/ relational' analysis of the production of absolute and relative surplus value or profit (Araghi, 2003, p.49). For Araghi, a value relations framework requires the study of the politics of state relations, world markets, colonialism and imperialism. He argues that this class-oriented lens better highlights the uneven development of capitalism and the relations of surplus extraction within capitalism, i.e. who or which country is expected to produce more profit or surplus (ibid, p.50). This roots analysis in global socio-economic or class relations, rather than those struck by and between nation states. As McMichael notes, this critique also serves to remind us that 'under capitalism, food is an exchange-value, first, and a use-value second' (2009, p.155). This underlines the role of food as a commodity-relation, placing 'agriculture in the analysis of capitalist transformations' (ibid) and 'the reproduction of labour power' (Araghi cited in op.cit). McMichael argues that Araghi's critique reinforces the original intention of food regime analysis, as it focuses attention on 'the political history of capital…realised through the structuring of global food relations' (ibid).

The methodological implication of Araghi's value relations approach is an overhauling of the timings of the original food regimes. Instead, he categorises these as: 1) 1492-1832: 'era of colonial enclosures' spearheaded by the British Empire (Araghi, 2009, p.120) but this also includes colonial expansion by other European powers such as Spain and Portugal; 2) 1832-1917: 'emergence and dominance of industrial capitalism and the global division of labour' (ibid, p.122); 3) 1917-1975: the 'global reformist retreat from classical liberalism' (ibid) 4) 1970-present: neoliberal globalisation (ibid). Although McMichael praises the analytical value of Araghi's critique, he also states that it is too 'capital-centric' and 'discounts the ecological calculus' (2009, p.162).[12] This research is driven by this methodological gap and provides a possible example for how an intertwined analysis of labour and nature may be undertaken, by exploring 'how capital's food regime exploits labour-power and nature together' (McMichael, 2013, p.135). Araghi's most important contribution, thus, is the need to emphasise the inherent class tensions and dialectical or relational aspects of food regimes but this must arguably be broken down further in local case studies to understand the class tensions among the corporate sector and peasantries themselves.

McMichael suggests that food regime theory does not solely belong to the regulation school, however, as it also draws on Wallerstein's world systems perspective (1974, *inter alia*). He suggests the symbiosis of the two concepts is evident in the 'stable regulatory arrangement of international food relations, [which support] a particular form of accumulation' (McMichael, 2013, p.11). World systems theory is relevant to food regime analysis in its provision of a framework for understanding how trade and production have developed- high value production in the core countries and the contracting out of raw material supply to peripheral or semi-peripheral nations (Van der Pijl, 2009, p.174)- mapping a particular form of global accumulation.

Regime theory, however, is less deterministic than world systems theory because it posits the possibility of crisis in the system of accumulation and regulation. It also caters for individual agency and conflicts of interest that can go against the logic of the dominant system. World systems theory, on the other hand, 'leaves practically no role

[12] McMichael and Friedmann also neglected ecological feedback incurred in earlier food regimes (Campbell, 2009), something which they have attempted to rectify in later papers.

for actors other than functional behaviour' (ibid, p.178). Regime theory is also equipped to deal with the transnationalisation of production, since Wallerstein's model appears unable to explain complex production patterns across multiple zones (ibid, p.182). Regime theory, hence, provides better analytical tools to construct webs of institutional and corporate power, which do not necessarily pertain to centre-periphery hierarchies. This is not to suggest that a Global North and South order does not exist but that it is a more complicated and transnational hierarchy, which world system's theory alone does not explain. Food regime theory is a combination of weak and strong systems theories, a middle way of sorts.

In light of the debate on what a food regime is and how it is structured, it is important to reassert the definition of food regimes. A food regime is a shared set of agricultural production and consumption relations, spanning national borders and time, which links to specific forms of global capital accumulation (McMichael, 2009). The regime of accumulation is determined by global value relations that primarily view nature and the environment in terms of exchange value and is heavily dependent on nation states to maintain modes of regulation. This definition is inclusive of both Araghi and McMichael's approach. It also reasserts the importance of analysing the conflict and contradictions within nation states and national contexts, as these are central to the construction of global hegemony (Pritchard et al, 2016).

2.3.2 The Third Food Regime: Emerging Corporate-Environmentalism or Corporate Food Regime?

The most heated debate in food regime studies surrounds the third food regime, which fundamentally relates to the very conceptualisation of food regimes. Scholars have debated whether a third regime even exists, when it began or whether it is still forming. As noted earlier, Friedmann (2005) suggests that a third corporate-environmental food regime is emerging, while McMichael (2009) argues a third corporate food regime (CFR) began from the 1980s onwards, coinciding with the beginning of neoliberalism. McMichael's CFR falls in line with the era of Reaganomics in the United States and Thatcherism in the United Kingdom, which heralded privatisation, monopolisation and transnationalisation of previously national industries. McMichael (ibid) argues that under this food regime the corporate sector gained control over food production, packaging and circulation. The neo-liberal agro-food order was underpinned by the WTO's Agreement on Agriculture in 1995. This agreement 'institutionalise[d] a

distinctive form of economic liberalism geared to deepening market relations via the privatisation of states' (McMichael, 2005, p.273). Le Heron notes that the third food regime came to fruition due to 'declining governmental powers over the principal agents of restructuring' (cited in McMichael, 2009, p.149)- transnational corporations- and the shifting of crop breeding and development from a state-led activity to corporations (Pistorius and van Wyk cited in McMichael, 2009, p.150). As a result, 'states become subservient to (global) capital… follow[ing] the 'rules' imposed by the ideology of the market' (McMichael, 2005, p.153), so institutionalising corporate power. The revised role of the state and the capacity of the private sector to shape the mode of regulation, makes this regime different to the previous two.

A New Green Revolution (NGR) is also at the heart of the CFR's productive model, as global food security is sought through genetically modified crops (Holt-Giménez et al, 2012) and other biotechnologies (Pechlaner & Otero, 2008, 2010; Otero, 2012), and by sourcing food from global markets. This is because the CFR's regime of accumulation is also based upon profit earned from GR and NGR technologies. These technologies can often begin a vicious cycle that increase use of industrial technologies. For instance, herbicide and pesticide resistant GM seeds have led to increased application of both chemical inputs, as plants can become resistant to certain herbicides and pests can develop resistance to the particular pesticides produced by GM plants. Overuse of pesticides has been referred to as the 'pesticide treadmill'[13] (Van den Bosch cited in Perfecto et al, 2019), which is encouraged by pest resurgence, pest resistance and secondary pest outbreaks. A similar term is also applied to the excessive use of fertilisers- 'the fertiliser treadmill' (ibid). This highlights the fact that 'provisioning soils with large amounts of inorganic ions disrupts the normal nutrient cycling processes in the soil, thus making it even more necessary to apply fertilizer' (ibid, p.81).

These terms and ecological narratives should be engaged with critically, however, as there is arguably an 'emergent truth narrative' around the use of chemical inputs. For

[13] This is inspired by Schnaiberg's (1980) 'treadmill of production'. This consists of the over extraction of natural resources for industrial production that results in 'ecosystem disruption' or 'ecosystem disorganization' (ibid).

instance, a Google Scholar search on the impacts of pesticides, yields numerous results about the negative consequences of pesticide use but only a few articles that refer to the benefits of chemical inputs. There is a tendency to consider all use of chemical inputs as negative, without distinguishing between the quantities applied by farmers or the frequency of applications. These are important questions since negative ecological consequences usually occur due to excessive or prolonged use of chemical-inputs. Moreover, this body of literature does not engage with how herbicides are used in farming systems that seek alternatives to the industrial model, such as conservation agriculture. This model combines herbicides with low tillage, permanent organic soil cover and crop rotation. Herbicides also reduce labour demand, which can be crucial for peasant producers who do not have the economic capability to hire waged labour. This thesis takes this emergent truth narrative into account when analysing GR technology use by campesinos, to avoid the demonisation of smallholders who use these technologies and provides a closer analysis of the rationale behind why they do so.

Another concept that illustrates how corporate power is consolidated and expanded in the CFR is Harvey's (2004) 'accumulation by dispossession'. He sees this as the modern permutation of Marx's primitive accumulation, i.e. the process of transforming pre-capitalist modes of production (such as feudalism and chattel slavery) into capitalist modes of production.[14] 'Accumulation by dispossession' consists of widening markets (principally in the Global South) by forcing non-capitalist territories to open 'not only to trade…but also to permit capital to invest in profitable ventures using cheaper labour power, raw materials, [and] low-cost land' (Harvey, 2004, p.139), with

[14] Numerous scholars have discussed the relationship between Harvey's theory of accumulation by dispossession and Marx's primitive accumulation (Hall, 2013; Das, 2017; Bin, 2018). The two terms can be used synonymously but Marxist scholars have correctly pointed out their analytical differences. According to Das, primitive accumulation is the 'historical process of divorcing the producer from the means of production and subsistence and creates the two basic classes of capitalist society (capitalist and workers) (2018, p.591). Harvey suggests that the historical specificity of primitive accumulation means that new terminology is needed to understand expanded production in the neoliberal turn. He argues that this takes place through 'predation, fraud and violence' (cited in Das, 2018, p.592)- through extra-economic means and not only through the market.

the aim of reducing production costs and increasing profit margins. This is undertaken through a number of means: '(1) the commodification and privatization of land and the forceful expulsion of peasant populations (as in Mexico and India in recent times); (2) conversion of various forms of property rights (common, collective, state, etc.) into exclusively private property rights; (3) suppression of rights to the commons; (4) commodification of labor power and the suppression of alternative (indigenous) forms of production and consumption; (5) colonial, neocolonial, and imperial processes of appropriation of assets (including natural resources); (6) monetization of exchange and taxation, particularly of land; (7) the slave trade (which continues, particularly in the sex industry); and (8) usury, the national debt, and . . . the use of the credit system…[9] extraction of rents from patents and intellectual property right' (Harvey cited in Das, 2018, pp, 592-593; also see Bin, 2018, p.79). Additional mechanisms include contracting, the imposition of high-intensity chemical farming and environmental governance schemes such as REDD+.[15] Harvey argues that these mechanisms are all extra-economic ways that capital is expanding markets and redistributing wealth from the poor to the rich.

Scholars have critiqued the accumulation by dispossession theory for conflating different processes of accumulation and not clarifying the causal connections between the numerous mechanisms noted above (Das, 2017; Bin, 2018). For instance, there are significant differences between land grabs that take place using force or through market processes, where the former is illustrative of violent or coercive dispossession and the latter accumulation using market means, both of which vary greatly from the dispossession that occurs through knowledge displacement using GR technologies. This thesis does not seek to clarify the causal connections between all the different

[15] This is a transnational Payment for Ecosystem Services (PES) conservation scheme, which trades forest carbon sequestration potential in remote areas for cash paid by corporations and nation states, to offset their own carbon emissions through multi-scalar linkages among multi-national corporations, state governments and local organisations. It attempts to green the economy through a collaborative and integrated process, but one which fundamentally remains governed by the principle of profit and market logic (Aguilar-Støen et al in De Castro et al, 2016, pp.205-234). It is what Igoe and Brockington (2007) would call 'neoliberal conservation'.

mechanisms that together compose accumulation by dispossession. However, its inclusion of distinct CFR dimensions (discussed in greater detail in Section 3.5) illuminates how specific mechanisms of accumulation by dispossession, relevant to the case studies, interlink and together work to marginalise smallholder producers from agriculture.

The thesis finds Magdoff's (2013) broad categorisation of dispossession lends significant analytical clarity to Harvey's theorisation, as he suggests dispossession takes place through enclosure, force or economic means by states and corporations. It is important to note, however, that he associates forced dispossession with imperialism and historical examples of 'land grabbing'. However, this thesis argues that violent, coercive or forced dispossession still takes place alongside and often intertwined with economic dispossession (Das, 2017; Bin, 2018). Thus, it is important not to see these categories as mutually exclusive but as potentially interconnected. Additionally, both Magdoff and Harvey overlook the role of non-state armed groups in the process of accumulation by dispossession**.** This area is explored in greater detail in the thesis, as armed groups have been central to the process of agrarian change in Colombia.

Another important criticism of Harvey's (2004) accumulation by dispossession is that it tends to homogenise peasants as existing outside capitalist relations- as subsistence farmers who are not integrated within markets (Hall, 2013). This overlooks the differentiation among peasants, particularly their petty-commodity and capitalist production (see Section 2.2). It also assumes a passive role for all peasants, who can also actively participate in processes of accumulation by dispossession, e.g. by adopting GR technologies and concentrating land. Viewing peasant class formation through a differentiated lens provides greater nuance to processes that drive accumulation by dispossession but also points out that this can take place in spaces already integrated in markets. In these cases, capital could be re-distributed through integration in global commodity chains via technological transitions, economic and extra-economic processes. This is in fact the key focus of the thesis, as it analyses how CFR integration takes place in two Colombian cases. The accumulation by dispossession concept, thus, sheds further light on the mode of regulation that enables the corporate sector and other actors to accumulate capital. Table 2.1 provides a succinct overview of the various elements and contours of the CFR.

Table 2.1: Bernstein's Overview of the CFR

International state system	Reconfigured by 'politics of neoliberalism' [boosted by end of USSR]; states as instruments of corporate capital
Dominant forms of capital	(Financialised) corporate agribusiness capital
International division of labour/trade	• Northern grain exports to South • Southern export of 'exotics' to North • New frontiers of production of bulk staples in some parts of South (and 'land grabbing' to effect this) • 'integration of food and energy markets'
Rules/ legitimation	• Markets rule • Ideology of agricultural 'modernization' • ['Westernization' of diets?]
Social forces	• Environmental and other oppositional social movements • La Vía Campesina and other agroecological small farmer movements
Technical and environmental change	• Ongoing mechanisation and chemicalisation of farming, with intensifying fossil fuel usage (and pollution) • GMOs, biopiracy, 'neoliberalization of nature' through private property rights in biochemistry of organisms • Mounting ecological devastation
Tensions/ contradictions	• Ecological crisis • Volatility of food markets and prices • Widespread (and increasing?) hunger • Crises of profit and accumulation
'Alternatives'	• 'civilizational movement' of La Vía Campesina, and allied and similar movements • Food sovereignty: localised production, distribution and consumption = 'food from somewhere' *versus* 'food from nowhere'

Source: Bernstein, 2015, p.18.

McMichael (2009) identifies Food Sovereignty (FS) as the key oppositional movement transnationally resisting the expansion of the CFR. Rather than a movement, however, FS is better understood as a political vision or an alternative paradigm reflecting a reorientation of the food system towards smallholder production, sale and consumption. FS opposes the CFR because the production of local, culturally appropriate and ecologically friendly produce is in many ways the opposite of mass produced, industrial, export-oriented and chemically fertilised foods. Viewing the food regime in this dualistic manner, however, could be problematic for nuanced analysis, as this flattens out other forms of campesino farming that do not conform to the ideals

of FS. Moreover, using the idea of FS as the key form of opposition in the CFR is made even more complicated by the diffuse definition of this term, which in turn reduces analytical rigour of campesino resistance.

Instead of FS, this thesis argues that agroecology should be viewed as the main oppositional social force in the CFR. This is because it provides practical and technological tools that contrast to (New) Green Revolution technologies and proposes a political alternative to the CFR that places smallholders at the heart of the food system. It is often used conceptually in conjunction with FS, as scholars suggest agroecology provides the scientific and practical tools to engineer a paradigmatic shift (McMichael, 2009). However, as Bernstein (2015) notes, agroecology also has a key social movement component around the world (see Table 2.1) because it provides an alternative political and socio-ecological vision of agricultural production. FS and agroecology are complimentary and are often used interchangeably but for the sake of clarity this thesis identifies agroecology as the main oppositional force or pivot in the CFR. One of the main theoretical challenges of identifying agroecological social movements as the key oppositional force to the CFR is that agroecology as a practice and approach is diverse and context specific. The social composition of agroecology movements diverge according to nationality, ethnicity, language, geo-political, socio-economic and ecological contexts to name but a few. Nevertheless, the divergence and difference among agroecological social movements complements the thesis' instantiated approach in understanding how differentiated peasant communities are integrated with the CFR and resist it through their context specific strategies.

A serious point of disagreement among food regime theorists, however, is whether a third food regime even exists. Pritchard (2007) argues against the idea of a clean break between the second and third regime. He views the collapse of the WTO Doha Development Round Negotiations in 2008[17] as evidence that the CFR is a 'carryover from the politics of the crisis of the second food regime' (Pritchard cited in McMichael, 2009, p.156). This view is based on the fact that the WTO proved an inadequate forum

[17] The Doha Development Round Negotiations sought to consolidate agricultural liberalisation by responding to the misgivings of Global South countries, as they argued the system was skewed against them and in favour of Global North countries.

for resolving the divergent interests present in global agriculture, therefore, Pritchard argues that it failed to establish a solidified mode of regulation for a possible third regime. This is important precisely because McMichael suggests that the WTO provided a new regulatory framework or mode of regulation for the CFR.

McMichael convincingly rebuts that the WTO's 'protocols have…enabled a massive corporate consolidation and assault on smallholder agriculture' (ibid. p.157). Under the purview of the WTO, free trade agreements promoting agricultural neoliberalisation have proliferated. Although these are bilateral and multilateral agreements, rather than tools to facilitate all global trade, they have reinforced global commerce between existing trading blocks. Additionally, these trade agreements adhere to the levels of liberalisation established by the WTO and often go beyond them. Nevertheless, Pritchard's critique remains helpful in underlining the continuities between regimes and in highlighting the tensions that continue to exist between nation states/ the Global North and South in the current food regime.

The arguments regarding continuities between the second and third regime build on Friedmann's (2005) doubts about the CFR, as she argues for the *emergence* of a corporate-environmental food regime. Her analysis maintains a traditional approach in its focus on both formal and informal institutions. In distinction to Pritchard, she does not see this emergent regime as building on the facets of previous ones, rather, it links agriculture to new issues such as animal welfare, environmental pollution, energy use, gender and racial inequality (Friedmann, 2005, p.249). In this newly emerging regime, consumers and social movements apply 'green pressures' (Pechlaner & Otero, 2010, p.184) on corporations to reform their resource base. The result is a convergence between 'environmental politics and the reorganization of retailing food supply chains', an example of which is Whole Foods in the United States (McMichael, 2009, p.152). In this context, Friedmann (2005, p.253) argues that private enterprise has taken the lead in setting food standards, quality controls, packaging and labelling, hence, surpassing the rule making of the state.

The differences between Friedmann and McMichael are not as wide as they appear. Their theoretical positions are indeed 'distinct…but not necessarily contradictory' (McMichael, 2009, p.151). Holt-Giménez and Shattuck's (2011) analysis of the food movement help to illuminate the underlying similarities between Friedmann and

McMichael. They suggest the food movement has two arms: progressive and radical. The progressive espouses a greener form of agriculture or as Friedmann (2005) calls it 'green capitalism', while the radical attempts more systemic change, akin to political agroecology counter movements. Holt-Giménez and Shattuck (2011) emphasise that both are complimentary expressions of a single movement in the same overarching food regime. This then suggests that green capitalism is not an emergent regime of its own but a less radical arm of the current counter movement looking to change the mode of regulation.

In fact, green capitalist production does not alter the food regime's patterns of accumulation, as it remains linked to corporate accumulation. So, 'corporate-environmentalism' cannot be seen as a separate, emergent regime. This is especially clear from the way in which purchased organic input substitution and the fair-trade movement have been adopted by the corporate sector to strengthen the existing regime of accumulation (Rosset & Altieri, 2017). As Perfecto et al. note, organic production for commercial use essentially 'substitutes synthetic inputs with organic and biological ones' coming from 'large-scale monocultural organic production', which does 'not challenge the industrial approach' (2019, p.92) nor reduce smallholder dependence on the market (Bellamy & Ioris, 2017). Harvey (2004) sheds further light on this argument, as he defines the replacement of traditional farming practices and knowledge with 'greener forms' as accumulation by dispossession. Organic input substitution increases the cost of production and prevents the reproduction of more socio-economically sustainable practices, thus, contributing to the long-term economic dispossession of smallholder lands (Magdoff, 2013). Greener farming may yield eco-friendlier results, but this reinforces the structural position of capital and marginalises smallholders. It is for this reason that the long-term complementarity of green capitalist options to radical food movements must be questioned (Altieri & Toledo, 2011). In contrast, agroecology redresses the socio-economic role of campesinos in the food regime.

Friedmann also critiques the CFR for not having a stable hegemonic power. She suggests that 'agrofood corporations are actually heterogeneous in their interests' (1993, p.52) and therefore the regime does not have a solidified power structure (Bernstein, 2015, p.26). Although McMichael does state that corporate interests are heterogeneous, he simultaneously makes the argument that the main fault line in the

CFR is between a generalised ‘corporate agriculture’ and the FS movement- a food from nowhere vs. food from somewhere regime or ‘abstract globalism’ vs ‘concrete localism’ (2016, p.649). This binary approach to the CFR may seem convincing in its neat simplicity but it is important to situate regimes of accumulation to gain nuance (Pechlaner & Otero, 2008, 2010), for instance, national interests do not always align with global ones. Deeper case study analysis not only allows a more concrete rendering of how the food regime is constructed and resisted from below (Ioris, 2018) but also sheds light on the complexities and contradictions in the corporate sector.

Fundamentally, the debate between McMichael and Friedmann relates to how scholars understand food regimes. Friedmann follows a more traditional methodology and conceptualisation, as she looks for a unified hegemonic power, a stable mode of regulation and regime of accumulation. Whereas, McMichael opens the possibility of viewing food regimes ‘not so much as an episodic structure, or set of rules, but…a method of analysis’ (2009, p.148). This enables the illustration of larger power dynamics alongside more context specific tensions. In later writings, McMichael (2013) and other scholars (Pechlaner & Otero, 2008, 2010; Otero, 2012; Ioris, 2015; Pritchard et al, 2016) encourage more empirically grounded, regional or country based studies to highlight the CFR’s instantiation in specific geographical and political settings.

Consequently, this research roots the global CFR in a national context because ‘the international situation should be considered in its national aspect…the point of departure is national…yet the perspective is international’ (Gramsci, 1988, pp.230-231). This is supported by Pechlaner and Otero, who emphasise the need for more empirical research on the modes of regulation established by nation states, resistance within specific countries and localities, ‘while keeping the global framework in sight’ (2010, p.182). This is because states directly negotiate with corporate interests and enter bi- or multilateral trade agreements that give shape to nation specific regulatory framework. Friedmann (2016) touches upon this in her suggestion that corporate interests are complex precisely because agribusiness corporations have developed their own agreements with national governments and linkages with local spaces. Consequently, the research unpacks the global CFR to find ‘differences and insights at the local level’ (Forsyth, 2003, p.168).

Pechlaner and Otero (2008, 2010), in fact, suggest that due to the continued centrality of the nation-state, the third food regime should be termed the 'neo-liberal food regime'. They argue that the term neoliberal denotes the explicitly ideological nature of the regime and reasserts the importance of the nation state as a 'central sphere of struggle' (2008, p.185). Otero claims that levels of agricultural neoliberalisation in each country depend 'on domestic mobilisation and resistance…the state continues to play a central role, even if it has changed to favour' agribusiness (2012, p. 284). This is a convincing argument that influenced the case study approach adopted by the thesis. Nevertheless, the term corporate is preferred because it clearly identifies the sector/actors who the regime of accumulation favours. Afterall, nation states are largely supporting and facilitating the expansion of the corporate sector. Exceptions and contradictions do arise within states, reflecting the fissures and tensions inherent to food regimes.

In short, nation-specific contexts have played a crucial part in either slowing down integration in the global CFR, resisting corporate penetration or further accumulation/ quicker neoliberalisation (Holt-Giménez & Shattuck, 2011, p.135). Friedmann's (2005) argument for the need to inject more nuance by outlining the different factions, actors and interests in food regimes, therefore, is highly relevant. This oversight has left a problematic gap in the literature, as it does not account for the tensions and obstacles that emerge in national contexts during integration and resistance with the global CFR, nor the shaping role of the state in facilitating this process.

2.3.3 Contextualising the Corporate Food Regime by Bringing Nature Back in

One particular way that the CFR and food regime lens can be contextualised is by bringing nature back in. This entails understanding how patterns of accumulation, food circuits and, fundamentally, agricultural practice impact the environment and vice-versa. In so doing, this thesis places itself in political ecology literature, as it looks to interlink political and ecological analysis. Metabolic rift theory (Foster, 1999) is useful in providing a closer lens on how the CFR shapes socio-ecological interactions. Metabolism here refers to 'a dynamic interchange between humans and nature' (Foster, 1999, p.380)- a dialectical exchange where humans alter nature using their labour and they too are changed by this process or interaction.

Much scholarly debate exists around the meaning of nature and how it can be understood from different ontological positions (Carolan, 2005). Critical realist engagement with the concept of nature underlines one of the key criticisms of the metabolic rift approach, namely, its static representation of nature 'as fixed' (White et al, 2017) and its lack of attention to the discursive construction of 'natural' phenomena and precisely which 'nature' is being considered. Equally, some theorists object to the dualism between human society and nature, as all of nature has been subsumed in capitalist/social relations (Moore, 2011). Carolan (2005) convincingly suggests, however, that distinctions between the social and natural should not be discarded but there should be thought about what these terms seek to convey. He also reemphasises the importance of considering socio-biological factors together, which metabolic rift theory operationalises empirically. This distinction is maintained in the thesis to underline how the corporatisation of agriculture, and the social and technological changes this implies, have impacted the environment and how campesinos respond to these changes or rifts through agricultural practice and social organisation.

The notion of a 'rift' was popularised by Foster, who coined the term 'metabolic rift' during his re-reading of Marx's work on the socio-ecological metabolism (*stoffwechsel*). Marx viewed capitalist society taking from nature but not returning nutrients to the soil- in literal terms the removal of human waste from the soil nutrient cycle. Instead, urbanisation and industrialisation resulted in the concentration of human waste in cesspits. Another result of urbanisation and a driver of the metabolic rift was long-distance trade, which separated sites of production and consumption. According to Marx, this resulted in soil degradation and an 'irreparable rift' in the socio-ecological metabolism (ibid). In emphasising the existence of an imbalance, Marx's rift explains the detrimental ecological effects of industrialisation and early capitalist development.

Scholars (Moore, 2000; Schneider & McMichael, 2010) have objected to the chronology of Marx's conceptualisation of the metabolic rift. Moore (2000) believes the metabolic rift began in the sixteenth century with the advent of capitalism as a whole and not just the industrial revolution, as suggested by Marx. This is an important distinction because Marx believed urban industrialisation was the root of human

alienation from nature and the beginning of nature's imbalance. Moore (2000), on the other hand, states this process was evident earlier in the plantation economies of the Americas and through imperialist policies of capital accumulation. In this sense, he argues that dimensions of the metabolic rift have altered depending on different stages of capitalist development through time. Nevertheless, like Marx and Foster (1999), Moore frames the metabolic rift through soil degradation and exhaustion. Schneider and McMichael (2010), however, critique the limited scientific scope used to define the metabolic rift. They suggest soil infertility is a more dynamic process that has a number of composite factors, not just the removal of crop residues and human waste from the soil nutrient cycle. They note the importance of viewing the metabolic rift through the lens of wider interlinked agricultural practices.

Later scholarship has reinterpreted the metabolic rift theory to numerous ecological crises beyond agriculture, for instance the environmental feedback of urbanisation (Clement, 2011; Burger et al, 2017), specific environmental issues such as overfishing in oceanic systems (Longo et al, 2015) and global warming (Weston, 2014). Metabolic rift theory has also been applied to food systems studies that have analysed the impact of agricultural globalisation on ecosystem processes (Napoletano et al, 2019). Importantly for this thesis, scholarship has also engaged in empirical studies of how communities and spaces seek to 'overcome particular aspects of rifts in the capitalist food system and the structural obstacles that capital imposes' (ibid, p.1832). This is relevant to understanding how diverse campesino communities have been variably impacted by the CFR and react to this through further market integration and or the creation of alternatives. This thesis adds to this literature by analysing how the instantiated CFR impacts the metabolic rift in two case studies.

Given this thesis is interrogating the instantiation of the CFR in two cases through a study of how corporate agriculture has impacted and shaped campesino communities, practices and environments, it is relevant to outline the various dimensions of the agricultural metabolic rift as identified in scholarship to date (see Table 2.2 for dimensions of the agricultural metabolic rift). This provides an overview of how scholars have theorised the metabolic rift, illustrating recent broadened theorisation. The wide-ranging conceptualisation of the food system among metabolic rift scholars influences this thesis in its analysis of food production, distribution and consumption

habits. The thesis analyses these aspects and adds to existing theory of the different dimensions of the agricultural metabolic rift during the current CFR.

Table 2.2: Dimensions of the Agricultural Metabolic Rift

Scholar	**Describing the Agricultural Metabolic Rift**	**Dimensions of the Agricultural Metabolic Rift**
Foster (1999)	Industrialisation (c.19) moves humans away from sites of production, removing human waste from the soil nutrient cycle.	- Soil nutrient cycle rift[18] - Separation of consumers from sites of production
Moore (2000)	Capitalist development (c.16) disrupts the soil nutrient cycle through a series of rifts coinciding with different phases of development.	- Soil nutrient cycle rift
Schneider and McMichael (2010)	Wider agricultural practices must be considered in any given time or place to understand the fuller ecological implications of the metabolic rift.	- Soil nutrient cycle rift - Separation of consumers from sites of production - Knowledge rift[19] - Reducing biodiversity that weakens ecosystem services[20]

[18] This implies a rift in nutrient cycling in soil, which results from the removal of nutrients (such a nitrogen and phosphorus) through crop production. The rift is produced due to nutrients not being returned to the soil, as long-distance trade exports nutrients out and away from sites of production.

[19] A knowledge rift is the failure to reproduce knowledge about specific ecosystem processes and situated ancestral farming knowledge.

[20] The reduction of ecosystem services particularly refers to the tendency of pest resurgence, pest resistance and secondary pest outbreaks, which occur due to changes in ecosystems effected by the application of large quantities of pesticides.

Scholar	Describing the Agricultural Metabolic Rift	Dimensions of the Agricultural Metabolic Rift
	Also consists of a knowledge rift, whereby the separation of people and place disrupt the reproduction of site-specific agricultural knowledge.	- Separation of animal and crop farming
Mancus (2007); McMichael (2008); McMichael (2013); Clausen, Clark and Longo (2015)	Modern capitalist agriculture has disrupted soil nutrient cycles, polluted waterways, reduced biodiversity, cleared forested land, used high levels of fossil fuels throughout agricultural processes, separated animal and crop farming. It has undertaken this through monoculture commodity relations, which is dependent on synthetic	- Soil nutrient cycle rift - Soil structure degradation[21] - Nitrogen cycle rift[22] - Phosphorus cycle rift[23] - Water cycle rift[24] - Polluting waterways - Reducing biodiversity that weakens ecosystem services - Separation of animal and crop farming

[21] This term principally refers to soil compaction, due to intensive tillage, but also the disappearance of worms due to the high use of chemical inputs, the absence of which also impacts soil structure.

[22] This refers to rifts in the cycle of nitrogen fixation, ammonification, nitrification and denitrification, which take place due to the depletion of nitrogen from intensive agriculture and its overapplication through synthetic fertilisers.

[23] This rift also occurs from the intensification of agriculture, part of which entails the over application of synthetic fertilisers that are leached into water bodies and result in eutrophication- the over enrichment of phosphorus in water bodies that can lead to dead zones.

[24] This rift denotes changing rates and frequencies of precipitation, in the water levels of rivers and also draughts.

Scholar	Describing the Agricultural Metabolic Rift	Dimensions of the Agricultural Metabolic Rift
	chemical inputs, genetically modified seeds and other industrial technologies like tractors.	- Carbon cycle rift[25] - Separation of consumers from sites of production
Heffernan (2000); Gunderson (2011); Longo, Clausen and Clark (2015)	Intensive livestock farming, including monocrop cultivation of animal feed and the use of growth hormones used to fatten livestock.	- Soil nutrient cycle rift - Carbon cycle rift - Nitrogen cycle rift - Phosphorus cycle rift - Soil structure degradation - Water cycle rift - Accelerates the animal life cycle - Polluting waterways - Polluting soils through residue in excretion - Reducing biodiversity that weakens ecosystem services - Separation of consumers from sites of production

[25] The rift in the carbon cycle relates to the increased release of CO2 from fossil fuels used for the intensification of agriculture and also the transportation of goods to markets ranging in distance.

Scholar	Describing the Agricultural Metabolic Rift	Dimensions of the Agricultural Metabolic Rift
Longo & York (2008)	Export-led agriculture contributes to higher use of fertilisers and pesticides, as this is based on crop specialisation and industrial scale farms. It also incurs higher outputs of greenhouse gases due to storage of goods and transportation.	- Separation of consumers from sites of production - Soil nutrient cycle rift - Soil structure degradation - Carbon cycle rift - Nitrogen cycle rift - Phosphorus cycle rift - Water cycle rift - Knowledge rift
Butler & Dixon (2012); Scales (2014); Sharp (2016)	There is a metabolic rift in foodways, as industrial farming and long-distance trade lead to the consumption of processed and ultra-processed junk food. This food is produced industrially, during which natural ingredients are substituted with synthetic ones that preserve longer, producing a rift in understanding where food comes from and how it is produced. Intensively farmed food is also nutritionally poorer, which results in the use of nutritional supplements or genetically modified food that provides key nutrient.	- Separation of consumers from sites of production - Knowledge rift - Illnesses in humans such as diabetes, heart disease, malnutrition and in some cases cancer - Carbon cycle rift

Source: Elaborated by author using a variety of sources noted above.

As mentioned, recent scholarship has gone beyond Marx's ecological characterisation of the metabolic rift. Schneider and McMichael look at how 'a wide range of agricultural practices impact soil fertility…in particular times and places' (2010, p.462). This theoretical reconceptualization embeds 'agricultural practices and systems within 'natural' or biological systems' (ibid, p.475). Following this definition, it would be fair to argue that the dimensions of metabolic rifts vary by case and time. In light of the broadened interpretation of metabolic rifts, however, it would also be prudent to observe the impact had on biodiversity (planned and associated), on virgin forests, landscape matrices, seed varieties, genetic diversity in animals, as well as the separation of animal and crop farming to name but a few dimensions (Heffernan, 2000; Clausen et al, 2015; Longo et al, 2015; Perfecto et al, 2019). When used in conjunction with the CFR, this theoretical framing helps situate food regimes in specific socio-ecological relations. The inclusion of agricultural practice in the study of the metabolic rift also underlines the fact that it should encompass a knowledge rift, which is 'a rift in the production and reproduction of knowledges' (Schneider & McMichael, 2010, p.477). This is a result of the dislocation of 'culturally, historically and geographically specific knowledges about farming practices and local ecosystems' (ibid) by agribusinesses, which have replaced smallholder farming with prescriptive, chemically enhanced techniques. The process of smallholder dislocation and changes in farming practices is precisely what this thesis attempts to understand.

White et al. (2017), however, argue that metabolic rift theory fails to reveal accurately the dynamic process of ecological change that takes place. They note that 'an emphasis on equilibrium, balance and order has increasingly shifted in scientific ecology to a much greater emphasis on disequilibria, instability and even chaotic fluctuations' (2016, pp.104-5; also see Forsyth 2003, 2008). With this in mind, they say that 'simple notions of stability, harmony and resilience may have to be rethought' (White et al, 2016, p.105) because there is no pre-existing ecological equilibrium that can be returned to (White et al, 2017). It is important to consider this point, as metabolic rift scholarship, along with CFR theorisation and agroecological discourse can result in simplistic bad vs. good analyses of industrial technologies and organic methods. This imbues other forms of agriculture with a negative role or impact and biases data collection by pushing academics to search for an ideal form of campesino

farming. Agroecological theory can help generate more socio-ecologically complex interpretations, as some currents of thought stress the fact that change takes place along a non-teleological scale (Gliessman, 2016).

2.4 Resisting the Corporate Food Regime through Agroecology & Healing the Metabolic Rift

As discussed previously, oppositional movements are an integral element of food regimes. This thesis identifies agroecology as the opposition movement because it has a political vision that contrasts to the CFR, namely placing smallholders at the heart of food production and distribution. Altieri also outlines agroecology as a 'scientific discipline that uses ecological theory to study, design, manage and evaluate agricultural systems that are productive but also resource conserving… [considering the] interactions of all important biophysical, technical and socioeconomic components of farming systems' (2000).[26] Clausen et al. note that agroecological systems heal various dimensions of the metabolic rift by 'sustaining the efficiency of the energy flow through natural systems, maintaining biodiversity, nourishing the self-sufficiency of ecosystems, ensuring the self-regulation of ecosystems, and enhancing their resiliency' (2015, p.16). They use the example of agroecological transitioning in Cuba, which has largely consisted of converting monocultural sugar plantations to diverse farms, replenishing soil nutrients with on-farm resources and vermiculture, as well as integrating animal and crop farming (ibid). It is important to note, however, that agroecology is not prescriptive and so the methods used depend on particular ecological contexts.

The centrality of smallholder systems to agroecology make it indicative of Van der Ploeg's (2008) 'repeasantisation': a reclamation and reassertion of the viability and durability of peasant livelihoods, economies and ecologies against increased corporatisation. As mentioned earlier, the theoretical underpinnings of this new peasantry are determined by an ecological resource base, and farming practices that not only determine 'what is produced (food and fuel)' but also 'what is reproduced (e.g.

[26] Importantly, agroecology differs from organic agriculture, as the latter does not necessarily reduce dependence on the market (Bellamy & Ioris, 2017; Perfecto et al, 2019). Instead, agribusiness supplies organic inputs to substitute the synthetic chemicals associated with Green Revolution agriculture.

seed, soil fertility, water cycles)' (McMichael, 2016, p. 342). This translates into a smallholder farming model that largely depends on on-farm inputs and is organised around principles such as biodiversity, polyculture, rotation and agroforestry to name but a few (Rosset & Aliteri, 2017). An important theoretical question that has yet to be answered is whether campesinos who do not fully practice agroecology but combine agroecological methods with conventional/ industrial farming, can be considered as part of this agroecological social movement. In fact, agroecologists do not pay enough attention to hybrid farms and how the campesinos that farm them participate in the creation of alternatives to corporate agriculture. The thesis addresses this important oversight to avoid idealistic analyses of the modern peasantry.

Gliessman's agroecology transition is fundamental to moving away from an essentialist analysis, as it emphasises nuances in farming systems, viewing agroecological change along a scale, within which a number of different conventional and agroecological practices co-exist in hybridity (see Table 2.3). In so doing, the transitional scale implicitly acknowledges the livelihood-environment tensions many campesinos face. For instance, campesinos may live economically precarious lives and are therefore unable to dedicate the intensive labour required to cultivate fully agroecological systems, especially those that mainly depend on wage labour from off-farm activities. Gliessman's understanding of agroecology encompasses these campesinos too, removing a normatively negative role for other agricultures. This facilitates a more nuanced understanding of CFR integration and resistance in farming, as well as less idealistic notions about how to heal the metabolic rift.

Table 2.3: Agroecology Transition Levels

Agroecology Level	**Definition**
Level 1	Increased efficiency of 'industrial and conventional practices in order to reduce the use and consumption of costly, scarce, or environmentally damaging inputs' (Gliessman, 2015, p.187). This requires more assistance from technical personnel and education around the ecological impacts of excessive chemical inputs.

Agroecology Level	Definition
Level 2	The substitution of 'alternative practices for industrial/conventional inputs and practices' (ibid).
Level 3	The redesigning of the 'agroecosystem so that it functions on the basis of a new set of ecological processes' (ibid, p.188), with an interconnected and holistic agroecosystem vision.
Level 4	'Re-establish a more direct connection between those who grow our food and those who consume it' (ibid). Inherent to this is a process of informing consumers where food comes from, who has produced it and how.
Level 5	Building 'a new global food system, based on equity, participation, democracy, and justice, that is not only sustainable but helps restore and protect earth's life support systems' (ibid). This is the global sum of numerous localised agroecological transitions.

Source: Gliessman, 2015.

The transition scale, however, remains abstract in how it defines the redesigning of agroecosystems and its blueprint for constructing 'a new global food system'. This is especially pertinent, as the gap between Levels One to Four and between Four and Five are considerable and Gliessman provides little explanation for how to reconcile this. As Mier y Terán Giménez Cacho et al convincingly point out 'more complex agroecological management, practices that accrue benefits more slowly, and those that require landscape-level coordination may be more difficult to promote, particularly because their benefits, while substantial, can be diffuse and difficult to observe' (2018, p.11). With this in mind the thesis will analyse why campesinos practice certain expressions of agroecology more than others.

In fact, the changes proposed in Levels One to Three (out of five) are isolated and there is no theoretical consideration for how to connect each of these together nor how to move along the scale. This is even more problematic if one considers these

agroecological methods as project-based activities, since Holt-Giménez and Altieri (2013) argue that individual shifts towards more organic methods are more easily co-opted by industrial agriculture or agribusiness. They suggest these agroecological expressions can be disconnected from radical social movements pushing for systemic change (Levels Four and Five of the scale). This is reiterated by Altieri and Toledo, who note that 'keeping farmers dependent on an input substitution approach, [or] organic agriculture's fine-tuning of input use does little to move farmers toward the productive redesign of agricultural ecosystems that would move them away from dependence on external inputs' (2011, p.588). Both these arguments, thus, point out that Levels One to Three of the transition do not necessarily lead to Four or Five. They realistically assert that in isolation these levels are unlikely to overturn the food regime and result in systemic change. Nevertheless, some divergence from CFR norms of agricultural production provides grounds for resistance, especially if these practical or scientific aspects of agroecology take on a more political and overtly structural framing (cf. Holt-Giménez & Shattuck, 2011). This debate re-emphasises the importance of qualitative analysis of agroecology.

Mier y Terán Giménez Cacho et al. (2018) provide a wider blue-print that contrasts to Gliessman's more on-farm vision of agroecological transition. Their eight drivers for scaling-up agroecology[27] complement Gliessman's transition and in many ways fill in the gaps from on-farm changes to wider societal change (see list below). The eight drivers cover a range of economic, political, social and cultural categories that are important for realising different aspects of the agroecological transition. This includes wider societal crisis (this could be economic, social, cultural or ecological, or any combination of these), the capacity building potential of social movements, exchange of farming knowledge between farmers, on farm agricultural practice, transformative agroecology discourse, international and national solidarity efforts (links to other

[27] Scaling-up refers to the integration of 'more people, communities and organizations in agroecology…[and] the qualitative dimension of the process of organizing, transmitting and consolidating agroecology as a way of living…strengthening and multiplying many small processes' (Val et al, 2019, p.2), which entails institutional 'vertical processes' (Mier y Terán Giménez Cacho et al, 2018, p.3). Scaling-out is related to the inclusion of people and communities but it is led by or associated with the initiatives of grassroot movements (ibid).

groups outside the community itself), market conditions that socio-economically and ecologically strengthen campesino commerce, and finally state/municipal/institutional policy engagement that supports this sector.

1. Crises that drive the search for alternatives;
2. Social organisation;
3. Constructivist teaching–learning processes;
4. Effective agroecological practices;
5. Mobilising discourse;
6. External allies;
7. Favourable markets;
8. Political opportunities and favourable policies.

Strong social organisation, arguably, is the most fundamental driver in this list, as this is necessary to build sustainable farmer to farmer exchanges and agroecological discourse, as well as the formation of external allies and the construction of bottom-up market alternatives. The scholars do not expand on how to build up effective social organisation, however, nor link this to literatures on the numerous obstacles faced by grassroots organisation. These issues are made ever more complicated in countries such as Colombia, where different factions of the left have been waging armed struggle, therefore dividing rural communities along ideological lines, in addition to the numerous other factors that differentiate the peasantry, and where violence has directly curtailed the organisational efforts of campesinos for decades. Social movement organisation is not the main focus of the thesis but its importance to the construction of agroecology means brief analysis of social movements will be included in each case study.

Also significant is the exchange of campesino knowledge of local ecosystem processes, the sharing of experiences of experimentation, successes and failures. Mier y Terán Giménez Cacho et al. define this as constructivist teaching- 'teaching-learning processes used by movements that have scaled out agroecology' that 'promote the active inclusion of traditional/local/contemporary knowledge, as well as development of autonomy. Pedagogy is predominantly horizontal' (2018, pp.11-12). Horizontal dialogue between campesinos is related to the approach espoused by

numerous campesino organisations across Latin America through the farmer to farmer or *campesino a campesino* methodology. This has been practised by campesinos from across the continent, including in Cuba (Rosset, 2011), Guatemala and Mexico (Holt-Giménez, 2006). With researchers noting that farmers presented and shared knowledge through parables and stories, as well as more organised show/tell sessions supported by teaching material and exchange through social media/using mobile phones and the internet. Without this exchange or *diálogo de saberes*[28] (Martínez-Torres & Rosset, 2014) social movements could fall into the trap of imposing an alternative imperialism, agricultural praxis and knowledge in a top-down fashion. For this reason, it is imperative to understand the organisational structures and processes seeking to bring about agroecological transitions.

Mier y Terán Giménez Cacho et al. (2018) argue that establishing markets is not an essential pillar for agroecological scaling. This would suggest that ecological and political motivations override economic concerns for campesinos, a point this thesis does not find so convincing given the precarity experienced by campesinos the world over. However, they do provide a more substantiated understanding of how market strategies contribute to the agroecological transition (Gliessman's Level Four). They highlight Alternative Food Networks (AFN)s and solidarity networks or the solidarity economy as central to the construction of more socio-economically and ecologically just market transactions.The solidarity economy reasserts 'social control or social power over the economy by giving primacy to social and often environmental objectives above profits, emphasising the place of ethics in economic activity and rethinking economic practice in terms of democratic self-management and active citizenship' (Utting, 2015, p.2). This encompasses a plethora of different 'enterprises such as cooperatives, mutual associations (NGOs)…fair trade networks and other forms of solidarity purchasing' (ibid, p.1). Miller (2009) notes that in Colombia this term intended to place the cooperative movement in a broader political context with the aim of building a more socially just economy. With this in mind, the solidarity economy lens

[28] This conversation is not only between campesinos but also with positivist science, a process that creates a set of 'new scientific explanations based on the values and experiences of local groups' (Forsyth, 2001, p.8), with the intention of making these more inclusive and socially just.

pushes us to investigate who producers are, what networks they are using collectively to intervene in the market, how produce differs (e.g. through the use of eco-friendly agricultural practice) and how market transactions feed back into the producer community (i.e. to socio-economically strengthen a given project or group). This lens provides more layers of analysis for local market transactions that help us to weigh up whether and how these kinds of market strategies represent resistance to the CFR.

Similarly, AFNs 'seek to diversify and transform modern food provisioning by connecting ethical producers and consumers in more local, direct ways…that support a return to community food production and demonstrate a commitment to social, economic and environmental justice along the food chain' (Edwards, 2016, p.1). The debate among scholars on AFNs illuminates important points about local economic transactions and the need to define the differences between AFNs to avoid the homogenisation of diverse food circuits. For instance, the distances involved in local sale- face to face sale, regional sales with intermediaries or 'extended relations' involving products exported outside of regions to national markets (Renting et al, 2003). All these market exchanges are 'local' but have clear differences in terms of consumer contact with producers, profit margins and the kinds of markets farmers access. Analysing the conditions of sale also highlights the varying markets, buyers and consumers that AFNs access, which is important to gauge socio-economic sustainability. These aspects identify who can afford to consume locally produced goods, i.e. whether these food chains are exclusive and destined for more affluent consumers, as well as the kind of niche markets diverse AFNs construct or access. Robbins suggests that local markets themselves are not perfect mechanisms through which to overcome the contradictions of capitalism, as they 'may demonstrate contradictory characteristics … [making them] not automatically synonymous with Food Sovereignty' (2015, p.458). Contradictory characteristics refer to the pervasive existence of sexism, patriarchy, racism and class inequalities within local spaces, which reproduce asymmetries inherent to the global CFR. The thesis reasserts this point by analysing local markets, how they integrate with or resist the CFR.

The interdisciplinary analysis of local markets, their political and ecological dimensions, is integral to the construction of socio-economic alternatives to corporate agriculture. Some scholars separate these elements and only view agroecology as an ecological science (Wezel et al, 2009), which informs organic farming practices. What

Méndez et al. (2015) term 'agroecology-as-natural science' fails to problematise the social relations of production and local social governance, thus, it misses the opportunity to identify and propose alternative models of social organisation for production. As mentioned, Holt-Giménez and Shattuck (2011) classify this strand as the ‘progressive’ element of the food movement, which seeks to inculcate more localised and less structural reform. On the other hand, Gliessman emphasises the connection between agroecology and food regime studies, as he asserts that agroecologists must see the food system from the standpoint of the ‘distribution of power- among farmers, among the eaters of food, and among all the many other components of the system…[we must] view the food system through a political lens’ (2015, p.304). He convincingly suggests that the depoliticization of the food system is deliberate, as it allows the wealth of agribusiness and ‘unequal distribution of power’ to continue unquestioned (ibid, p.306). Emphasising the structural aspects of the food system is precisely the aim of food regime analysis and it is for this reason that this analytical lens compliments agroecology.

The discussion on agroecological scaling or transitioning fundamentally connects to how agroecologists theorise and understand resistance, which arises from a larger debate about resistance to neoliberal development in Latin America. Resistance can be an intentional ‘act that is carried out in some kind of oppositional relation to power’ but it can equally be a practice that is not necessarily consciously recognised (Johansson & Vinthagen, 2014, p.418). With this in mind, employment of agroecological practices, by both campesinos invested in structural change of the food system and those who are not, all count as acts of resistance. Some are acts of ‘everyday resistance’ (ibid), while others have a more political and ideological foundation. As socio-spatial theorists argue, resistance is indeed heterogenous, reflecting the diversity that exists among campesinos. Therefore, analysis of resistance must be contingent and historical not only to understand the trajectory of change but also to move away from idealistic and static conceptualisations of resistance. The agroecology transition (Gliessman, 2016) and agroecology drivers (Mier y Terán Giménez Cacho et al, 2018) provide material and socio-economic criteria to analyse different expressions of spatially bound agroecological resistance.

This chapter has engaged with literature related to the agrarian question, the development of agrarian capitalism and political ecology in Latin America and

particularly Colombia. This has underlined arguments about the differentiation of the peasantry, which contrasts to the unified representation argued for by re-peasantisation scholars and CFR theorists. This thesis concludes that it is theoretically necessary to analyse the difference among the peasantry to better explain the various ways that CFR integration takes place and importantly how different levels of market integration impact campesino expressions of resistance. The CFR was also considered in the context of the debate around agrarian questions in peasant studies. The chapter explores the different theoretical arguments that surround what food regimes are and whether the CFR exists. It largely coincides with McMichael's (2009, 2013) conceptualisation of the CFR, who argues that this is governed by a more heterogenous order than previous regimes. For this reason, it is important to explore the tensions that exist within the corporate sector also, particularly those between global or transnational interests and national/protectionist ones. The chapter moves on to look at the metabolic rift, as this theory helps to situate food regime analysis by providing a lens on socio-ecological relations. The thesis suggests that metabolic rift theory is crucial to bringing nature back into food regime studies. It also looks to analyse how far agroecology has the tools to repair the dimensions of the rift brought about by industrial/corporate methods. Finally, the chapter critically engages with the concept of agroecology and the importance of moving away from absolutist judgements of good or bad agriculture to better ascertain the complex causes that sustain and expand corporate agricultural methods. The chapter considers agroecological transitioning and scaling to be central to a more nuanced understanding of the different expressions of agroecology and resistance in diverse peasant communities.

3 Methodology

3.1 Introduction

The thesis uses a case study approach to analyse the instantiation of the CFR in two ZsRC in Colombia: how corporate agriculture is integrated and resisted in these zones. It follows McMichael's (2013) theorisation of the CFR, which allows for more heterogenous corporate hegemons that exercise rule through context specific modes of regulation. This theoretical and methodological interpretation requires greater empirical input to understand how the regime is built and sustained from below in national and local spaces (Pechlaner & Otero, 2008, 2010; Otero; 2012; McMichael, 2013; Ioris, 2015). Therefore, the research asserts the primacy of the nation state (Pechlaner & Otero, 2008, 2010; Otero, 2012; Pritchard et al, 2016) but also of other actors including municipal governments, campesinos, intermediaries, convenience store operators and in the Colombian case armed actors, who are integral to establishing and maintaining modes of regulation and regimes of accumulation that have place specific particularities. This methodological approach is driven by the analytical need to specify the CFR and its composite parts (this is discussed in further detail in Chapter 2).

This chapter also outlines the qualitative methods used in the thesis and the rationale behind this. The methods used for data collection included interviews with national civil servants in Bogotá and campesinos in each of the case study zones, observation and short-duration ethnography during a month long-stay in each area. The challenges related to my own positionality, gender and age in interviewing are discussed, alongside how these were overcome. The chapter also defines the analytical framework devised after fieldwork for data analysis, namely the selection of four food regime dimensions and case study specific aspects for each dimension. This approach also provided a comparative framework for cases; the theoretical underpinning of how the thesis uses comparison is also discussed in this chapter.

3.2 Locating the Local in the Global CFR

Global-local relations and the shaping role of the nation state are under theorised in food regime studies, as are other country specific factors that impact agriculture, such as armed conflict, which has been so influential in Colombia. CFR theorisation does not illustrate how non-corporate actors interact, support or contest the corporatisation

of agriculture. These omissions mean the literature does not account for the local tensions and obstacles to global CFR integration and resistance, nor do we gain a complex enough understanding of how corporations work to expand and solidify their influence in agriculture outside of institutional processes. As Beck & Sznaider note, 'the local must be understood as an *aspect* of the global' (2000, p.48). Glocalization ethnography reiterates the need 'to find the local in the global and vice versa; to reveal global complexity' (Roudometof, 2016, p.40). It encourages researchers to find out how 'behaviour is shaped by local/global influences' and to identify 'the power relationships within and between those settings' (ibid). These were essential ideas in the process of grappling with the interplay between the global and local in the CFR. Global aspects of the CFR include industrial technologies fabricated abroad, industrial farming methods that have transnational reach, free trade agreements (bilateral and multilateral) that seek to neoliberalise the Colombian agricultural sector and land accumulation led by transnational companies. Local aspects vary depending on the scale of analysis. In Chapter 4, this relates to the operations of Colombian agribusinesses, enabling the research to identify differences within the corporate sector nationally. In the case studies (Chapters 5 and 6), local influences are identified through place-specific or ancestral farming practices, nutritional habits based on local foods and histories and the construction of alternative food networks not involved in the global commodity food chain.

3.3 Comparative Analysis and Case Selection

The thesis aims to assess local integration, hybridisation and resistance against global CFR agricultural practices and structures through comparative analysis of two ZsRC. The ZsRC model is the chosen methodological unit to assess resistance against global CFR integration because it was established to strengthen smallholder production through state investment in infrastructure, credit and technological support to foment agroecological farming. ZsRC remain the only state recognised development model designed specifically for campesino agriculture, making the model methodologically apt for analysing smallholder agriculture during the CFR. The purpose of comparison in this thesis is to facilitate better understanding, explanation and interpretation (Sartori, 1991, p.35) of the diversity of ways in which CFR integration and resistance occur; and importantly the varying expressions of campesino resistance. Comparison also helps to prevent relativisation/ over-generalisation (Esser & Vliegenthart, 2017),

which is particularly important to the thesis, as it explores how peasant differentiation impacts CFR resistance.

With this in mind, case studies were chosen on the basis of key differences between them that would assist the thesis in analysing the various factors that influence different trajectories for CFR integration and resistance in Colombia. Choosing the ZRC model as the methodological unit of analysis offered seven potential case studies but due to word, time and financial restrictions only two were selected- the ZRC Cabrera and the ZRC Valle del Río Cimitarra (VRC). These two zones were chosen for their contrasting climates, landscapes, infrastructural development, market integration, demographic makeup, socio-economic and political histories. These contrasting conditions are vital to the research because regional socio-economic and political histories, including varying levels of market integration, give rise to differentiation in the peasantry (cf. Zamosc, 1986; Akram-Lodhi & Kay, 2010). Therefore, this thesis looks to investigate how this influences peasant resistance. Contrasting climate and landscapes shape the kinds of agriculture, crop variety and environmental conditions. This provides greater insight and explanation of corporate influence in different commodity chains. It also conveys a more nuanced understanding of the technologies and practices used by campesinos in varying climates and landscapes- industrial, agroecological and or hybrid.

The ZRC Cabrera is in the department of Cundinamarca; it is the only ZRC in a single municipality- the others cross over parts of various municipalities. This is also an important comparative criterion because it gives a contrasting understanding of how development is implemented in ZsRC that operate across multiple municipal boundaries. It is one of three zones that received WB pilot funding in the early 2000s. It has historical importance due to its legacy of peasant land movements, which gained partial agrarian reform before the ZRC was established (see Chapter 5 for more on the agrarian history of this zone). Campesino agriculture flourishes here as a result of the strength of smallholder organisations in the region, as well as its geographical proximity to urban centres, more developed infrastructure and markets such as those in Bogotá. The ZRC Cabrera, therefore, is an example of an area where smallholder agriculture and economy predominate. The existence of strong market integration in the area enables analysis of how diverse peasants (capitalist producers, petty-commodity producers, semi-proletariat or landless) integrate with and resist the CFR.

The second case study is the ZRC Valle del Río Cimitarra (ZRC-VRC), which straddles the departments of Antioquia and Bolivar. The thesis investigates how the administrative boundaries of the ZRC have impacted agricultural development in the zone and the implications this has for the ZRC model's approach to development. This is one of the first zones to have assumed ZRC status and also one of the sites of the earliest peasant protests in the country calling for the creation of ZsRC in the 1980s. Nevertheless, it has very poor infrastructural links, which makes the sale of surplus subsistence production difficult, alongside which it has also faced greater political stigmatisation and levels of armed conflict than Cabrera. Despite all these factors, it has a vast array of agroecology projects, according to the agroecologist Manuel Mejías who has worked in all the ZsRC (Interview, 2017). This is because it has strong links with international organisations that work in co-ordination with local groups, particularly the local campesino organisation - the *Asociación Campesina Valle del Río Cimitarra*. These partnerships have enabled the campesino association to establish various solidarity economy projects across the zones to fortify the smallholder sector (see Chapter 6 for more on the agricultural developments of the zone, how these have changed during the CFR and the various expressions of campesino resistance).

Observing CFR integration and resistance in these two contrasting cases provides a nuanced understanding of the socio-economic durability of the ZRC model and whether it has contributed to strengthening agroecology. It also helps gain more insight into how the ZRC model has contributed to agricultural development in different parts of the country and the socio-political/institutional challenges it faces. These issues are key to a better understanding of what development in the ZRC model means. This thesis restricts comparison to within Colombia, due to word constraints the empirical dimension of the research is largely limited to the local/municipal level, but other researchers may choose to include a regional level, e.g. analysis of the food regime across Latin America (e.g. McMichael, 2013, pp.90-93; Otero, 2012). The case study approach remains methodologically innovative, as CFR studies tend to be international in focus, while here the intention is to provide a more detailed discussion of integration and resistance.

3.4 Field Research Methods and Difficulties Encountered

Prior to embarking on fieldwork, key institutions and civil society groups were identified for interviews by mapping the organisations working on Colombian rural development and the ZRC model in particular. This included the National Land Agency (*Agencia Nacional de Tierras*), the Agency for Rural Development (*Agencia de Desarrollo Rural*), the Rural and Agricultural Planning Unit (*Unidad de Planificación Rural Agropecuaria*), the Colombian Corporation of Agricultural Research (*Corporación Colombiana de Investigación Agroepecuaria*), the Colombian Central Bank (*Banco de la República*), the National Association of Peasant Reserve Zones (*Asociación Nacional de Zonas de Reserva Campesina*- ANZORC), the National Agricultural Union (*Federación Nacional Sindical Unitaria Agropecuaria*- FENSUAGRO)- the biggest union representing campesinos, the Agrarian Summit (*Cumbre Agrario*) and the principal peasant social movements or organisations in the zones, such as the ZRC Cabrera Steering Committee and the Peasant Association of Valle del Río Cimitarra (*Asociación Campesina del Valle del Río Cimitarra*- ACVC).

One of the main qualitative methods used was semi-structured interviewing, which allowed a targeted but also fluid approach to information gathering, as well as discussion on wider issues. Two interview guides were constructed: one for national civil servants and another for local campesinos (see Appendix 1 for a full list of the questions used). The first focussed on macro-economic issues related to CFR integration, e.g. the impact of free trade deals and market liberalisation policies. These interviews looked at the ZRC model from an institutional and public policy angle, questioning the agrarian development objectives at the heart of the ZRC model, what distinguishes this model from other rural development projects, what this model has achieved to date and the key obstacles before it. The interviews were an effective way of gaining access to documents otherwise unavailable through public channels and they also flagged up other publicly available sources. They yielded a number of contacts for the case studies.

The local interview guide focussed on local realities and farm-level information, as the vast majority of interview participants from the ZsRC were campesinos from across the class spectrum (petty-commodity producers, semi-proletarianised and landless). These questions were analysing the material conditions of farms, changes in farming practices and why, as well as the relationship of diverse campesinos to the political

and practical objectives of agroecology. The binary representation of the CFR as either good or bad could have shaped data collection. For instance, it could have led me to search for agroecological examples of farming and view campesino farming through a romanticised lens. However, I was very aware of this theoretical bias and the need to gain a wide cross-section of interviews from a variety of smallholder producers (those politically committed to agroecology, those who were not, those who practised some elements of agroecology and those who did not), which the campesino associations from both zones helped me with. Moreover, given my own position of privilege, growing up in an urban setting in the United Kingdom, a draft of this interview guide was first shown to the campesino organisations in each of the zones to ensure questions were sensitive to local cultural norms.

Prior to and during the interviewing process, I was acutely aware of my positionality, as a young woman of colour, educated and brought up in London. The map of key actors I put together before leaving the UK underlined the fact that the majority of civil servants, public policy analysts and academics I needed to interview were older men. With this in mind I planned ahead by packing smart, professional clothing and also purchased a fake wedding ring to lay clear boundaries. During interviews I followed this up by not sitting too close to the interviewee. I also ensured that friends and family both in Colombia and the UK knew where I was and who I was meeting. Despite my efforts, in a few circumstances inappropriate comments were still made by interviewees but I was sure to indicate that my interest was purely professional and academic, which was then respected. Although I had originally thought that my age might be an impediment, as I might not be taken seriously by older men, in fact this and my nationality worked in my favour because many of the older interviewees displayed an almost paternal attitude and went into significant detail to ensure I understood the wider Colombian context of development. Moreover, individuals were more open and willing to talk because I was from an external context and so I did not have any social stigma attached to me related to class, political affiliation or region. Also being of Indian origin helped me move around cities in particular without eliciting undue attention, as I appear ethnically similar to mestizo Colombians.

All of the precautions I took in the cities were even more important in the countryside because I was not in a business/office setting but in the more informal context of fields and also the homes of campesinos. In addition to all the issues around positionality I

mentioned above, in the countryside I needed to maintain awareness about any power relations implied by my higher income and educational status. I bought simple clothing for the countryside from Colombian supermarkets and did not take expensive items with me, so as not to display my comparative wealth. I also avoided using complicated jargon and expressions when asking questions or having conversations, seeking to explain things in the most accessible terms possible.

Interviews in the case studies were conducted during a month long visit in each ZRC. During this time, I also undertook farm visits, observation and short-duration ethnography. I went to the ZRC-VRC from May- June 2017. In the ZRC-VRC I first stayed in the apartment of the main campesino organisation- Asociación Campesina Valle del Río Cimitarra (ACVC)- in the provincial city of Barrancabermeja. There I was able to familiarise myself with the ACVC's main team, operational structure, general objectives and overall organisational context. I then went into the rural zone for a period of three weeks, accompanied by the ACVC's agroecologist and their livestock specialist. Together we travelled through the zone by boat, mainly visiting farms affiliated to the ACVC in the municipalities of Yondó, Remedios and Cantagallo. We stayed a number of days at each farm, which gave me the opportunity to integrate with the workers on the communal farms and the families- particularly giving me time with the women of the household. Living with families meant I was able to enquire and ask questions more informally in conversation. Moreover, the fact I was travelling to farms with an agroecologist and a veterinarian allowed me to triangulate information given to me by campesino interviewees and gain a multi-stake holder perspective. I visited the municipality of San Pablo some two months after my first trip, for a duration of two weeks. There I camped with coca farmers who were protesting the illegal eradication of the crop by the military. This gave me immediate access to many campesinos, who also accompanied me on farm visits. In so doing, I visited communal and private farms in all four municipalities that together form the ZRC-VRC.

I also participated in a limited number of activities on the farms, such as herding cows, buffalos and pigs; making notes for the livestock consultant on the buffalos (noting their health, whether they were pregnant and their weight); manual weeding using a machete; and planting trees. Participating in these tasks was an important way to build rapport with campesinos. This also meant that participants could continue with their work and that I could talk with them more informally whilst they were working and

during breaks. Moreover, performing these small activities with them allowed me to ask questions about why they undertook those practices and enabled them to explain these to me in greater depth.

In the ZRC Cabrera I was living with a family in the urban centre for a month from July-August 2017. The family owned a veterinary store, where I sat and observed interactions between the vets and farmers during the day. I would converse with people who came into the store and so arrange farm visits directly. The family I stayed with also helped connect me with farmers. The majority of my travel to the farms was with the farmers themselves, once again I had to be very clear in maintaining professional boundaries, as I was often alone with men. However, the family I was staying with always knew where I was going, as did neighbours and my own friends and family. On a few occasions, when visiting farms that were further away from the urban centre, I also stayed with other campesino families. I was only required to hire transportation on a few occasions, and this was with an individual who the main family I was staying with knew well. Within family homes, I spent most of my time with the women of the house, which allowed me to understand more about gendered roles in Cabrera. Living with a single campesino family gave me unbridled access to converse about the history and farming culture of Cabrera, as well as the ability to triangulate information from interviewees with veterinary experts. My openness with the family I was staying with, respect and inquisitive disposition created a mutual admiration that meant the campesino family was very open and accommodating with me. They were crucial gatekeepers to the rest of their community. In this zone I was again mainly an observer, taking part in some limited farming practice such as milking cows and picking fruit. I also helped the family with early morning cheese delivery rounds.

Several difficulties were encountered in the research process. The expanse of the ZsRC, in particular the ZRC-VRC, was problematic because of the limited forms of transport available in the area. There was greater flexibility in the ZRC Cabrera because the municipality had some tertiary paved roads, whereas in the ZRC-VRC the main routes of transport were rivers, which were more expensive and difficult to use given financial and time restrictions. The fact that the ZRC Cabrera had one main urban centre also facilitated direct contact with farmers from across the municipality. This allowed the establishment of relationships with producers to arrange individual farm visits. This was not possible in the ZRC-VRC, as farms were much more remote

and urban centres further apart. Contact with participants was mediated through the ACVC- the main peasant organisation operating in the ZRC-VRC. This did not pose any problems, however, as the organisation is well known and respected in the region. The limiting factor in this case was that fewer interviews were conducted with individuals unaffiliated to the ACVC.

Another key limitation in terms of the profiles of interview participants was the over representation of male views. This is because men are the main producers in these areas, therefore, they have the most to say about the kinds of crops grown and methods used. Women were more accessible in their homes, which was a limiting factor in the ZRC-VRC because farms were dispersed and difficult to reach. Several interviews with women were carried out in the offices of the ACVC in the provincial city of Barrancabermeja to compensate for this imbalance. It is highly likely that these women were the most active in their wards and municipalities. Therefore, their experiences may not be representative of less organisationally active female campesinos. To account for this, these interviews were triangulated with the ACVC's sectional organisers (officers delegated to each municipality to oversee development initiatives) and other female representatives in the ACVC. The gender imbalance was less of a problem in the ZRC Cabrera, however, as I made more farm visits. Interviewing a couple together was not advantageous to gaining insight into the female experience, as husbands often spoke over and for their wives. Additionally, men were more reluctant to talk about family nutrition, as this was managed by women and viewed as the socio-cultural remit of women. In line with this assumption, women were the most forthcoming in speaking about the family diet, the kinds and quantity of food available.

Interviews were carried out until informational saturation was achieved (Glaser & Strauss, 1967). In total 37 interviews were conducted in the ZRC Cabrera and 47 in the ZRC-VRC, whilst another 30 interviews were carried out with figures involved or linked to national rural development. Not all these interviews are cited in the thesis, so interviewee profiles provided in Appendix 2 only pertain to quoted individuals who have been anonymised. The names of campesino participants have been anonymised, despite gaining permission to identify these participants, due to the escalation of violence in the Colombian countryside against social movement leaders (Chohan &

Montenegro, 2019) and especially attacks against campesinos associated with the ZRC model.

Half the interviews were recorded on a Dictaphone with participant approval, gained through the signing of an information sheet about the research and a consent form. This informed potential interviewees that participation was optional, that they could withdraw from the interview at any time and also request that the information they provided be deleted. It also made clear that interviews would be kept anonymous if so wished and that the conversation would be recorded and stored on an encrypted USB and laptop. The rest of the interviews were left unrecorded because it was impractical to record during farm visits, most of which were in the ZRC Cabrera. These participants were also more relaxed when no recording took place because they were not seasoned activists. In these cases, thorough notes were taken. Furthermore, by this point in the research process key themes were already emerging, which made it easier to make more focussed notes.

3.5 Analytical Framework

Upon returning from fieldwork I transcribed all interviews, translated them into English and typed up my fieldnotes. I then set about re-reading theory alongside the data, thinking about how best to analyse this in light of the research questions that were exploring integration with and resistance to the CFR, as well as the socio-ecological relations in the two case studies. After much brainstorming about how to theorise the main themes emerging from the data and literature, I established four broad CFR dimensions through which to explore CFR integration and resistance: land tenure, technology & practice, agricultural markets and nutrition. Environmental feedback is considered in each of these dimensions to bring socio-ecological factors into closer dialogue. This interdisciplinary approach is influenced by Gliessman's (2015) book on agroecology, which connects ecological analysis of agriculture to wider political and ideological structures in the food system. Resistance is not included as a separate dimension of its own in the analytical framework because the thesis discusses the interconnected, dialectical relationship between corporate farming and agroecological resistance within each dimension.

The land tenure dimension arose from the fact that land concentration is a key issue in the literature on agrarian capitalism in Latin America (Borras et al, 2012; Kay, 2015). This explores the re-concentration of land in the neoliberal period, due to corporations participating in 'land grabs'- the purchase of large swathes of territory through formal and informal practices, which are then converted to monocultural plantations that specialise in export commodities. This literature lies within scholarly work on land reforms in Latin America, which highlights issues around land titling and land use planning (Borras, 2003; Thomson, 2011; McKay et al, 2016). These issues are particularly important in Colombia, which has a long history of failed land reforms (FAO, 2018). It is therefore pertinent to consider debates around land access and formalisation within the case studies to gauge how this impacts integration and resistance with the CFR.

The technology and practice dimension was influenced by Otero (2012), who explores the use of biotechnology in what he terms the neoliberal food regime. He cogently argues the importance of analysing why particular technologies are used and how modes of regulation support the solidification and expansion of regimes of accumulation that benefit the corporate sector. Greater analysis of technology and practice is also encouraged by agroecologists who study farming practices to understand ecological feedback better and identify how to begin or further agroecological transitions (Gliessman, 2016; Rosset & Altieri, 2017). This is also stressed by metabolic rift scholarship, which identifies how socio-ecological rifts occur through modern agriculture and how they can be 'healed', using agroecological and food sovereignty practices (Schneider & McMichael, 2010; Clausen et al, 2015).

The agricultural markets dimension is crucial to understanding nuances in market integration to analyse how corporations engage with these particular campesino communities, i.e. through contracting, absorption into export commodity chains, etc. This is influenced by literature on the differentiation of the peasantry, which analyses the kinds of markets campesinos participate in and how this shapes the peasant condition (Akram-Lodhi & Kay, 2010; Bernstein, 2010; Kay, 2015). This is relevant to understand how market engagement impacts the kinds of CFR resistance adopted by campesinos. Equally influential were ideas on alternative market transactions as facets of agroecological transitioning (Gliessman, 2016) and scaling (Mier y Terán

Giménez Cacho et al, 2018). These refer to establishing closer links between producers and consumers through the creation of alternative food networks (AFNs), which are founded upon agroecological production or the solidarity economy.

The nutritional dimension was influenced by Carolan's Food and Human Security index (2012), which quantitively investigates food security in countries around the world. The indicators used in this table include well-being, nutrition, ecological sustainability, food dependency and food-system market concentration. This paper alongside the work of others on the nutritional implications of the metabolic rift (Butler & Dixon, 2012; Scales, 2014; Sharp, 2016) underlined the need to analyse how diets were shaped by agricultural shifts in the case study ZsRC. Nutritional metabolic rift scholars highlight the global trend towards foods higher in empty calories and the fact that many of these shifts were rooted in the corporatisation and industrialisation of the food system. This underscored the need to explore the relationship between farming systems and the kinds of foods available to local communities. Ecological feedback is included within each dimension to investigate the impact these various factors have on the environment and vice versa. Including environment as a separate dimension would have led to an overly isolated discussion of ecological processes, disconnected from socio-economic and cultural factors.

The case study chapters are both structured around these four CFR dimensions, providing the thesis with a consistent narrative and overarching comparative framework. The fieldwork data was then analysed using these dimensions and case specific aspects were identified for each dimension. The aspects assigned to each dimension differed between the case studies to allow for place-specific analysis. Aspects were determined by literature on food systems (Gliessman, 2015; Agarwal, 2014; Martínez-Torres & Rosset, 2014; Chappell et al, 2013; Carolan, 2012, 2016; Van der Ploeg, 2008; Van der Ploeg et al, 2012; Altieri & Toledo; 2011; Altieri, 2000) but also and importantly by empirical experience in the field (see Chapter 5 and 6). The use of the same four overarching dimensions in both case studies but different aspects allows the universal dimensions to link to the particular in each area (Sartori, 1991) and facilitates comparison between the cases (see Chapter 7).

This chapter has argued for the methodological shift towards analysing food regimes in case studies, as this provides more nuance and explanation for how the corporate

sector expands and solidifies within specific locations through institutional and extra-institutional means. It has underlined a comparative case study approach to enhance explanation and interpretation but also to avoid relativisation. The latter is of equal importance, as differentiation among the peasantry is a key analytical point the thesis investigates. This chapter also discusses the various qualitative methods used for data collection, including semi-structured interviews and observation in short-ethnographic visits. It considers issues around positionality related to gender, age, ethnicity and nationality, how these issues impacted the data collection phase and how they were overcome. Finally, it outlines the analytical framework used to organise and structure fieldwork data according to the theoretical frameworks employed in the thesis and the themes emerging from the field.

4 Agricultural Neoliberalisation and the Emergence of the ZRC Model as a Campesino Alternative

4.1 Introduction

As discussed in Chapter 2, the global CFR emerged from a process of neoliberal globalisation in world agricultural markets. This consisted of policies at different geopolitical scales influenced by the principles of free trade, mediated through the World Trade Organisation (WTO), as well as the systematic consolidation of (New) Green Revolution farming practices. The chapter analyses the Colombian trajectory towards agricultural neoliberalisation through macro-economic policies. For this reason, the timeline of analysis for this chapter runs from the 1970s onwards, charting the country's technological transition through the Green Revolution, which laid the foundations for the neoliberal turn from the 1990s onwards. Free trade policies are integral to the expansion of the corporate sector. States are crucial in setting this policy direction and the associated regulatory framework. This emphasises the theoretical point that nation states remain central to the construction and maintenance of regulatory frameworks/ modes of regulation in the CFR (Pechlaner & Otero, 2008, 2010; Otero, 2012; Pritchard et al, 2016).

In charting a short history of agricultural neoliberalisation, this chapter enables an analysis of the actors supporting but also resisting macro-economic integration within the global CFR, which illuminates the heterogeneity of corporate interests (Friedmann, 2005). In so doing, this chapter argues for the need to investigate the class interests behind different forms of resistance to the CFR. This is pertinent because the call for higher import tariffs and sector specific subsidies from national corporations did not necessarily support campesino farming or challenge the regime of accumulation, as it protected the market share of existing large Colombian enterprises. At the same time, these policies did slow down global free trade and therefore resisted this element of the CFR. This contrasts to the resistance against neoliberalism emerging from the campesino sector, which explicitly sought to strengthen campesino access to land and so foment petty-commodity production, both of which resist the CFR as they enable smallholder production. This chapter analyses how effectively the model has facilitated campesino resistance to the CFR by exploring agricultural development in the ZsRC.

In so doing, the chapter analyses the differing class interests of those who resist to better understand the motivations and aims behind various forms of resistance.

4.2 Dismantling Protectionist Agricultural Policies: Colombia's Uneven Path to Neoliberalisation

The neoliberalisation of agricultural markets in Colombia has been a highly uneven and faltering process throughout the CFR period (1980-). However, the slow opening up of agricultural markets was preceded by a more rampant and faster paced introduction of industrial technologies. The concerted transfer of Green Revolution (GR) technologies notably began in 1968 with the establishment of the International Centre for Tropical Agriculture (CIAT) in Cali, Colombia's third largest urban centre by population. CIAT was first funded by the Rockefeller Foundation, the World Bank (WB), United Nations Food and Agriculture Organisation (FAO) and the United Nations Development Programme among many other international donors. As Galli (1979) astutely argues, CIAT was one of the principle international organisations tasked with researching GR technologies in the 1970s. She outlines how CIAT pioneered a programme that encouraged smallholders to use chemical inputs; it developed, tested and provided improved seeds among other industrial technologies to Colombian smallholders. Pechlaner and Otero (2008, 2010) argue that technology is an essential aspect of modes of regulation in food regimes. Therefore, the technological shift towards the GR overseen by CIAT, by other international institutions and various Colombian governments, laid the groundwork for CFR integration, as this process engendered technological dependency upon agribusinesses.

The *Desarrollo Rural Integrado* (DRI) or Integrated Rural Development programme followed on from the initial projects begun by CIAT, as it was financially and politically supported by various international organisations including the WB, FAO and Inter-American Development Bank (Galli, 1981). President Alfonso López Michelson (1974-1978) of the Liberal Party initiated DRI in 1976; it endured in different forms through five presidencies until 1990.[30] DRI was seen as a substitute for agrarian reform

[30] Four of these Presidents were Liberal party members and one a Conservative. Alfonso López Michelson was the first elected President after the period of the National Front (1958-1974), under which both the Liberal and Conservative parties alternated executive power (Safford & Palacios, 2002).

throughout its existence (Berry, 2002; Thomson, 2011) because it aimed to alleviate poverty through the transfer of GR technologies to smallholders, such as new seeds, pesticides and fertilisers (Thomson, 2011) without the redistribution of land. This is evident from the fact that DRI had two main phases: it promoted the modernisation of the traditional campesino economy in the 1970s by encouraging shifts towards pesticide and fertiliser use (Fajardo, 1983; Galli, 1981), while in the 1980s it aimed to strengthen Colombia's agricultural exports (Murillo, 1995, p.67; Blanquer & Fajardo, 1991). The objective was to improve 'productivity in staple food production, [and] forge links between the peasant economy and wider markets…[P]articipants were not simply to be drawn into capitalist markets as suppliers of food goods, but as consumers of agricultural inputs, technology and credit' (Thomson, 2011, p.24).[31] Galli (1981) similarly argues that DRI guaranteed further commercialisation and land concentration through industrial scale farms. Prior to and during the CFR period in Colombia, different governments used DRI to shape the country's regulatory framework towards one in which campesinos became more dependent on industrial technologies and the agribusiness sector, which is congruent with theorisation around the second food regime. This public policy laid the foundations for a technological shift that was crucial to CFR integration.

Despite DRI, however, Colombia's agricultural markets remained relatively protectionist until the 1990s. In 1991, the *Apertura* or opening began, which was a key moment for market liberalisation in Colombia, as it entailed a decisive shift from the model of import substitution industrialisation.[32] With the *Apertura*, President Gaviria of

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Arguably, this pact revealed the shared political and class interests of both parties. Colombia is traditionally seen as one of the most conservative leaning states in Latin America, which has fundamentally informed the politics of agricultural neoliberalisation regardless of whether Liberals, Conservatives or others hold power.

[31] For a further breakdown of how different regions performed during DRI see Galli, 1981; Fajardo, 1983; Blanquer & Fajardo, 1991; and Murillo, 1995.

[32] Import substitution industrialisation promotes the replacement of imports with domestic production, with the aim of reducing foreign dependency through local production.

the Liberal party (1990-1994) eliminated non-tariff barriers on grains and oil seeds by removing state monopoly on grain imports. His administration reduced import tariffs from 0-50% to 0-20% and tariffs on agricultural inputs fell from 15% to 2% (Jaramillo, 2002). Consequently, he lowered aggregate tariff rates for agricultural goods from 31.5% to 15.0% between 1991 and 1993 (Jaramillo, 2001, p.823). Additional internal protection mechanisms faced reductions and eventual elimination, namely, the *Instituto de Mercadeo Agropecuario* (IDEMA). Among other tasks, IDEMA controlled the 'purchase, sale, storage, export and import of grains…bought farmer's outputs at government regulated prices, [and] maintained buffer stocks to stabilise prices' (OECD, 2015, p.164). Between 1990 and 1993, IDEMA reduced its purchase of national crops by 37%, which continued to decline until its liquidation in 1997 (Montoya, 2007, p.70). These neoliberal measures signalled President Gaviria's intention to fashion a mode of regulation conducive to CFR integration.

Colombia's path towards agricultural neoliberalisation, however, has not been linear, as Gaviria's government kept in place mechanisms to 'limit and control…capital movements' (Thorpe, 1998, p.258). In the years following the founding of the WTO, Colombia bucked a global trend by liberalising agriculture at a comparatively slower rate. As Thorpe points out, from 1990 to 1991 Colombia 'adopted [free market policies] in a broad way' but 'more moderate[ly] than elsewhere' (1998, p.258). This is partly explained by the country's political history. Unlike other Latin American nations, Colombia did not have large debts in the 1970s, due to political 'pragmatism' (ibid, p.257) and a 'prudent' approach to debt accumulation (Bulmer-Thomas, 2003, p.353). Consequently, it escaped restructuring programmes and forced liberalisation.

Additionally, the country's agricultural sector historically held sway over agricultural policy. As Jaramillo notes, 'substantial opposition to reforms was voiced by some producer associations that had thrived under import restrictions. This resistance, coupled with government concerns about the impact of rapid liberalization, led to the creation of a special trade regime for politically sensitive crops in mid-1991' (2001, p.823). This saw the establishment of price bands to 'produce variable tariffs that would filter out extreme price variations from world markets' (ibid). In essence, these were protective measures for nine commodities (wheat, barley, rice, maize, sorghum, soybeans, palm oil, milk and sugar). Evidently, globalised free trade did not serve key interests in the agricultural sector, which led to a policy U-turn. This reflects Pechlaner

and Otero's (2008, 2010; Otero, 2012) argument about the possibility of nation states resisting global neoliberal regulation through protectionism.

Gaviria initiated protective measures during the final years of his presidency, which continued through Liberal President Ernesto Samper's tenure (1994-1998). By 1995, Colombia 'retreated to prior levels of protectionism for the agricultural sector' (Valdés and Foster cited in McCalla & Nash, 2007, p.251), resulting in what Machado calls state 'administered trade' (2005). These policies included anti-dumping laws; subsidies for exporting industries suffering from more open trade (banana, sugarcane and flowers); various sector agreements on prices and volumes for domestic output; purchase agreements for wheat, sorghum, maize, barley and palm oil; new price bands for pork, raw sugar, soybean, palm oil, and chicken parts; and finally new import controls and storage subsidies for rice (ibid, pp.265-266). Pushback against global CFR integration emanated from national corporations and commodity blocks that benefitted from protectionist terms of trade. Much like Friedmann (1993, 2005) argues, corporate interests in the CFR are not always aligned and can often be at odds, especially global/transnational objectives versus established national ones. Traditional agricultural elites in Colombia have been and continue to be opponents of agricultural market neoliberalisation and global free trade. However, this resistance does not overturn the structural marginalisation of campesino production, as it favours state support for national corporate entities over a system of free trade that undercuts them. This lobby represents the class interests of a landed elite linked to traditional *latifundio* land structures, which is destabilised by the move towards a transnationally owned monocrop, export-oriented system (cf. Kay, 2015).

Although Colombia initiated some highly protectionist macro-economic measures in some areas, in other sectors it continued to follow the global trend of strengthening tropical exports and opening up domestic markets for imports. Table 4.1 reveals a consistent increase in imports of staple foods, which were eight times higher in 1998 than they had been in 1991. This resulted in an almost 'geometric increase' in the country's food dependency (Montoya, 2007, p.94) in the period immediately after the *Apertura*.

Table 4.1: Agricultural Imports (1990-1997) in US$ Million

	1990	1997	Growth (%)
Cereals and cereal products	173.9	649.3	20.7
Maize	6.7	279.0	70.4
Sorghum	1.6	5.0	17.8
Wheat	119.1	191.1	7.0
Barley and malt	42.2	57.9	4.6
Rice	.1	72.6	152.8
Other	4.2	43.7	141.7
Fruits and fruit products	20.8	99.5	25.1
Soybeans	31.9	282.0	36.5
Legumes	28.7	94.8	18.6
Cotton	11.2	86.6	33.9
Tobacco	.1	25.0	111.9
Animal products	65.6	252.4	21.2
Poultry	.8	27.6	67.4
Fish and fish products	45.4	105.3	12.8
Dairy products	2.6	56.7	55.4
Pork	.3	9.9	62.5
Beef	.2	8.5	70.7
Other animal products	16.3	44.4	15.4
Other commodities	29.9	64.5	11.6
Other processed foods	71.6	297.9	22.6
Total	433.6	1,851.9	23.0

Source: Jaramillo, 2001, p.830.

Machado (2005) also argues that the selective protectionist measures sought to slow down rather than halt neoliberalisation, as President Samper also privileged export led growth. This resulted in an expansion of the land area devoted to tropical crops and livestock production (ibid). The latter directly correlates to the favouring of exports because farmers who were no longer protected from international price volatility left crop farming for livestock, as milk and dairy remained protected sectors (ibid). Despite, protectionist measures, the governments of both Presidents Gaviria and Samper did not abandon agricultural neoliberalism. The slow neoliberal turn entailed a restructuring of the economy and modes of regulation to favour exports, which were unfavourable to campesino production, as many staple goods were subsequently imported at cheaper prices.

The favouring of external markets and slow neoliberal restructuring continued with Conservative President Pastrana (1998-2002). Similar to Samper, Pastrana gave

preferential treatment to export-oriented tropical goods by strengthening commodity chains and productive alliances between producers and agribusinesses (Núñez, 2005). Plan Colombia- a US foreign aid, military and diplomatic initiative begun in 2000- was an integral part of Colombia's agricultural neoliberalisation. It undertook illicit crop substitution through strategic alliances and contract farming with agribusinesses in sectors such as palm oil (ibid). Plan Colombia reinforced the export economy and the cultivation of tropical goods that enjoyed competitive advantage. The Colombian state ratified and implemented this bilateral deal that invested in export crops, such as palm oil, underlining state complicity in CFR integration and the construction of modes of regulation favourable to further agribusiness intervention.

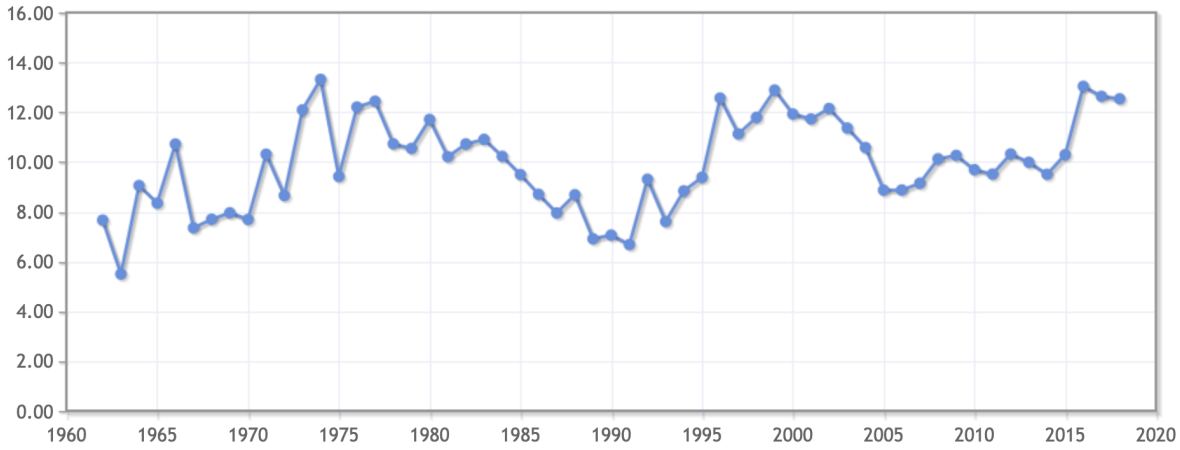
Szegedy-Maszák argues that 'the most complete [agricultural] trade related market liberalisation', however, took place during the two governments of conservative President Álvaro Uribe-Vélez (2002-2010)- who led the Colombia First party (2017, p.387).[33] She notes that both National Development plans under his government focussed on exports and favoured 'large productive projects' (ibid). Instead of addressing structural issues such as agrarian reform, both Pastrana and Uribe-Vélez focused on 'income generation' for campesinos by linking small producers to large enterprises. Importantly, contracting and productive alliances are methods of economic dispossession (Magdoff, 2013) and a means to facilitate capital accumulation within the agribusiness sector, as they link smallholders to the requirements and market arrangements controlled by the agribusiness sector.

The first National Development plan between 2002-2006 'enhanced agro-industrial projects such as sugar cane [as a bioethanol feedstock] and palm oil production' (ibid). The second plan (2006-2010) did have more social aspects to it but continued the theme of converting farmers to entrepreneurs (ibid, p.388). It also moved further away from the discourse of national food production, looking to achieve food security by increasing imports of basic foods (DNP, 2006, p.146). As is evident from Figure 4.1, from 2005 onwards food imports in Colombia increased from 8.8-10.32% of the total value of merchandise imports (Index Mundi, 2018). This corroborates the argument

[33] This election was the first time in recent history that a party other than the Liberals or Conservatives won the public mandate to lead the country.

that Colombia has plugged the national food security gap using imports. The mode of regulation during Uribe-Vélez's tenure, therefore, facilitated CFR integration by accelerating agricultural neoliberalisation.

Figure 4.1: Food Imports in Colombia as a Percentage of the Total Value of Merchandise Imports (this includes food and live animals, beverages and tobacco, animal and vegetable oils and fats, and seeds, oil nuts, and oil kernels)



Source: Index Mundi, 2018

The National Development plans were accompanied by subsidies for specific industrial agricultural sectors, thus, solidifying a mode of regulation that facilitated certain agribusinesses. This highlights an uneven commitment to neoliberalisation, as protectionism continued through subsidies. For instance, significant state support was given to the sugar cane industry for biofuel feedstock and to palm oil. Policies favourable to agribusiness included 10-year income-tax breaks and permits to operate in the country's free-trade zones. These were supplemented by sector specific agricultural subsidies for those that did not gain from the export driven development agenda. For instance, the *Agro Ingreso Seguro* (AIS – Agricultural Income Insurance) provided support to palm oil, cattle farming, coffee, fruit, and late yield crops (Szegedy-Maszák, 2017, p.390).

The AIS has been a source of controversy because of the claims of corruption that surround it. Uribe-Vélez's ex-agriculture minister- Andres Felipe Arias- was jailed for AIS embezzlement. Furthermore, a number of the recipients of AIS were close allies of the President. The UNDP criticised the scheme for creating 'clientelism between sectoral interest groups competing to obtain State subsidies' (cited in Szegedy-

Maszák, 2017, p.392). Therefore, protectionism for specific agricultural goods and sectors remained common place in Colombia's macro-economic strategy during the CFR period. This emphasises the resistance of national corporate interests against global free trade and the heterogeneity of corporate interests (cf. Friedmann, 2005). This has resulted in an uneven process of neoliberalisation, consisting of CFR integration through export-oriented restructuration but also protectionism for certain sectors, due to the historic influence of the agricultural sector in Colombia.

The path towards agricultural neoliberalisation continued during President Santos' National Unity administration (2010-2018); the two National Development Plans in his tenure reveal this clearly. The 2010-2014 plan spoke of making agriculture more productive and increasing its commercial potential by processing more agricultural products. It also pointed to 'foreign direct investment in agroindustrial projects' through *Zonas de Interés de Desarrollo Rural, Económico y Social* or Zones of Rural Economic and Social Development (ZIDRES).[34] This made restrictions on land accumulation more 'flexible' as a means to plug the emerging food gap (DPN, 2010 p.16)- a move towards a more corporate-oriented agenda for food production and security. The 2014-2018 plan, on the other hand, included ideas of territorially based peace and development, as it wsa oriented by ideas in the peace agreement. It identified co-operatives as a tool to strengthen smallholder access to markets, as well as the need

[34] ZIDRES are designed to issue unlimited amounts of unoccupied virgin territory to national or foreign persons for the purposes of agricultural production. ZIDRES, thus, can circumvent land ownership limits established in Law 160, 1994. The state suggests ZIDRES should be located in isolated parts of the country where there is no infrastructure (roads or electricity), such as the Altillanura Plains. Puerto Lopez, Meta, is the location of the first ZIDRES and contains 175,000 ha (Presidencia de la República, 2018). Companies agree to invest in infrastructure to attain this land title and in return have the rights to cultivate. Government investment in any area designated as a ZIDRES is contingent upon strategic alliances between corporations and smallholders (Moreno, 2017, p.9). Strategic alliances formally link smallholder labour with agribusiness capital. Gutiérrez convincingly suggests that 'this rural development policy privatised the State's function of providing technical assistance, technology and credit to smallholders' (2014, p.240), therefore, handing agricultural policy direction to the corporate sector- another example of CFR integration.

to link their supply to demand from state institutions.[35] A number of successful co-operatives exist in Colombia (Vásquez-León et al, 2017; Gutiérrez, 2014; Forero & Davila, 1997) but important limitations continue to exist, namely, the continuation of macro-economic trade policies that have undermined campesino production, alongside national development plans that have favoured agribusiness and the export economy.

Free trade agreements (FTA) are key to export-oriented agricultural neoliberalisation. FTAs are struck between two or more nations to facilitate trade liberalisation across multiple sectors of the economy.[36] Data from the WTO shows Colombia signed 75 regional trade agreements (RTA) from 1958-1999, whilst from 2000-2012 it signed an additional 156 (WTO, 2018). This reveals a sharp increase in bilateral trade agreements, thus, a significant shift towards international trade. In turn, this emphasises the commitment of Pastrana, Uribe-Vélez and Santos to global free trade. The increase in FTAs amidst continued agricultural protectionism illustrates Colombia's uneven trajectory towards agricultural neoliberalism. This is because certain sectors that did not benefit from free trade lobbied for higher levels of protection through subsidies, i.e. the *Agro Ingreso Seguro* programme, conveying the tensions

[35] Co-operatives allow the scaling-up of smallholder farming, better negotiating power and access to markets for campesinos (Gutiérrez, 2014), thus, representing a form of CFR resistance. However, they are 'seldom able to achieve economic goals without simultaneous improvements in education, health, social learning, and empowerment' (Vásquez-León et al, 2017, p.12).

[36] Economists are divided on how far FTAs liberalise trade. Wonnacott (1996, p.65) argues that they return trade to more regional ties, enclosing trading patterns rather than opening them up. Similarly, Mitchell and Lockhart suggest that FTAs 'entrench…discrimination…competing international rights and obligations' (cited in Lester & Mercurio, 2009, pp.81-2). Hayakawa and Kimura, on the other hand, suggest that FTAs linked to the WTO are associated with lowering tariffs and reducing non-tariff barriers (2014, p.726), so they have a synergistic relationship with trade liberalisation. The General Agreement on Tariffs and Trade (GATT) Article XXIV endorses and permits 'members to enter into' FTAs or preferential trade agreements (PTA) (Krishna cited in Lester & Mercurio, 2009, p.11). According to this regulation, FTAs do not conflict with WTO rules, as signatories are expected to 'continue to import the same amount from the rest of the world' (ibid, p.21) and are prohibited from increasing external barriers or tariffs above those which existed before the signing of the agreement (ibid, p.22).

within the corporate sector in relation to further integration within the CFR and global free trade.

Elite pushback against FTAs for depressing national agricultural production has also come from the country's biggest agricultural union- the *Sociedad de Agricultores de Colombia* (SAC).[37] After the trade agreement with the EU in 2014, imports of primary products in Colombia increased by 67%, while exports increased by 29.3% (Forero & Urrea, 2014). This forced 'many local producers of staples such as corn, wheat, potatoes and rice…out of business' as they were unable to compete with cheap imports (Oxford Business Group, 2015, p.126). These FTAs pushed Colombia towards increased dependency on imported food. Despite producing 31.4 million tonnes of food in 2014, the country imported 10.4 million tonnes, 'accounting for 28% of total consumption, at a cost of over US$6 billion' (ibid). Although the *Apertura* was short lived, export-oriented agricultural neoliberalisation measures and CFR integration did not abate, as Colombia progressively opened up to foreign imports and phased out support for smallholder producers.

The SAC's criticism of Colombia's trend towards global free trade has been supported by diverse campesino groups, social movements and unions. The unlikely alliance between smallholder groups and large landowners (represented by the SAC) illustrates Colombia's complex process of CFR integration- where large landowners are simultaneously involved in marginalising smallholders through violent and economic dispossession (cf. Harvey, 2004; Magdoff, 2013) but also ally with campesinos against agricultural neoliberalism and global free trade integration. This highlights the distinct class interests behind CFR resistance and the fact that resistance does not always aim to overthrow the regime but could also arise to protect an existing regime of accumulation that is threatened by neoliberalisation.

Colombia exemplifies the heterogenous nature of corporate interests that Friedmann (2005) references and the need for context-based studies of food regimes to understand the contingent motivations of corporate interests. These interests are conditioned by national socio-economic trajectories, which in Colombia have tended

[37] This union has traditionally represented the country's largest landowners.

to economically protect certain agricultural commodity groups. In this sense, Colombia is undergoing a tussle over dismantling protectionist policies and moving towards greater agricultural neoliberalism to deepen CFR integration. This is a key conflict and point of tension between some in the corporate sector and those in government, who continue to push the country towards greater macro-economic CFR integration through FTAs, whilst also shrinking the campesino sector by facilitating imports of cheap, staple goods.

4.3 Marginalising Campesino Access to Land: Violence and Land Concentration

Smallholders have not just been economically marginalised through neoliberal policies but historically they have been denied access to land itself. Poor access to land has worsened during the period of the CFR and is a key aspect of Colombia's mode of regulation but this phenomenon has its roots in the colonial era.[38] The country has the second highest land inequality ratio in Latin America after Paraguay (Oxfam, 2013). This is indicative of its dualistic or bimodal agricultural system- a term that reflects the vast difference in quantity and quality of land, as well as income, between large and small landowners (Montoya, 2007; Machado, 2002). In the 1980s, the land ownership Gini index improved but by the 1990s large and medium property increasingly re-concentrated, whilst smallholder lands fragmented (FAO, 2018). This was in the midst of increasing drug-related and political violence, as cartels amassed land at the expense of smallholders, exemplifying Harvey's (2004) accumulation by dispossession and Magdoff's (2013) violent dispossession of land. War and illicit economies, hence, were central to the process of land re-concentration at the expense of campesinos. These factors also facilitated Colombia's CFR integration by clearing

[38] The Spanish Crown granted large tracts of high-quality land to conquistadores, converting these to *encomienda* ranches (LeGrande, 1986). Civil and military elites redistributed this amongst themselves post-independence, continuing the legacy of land concentration (ibid). LeGrande identifies the persistence of *latifundia* from 1839-1936 as a colonial hangover (ibid). Another characteristic of this period was large landowners focusing on export crops, whilst smallholders both fed the country and generated profit for *latifundistas* through their labour (ibid). This led many campesinos to colonise frontier regions, a process that endures until today. Jaramillo suggests that colonisation marginalised smallholders to poorly located and less fertile lands (2002, p.41). In this sense, colonial dispossession laid the foundations of modern-day landed inequality.

away parts of the campesino economy, so facilitating land concentration among large-scale landowners.

Smallholder marginalisation in landownership worsened due to violence and conflict. By 2002, 46% of all farmland pertained to 0.4% of landowners and 4% of land to 68% of landholders (FAO, 2018). Table 4.2 provides more detail, illustrating the varying levels of land concentration in each department of Colombia between 2000-2009. Valle del Cauca and Antioquia have the highest coefficients- 0.91. These departments were both hotspots for cartel and paramilitary activity, a point which illustrates the link between conflict, drugs, land dispossession and land concentration. As Thomson astutely notes, violent land dispossession driven by non-state armed groups was an 'agrarian counter-reform' that started in the 1980s and continues to present day (2011, p.341). Therefore, in Colombia agribusiness corporations are not the main enactors of land dispossession, as the corporate sector is not the primary usurper of smallholder lands, which is instead sustained by non-state armed groups.

Table 4.2: Gini Coefficient of Property Concentration in Colombia (2000-2009)

Department	Gini	% Change	Department	Gini	% Change	Department	Gini	% Change
Vaupés	0.41		Huila	0.78	0.5	Risaralda	0.83	3
Guainía	0.54	54	La Guajira	0.78	1.4	Casanare	0.84	-0.8
Guaviare	0.56	11.2	Magdalena	0.78	0.4	Cauca	0.84	2.6
Vichada	0.57	12.3	Amazonas	0.79	12.4	Chocó	0.85	4.4
Caquetá	0.64	7.1	Santander	0.8	1.2	Meta	0.86	-1.1
Putumayo	0.72	5.7	Tolima	0.8	0.8	Arauca	0.87	1.1
Atlántico	0.73	-1.9	Sucre	0.81	-0.1	Caldas	0.88	1.4
Norte de Santander	0.73	3	Cundinamarca	0.82	1.3	Quindío	0.88	-0.1
San Andrés	0.73	1.9	Nariño	0.82	0.8	Valle del Cauca	0.91	1.8
Bolívar	0.76	1	Boyacá	0.83	-4.2	Antioquia	0.91	5.7
Cesar	0.77	2.7	Córdoba	0.83	1.2			

Source: McKay et al, 2016, p.17.

The scale and impact of land dispossession is measurable from the forced displacement of 7.4 million people. From the 1980s to mid 1990s 'violence linked to drug traffickers' enabled cartels to take control of some 4.4 million ha of 'fertile land' (FAO, 2014, p.97). A later publication puts the overall figure of abandoned lands due to forced displacement at 6.6 million ha (FAO, 2017, 59). This was a greater area than the Colombian Institute for Agrarian Reform (INCORA) distributed in 30 years (Thomson, 2011, p.341). Evidently violence in Colombia both 'regulates the process

of capitalist accumulation' and exercises social control (Estrada cited in Lote, 2016, p.66). Thus, violence and non-state armed groups have been central to Colombia's mode of regulation, which has enabled the continuation of hegemonic accumulation by dispossessing smallholders.

Armed actors are integral to the regime of accumulation, given they are primary actors in the process of land concentration. In this sense, paramilitaries have acted as 'armed companies of territorial conquest' (Reyes Posada, 2009, p. 114), whilst drug cartels have assumed the role of illicit agribusiness- drawing smallholders away from their own diversified production towards growing illicit cash crops or becoming farm labour as coca leaf pickers. Narco groups occupied swathes of the country to produce cash crops such as the coca leaf, cannabis or opium poppy; but have also bought land for conversion to large livestock holdings to launder illicit income (Restrepo & Morales, 2014, p.126; Reyes Posada, 2016). Though illicit and licit rural actors do not necessarily work together, their objectives run in parallel, i.e. land accumulation and the removal of the campesino economy. Thus, the conflict and illicit economies facilitate the long-term trajectory of agricultural neoliberalisation and CFR integration.

Violence perpetrated by paramilitaries and drug cartels has consolidated an 'exclusive model of development' (Magdoff, 2013, p.1). The FAO reiterates that the conflict and drugs trade have limited 'the productive capacity' of smallholders, due to 'the impossibility of accessing land, whilst it remains concentrated, monopolised in an unproductive form, in large part by *latifundistas* who are dedicated to largescale livestock and in the last decades to agribusiness' (2017, p.83). In fact, many largescale livestock farms have converted to agribusiness monocultures (ibid), underlining how land accumulated for illicit money laundering facilitates the entry of corporate agriculture. This also emphasises the interlinked neoliberal strategy for rural development and illicit capital accumulation. In this sense, illicit groups- their processes of land accumulation and changing land use- enable CFR integration in Colombia. Non-state armed actors are integral to shaping Colombia's mode of regulation and regime of accumulation by exercising control over smallholder land access.

4.4 Alternatives to Agrarian Reform

As Pechlaner and Otero (2008, 2010) outline, resistance to neoliberalisation can also

come from nation states, which the Colombian case attests to. In addition to protectionist economic policies, there have been a number of instances throughout recent history where governments have attempted to overcome the country's land inequality. Some view President Santos' tenure as an example of the Colombian state breaking with the historic trajectory of failed agrarian reforms. These arguments sustain that Santos' agricultural policies sharply differed from Uribe-Vélez because of Law 1448- the Land Restitution Act of 2011. This Act returns dispossessed land to campesinos who suffered violent and coercive dispossession. By 2014, some 715 farms had been returned to their previous owners and 12,217 land claims were in the process of review, amounting to a total area of 482,272 ha (Restrepo & Bernal, 2014, p.39), which represents one percent of the total, national, agricultural area.

Restrepo and Bernal argue that Law 1448 has been 'more efficient' than other land laws in terms of the amount of land distributed in a short space of time (ibid, p.40). They qualify this statement, however, admitting that a large number of cases cannot be resolved due to ongoing security concerns or because victims were tenants and not notary landowners (ibid). They also underline the difficulties of returning land in a system that lacks a full cadastral survey, land titles and adequate infrastructure (ibid). The effectiveness of the land restitution act is also undermined by the continued absence of comprehensive rural reform. Martínez Cortés (2013) convincingly argues that land restitution is unlikely to be successful whilst broader rural development policy favours monoculture production and agribusiness development. Furthermore, if adequate socio-economic amenities are not ensured, the Land Restitution Act continues to condemn campesinos to structural poverty and economic marginalisation, even if they return to their land parcels (ibid). Thus, without broader policy shifts this law remains more tokenistic than effective.

The Land Restitution Act is but one example of the Colombian state's historic attempts to redress land inequality. In 1961 the government implemented state-led redistributive measures to reduce land concentration. This was reversed, however, in the *Pacto de Chicoral*[39], as a result of pressures from large landowners. In 1994,

[39] This agreement was signed in 1972 between Liberals, Conservatives and big landowners. It agreed to halt plans for agrarian reform and instead hand land titles to campesinos in state lands adjacent to

policy makers chose the market as best placed to achieve redistribution (Borras, 2003). Law 160 sought voluntary negotiation for land redistribution and subsidised loans for smallholders, as beneficiaries were provided with up to 70% of the final purchase price but were required to contribute at least 30% towards this cost. The wave of market-openness, central to global CFR policies, heavily influenced the market-led land reform initiative of Law 160. This programme was also unsuccessful, however, as land transactions remained confined between small and medium farmers because the market alone did not incentivise the change that policy makers had envisioned. Finally, the programme fell short of reaching the planned number of beneficiaries and failed to recognise the deeply rooted asymmetries favouring large landholders (Fajardo, 2000; Machado et al, 1999; Deininger & Lavadenz, 2004; Borras, 2003). In this sense, state policies have not altered the regime of accumulation, as smallholder access to land remains limited.

Since the 1990s, there have been state initiatives to protect the land rights of minority communities other than campesinos. Firstly, the 1991 Colombian Constitution defends both collective and common land ownership. It formally recognised the ownership rights of indigenous people over ancestral *resguardos* and also gave Afro-Colombian communities common holdings. The Constitution, however, does not give campesinos equal status as political subjects. This has fuelled division, leaving campesinos without legal protection for their land rights (McKay et al, 2014). After sustained campesino protests, Law 160 of 1994 tried to remedy this through the creation of ZsRC- the only legal entity that exists to protect campesino access to land. This model was established to limit land concentration in designated areas and prioritised these zones for infrastructure and credit programmes. The ZRC model is a public policy tool designed to prevent further accumulation by third parties in marginal territories (Méndez Blanco, 2015). Law 160 has had some impact, as the Oxford Business Group (2015, p.126) views it and implicitly ZsRC as limiting agribusiness investment in the country. Although campesinos continue to be structurally marginalised in their access to land, the ZRC model gives them some legal recognition of their right to land.

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or in virgin forest, which drove campesinos to colonise marginalised areas and expand the agricultural frontier.

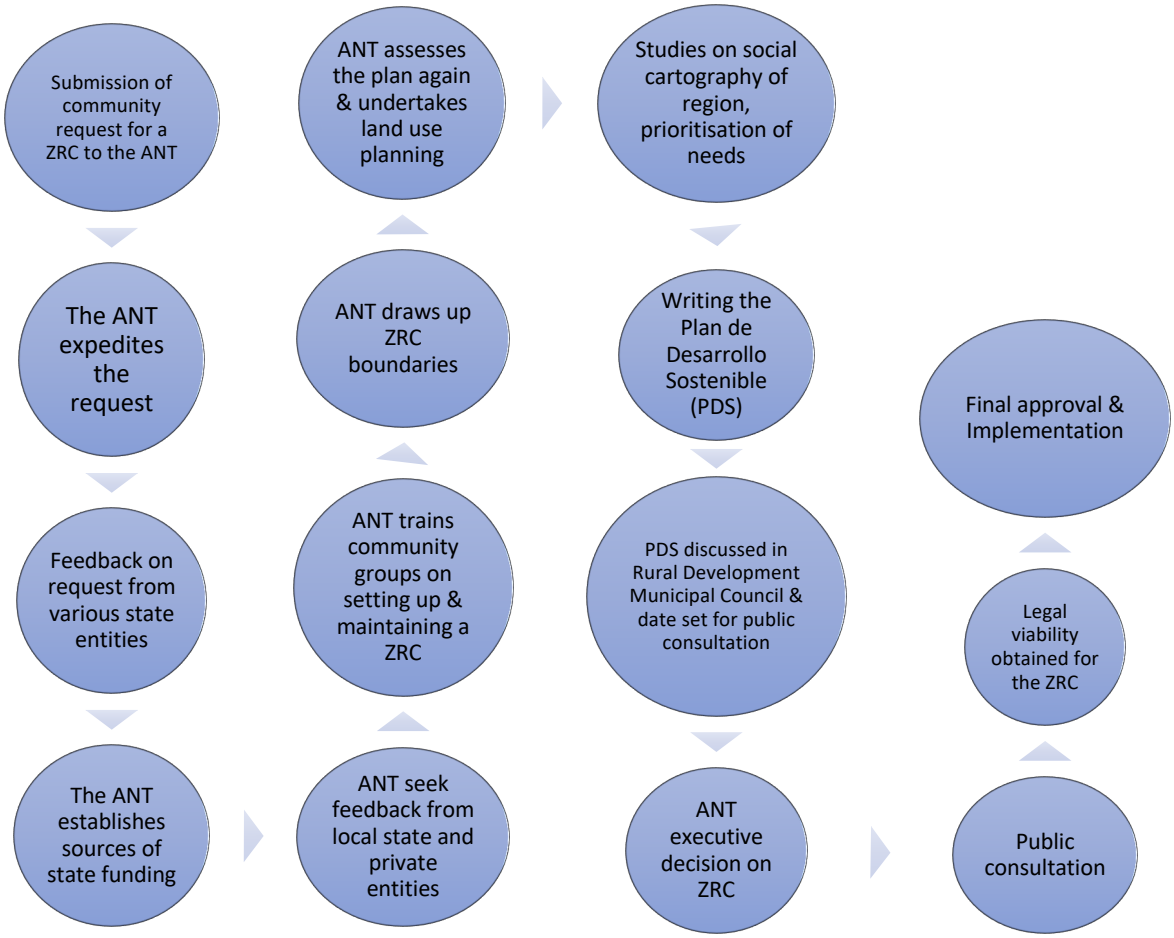
4.5 The ZRC Model

The ZRC model connects particularly deprived rural areas in the country with state organisations to fund 'alternative projects, modernisation, [and] provide quick and more efficient access to rural public services' (Article 2.14.13.3 in Law 160). One of its central aims is to promote and support campesino agriculture. ZsRC are also tasked with territorial ordering or zoning, i.e. defining areas where land ownership is limited to a certain number of 'Family Agricultural Units' or *Unidades Agricolas Familiares* (UAF) (Méndez Blanco, 2015). UAF is a plot of land dedicated to agriculture, livestock, forestry, or fish farming, which mainly depends on family labour or occasional hired labour. The size of a UAF varies according to the productive capacity of the land but should provide the beneficiary family with sufficient land to generate a monthly income equivalent to two minimum wages. Each ZRC, therefore, has different UAF sizes depending on infrastructural conditions and land use capability. The UAF size and system for each zone is co-determined by technical personnel and local campesino groups, which are then discussed and ratified through a public assembly with the community.

The methodology behind ZsRC signalled a shift away from development planned and implemented from Bogota, towards a more grassroots approach, where community groups work in closer communication with state institutions. It requires campesino communities to trigger the ZRC process, as they identify the geographical space that need 'regulation, delimitation and property ordering' (ANT, 2017, p.26). The first formal step entails the submission of a request by the organisation representing campesinos or *colono*s to various institutions including the *Agencia Nacional de Tierras* (ANT – the National Land Agency), various entities involved in agrarian reform, municipal governors and mayors, the departmental committees tasked with rural development and agrarian reform, and finally the municipal rural development council (ibid, p.27). Submissions must contain the following information: motivations behind the request, geographic characteristics and boundaries of the territory, its agroecological and socio-economic characteristics, existing issues and possible solutions, why the area would benefit from ZRC status, the responsibilities assumed by the community and the organisation representing the community. Requests that meet the required standards then begin an assessment process by the ANT including technical visits, which are completed within 15 days (see Figure 4.2 for a step by step guide to the

process of establishing a ZRC). This assessment utilises community knowledge of their own territory and personal lived experiences of the key socio-economic issues the area faces. This is a highly transferable procedure, as there are clear assessment criteria and a defined process of institutional engagement with community groups.

Figure 4.2 : How to Establish a ZRC



Source: Adapted and translated from Las Zonas de Reserva Campesina, ANT, 2017

The second step involves the ANT expediting the request. The third involves seeking feedback on submitted requests from municipal rural development councils and the Director of the *Corporación Autónoma Regional* (CAR), which oversees environmental regulation in different regions. Feedback is required within five days to allow time for the ANT to make an informed decision (ibid, p.29). The fourth step entails the ANT determining the various state agencies that will fund the proposed rural development programmes. Alongside this the ANT and proposer community groups seek wider feedback from local authorities and departments, as well as other public or private organisations in the zone. The ANT also provides initial training to community groups

on legal issues around zoning, workshops on strengthening local community organisation, participative planning and how to manage fragile ecosystems. These steps were conceived to bring about a closer working relationship between municipal, departmental and state level institutions. This is another important replicable aspect of institutional design because it aims to move away from a silo mentality that generates overlap and communicational disconnects.

The ANT then draws up the boundaries for the ZRC on the basis of the information it has received and fieldwork. In the fifth step the ANT evaluates the proposal, undertakes land use planning, identifying areas as forest reserve zones and others for collective land titling to define which land is appropriate for development. Step six entails various questionnaires and studies in the region aiming to outline the social cartography, prioritisation of needs, workshops and seminars with community groups to acquire information for the Sustainable Development Plan (PDS). [40] The methodology of participation in the PDS is another crucial aspect of the ZsRC institutional design. It brings about a closer dialogue between communities and institutions to assess the socio-economic and ecological problems identified by community groups and the possible solutions to these. Importantly, the PDS assessment criteria are replicable. Step seven is writing the PDS in conjunction with the Rural Development Municipal Council, public and private institutions active in the area and organisations representing the interests of campesinos and *colonos*. Step eight involves discussing the PDS in the Rural Development Municipal Council and setting a date for a public consultation on the plan. The final step enshrines popular participation in ZRC institutional design, as it takes the development agenda back to the community for an open debate and ratification, thus, bringing institutions into direct dialogue and scrutiny by the wider local community.

After this, the ANT's executive body decides whether the application will be approved and the ZRC constituted. This body has representatives from the Ministry of

[40] This is a blueprint for the key socio-economic and ecological conflicts in the zone, as well as the possible solutions that community groups provide to overcoming these problems. The PDS acts a mouthpiece for the community in terms of what their key needs are and how they envision bottom-up development.

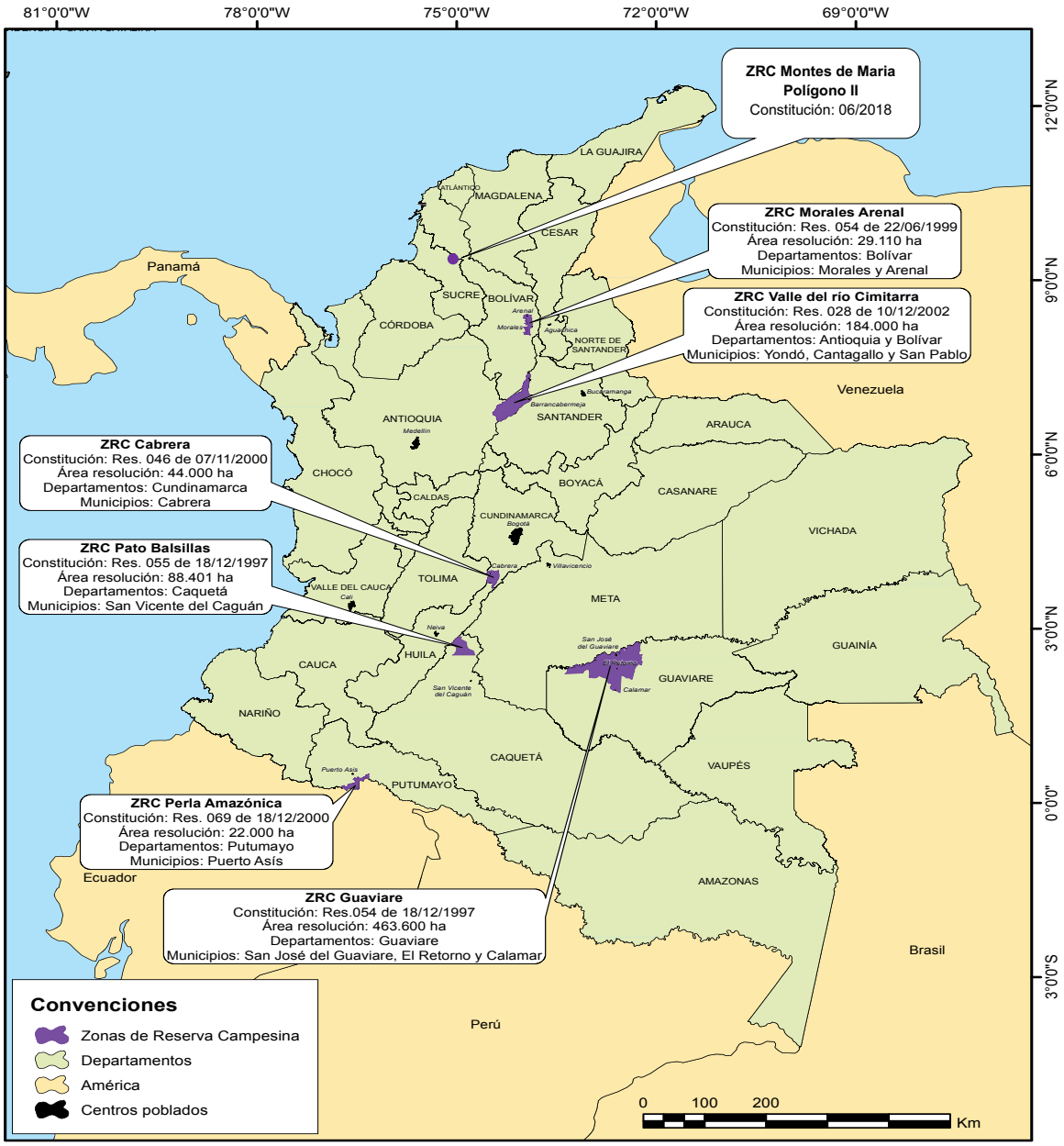
Agriculture, Ministry of Environment, Ministry of Commerce, agricultural unions, indigenous and Afro-Colombian groups. Step nine is the public assembly, which looks to communicate the advantages of the ZRC model, debate any objections/recommendations, agree on the proposed projects outlined for the zone, programmes and investment that state entities will carry out alongside campesino organisations. Step ten and 11 involve obtaining legal viability, which is debated and either approved or failed by the ANT's board. At the point of approval, project implementation begins immediately.

To summarise, the key aspects of institutional design in the ZRC model are the assessment criteria for the ZRC that are based upon local lived experience that are brought into closer dialogue with state institutions through the PDS planning process. This dialogue also enables the identification of institutions that assume responsibility for particular development plans, which increases accountability. An additional outcome is that institutions collaborate across administrative levels, thus, overcoming silo working. Finally, participative mechanisms such as public assemblies help to scrutinise policy implementation and enhance communication between community groups and state organisations.

It is important to note, however, that the process for establishing ZsRC has not been as efficient as planned. In fact, many applications are frozen because of a lack of political will, emphasising the centrality of the state in facilitating CFR integration or resistance. The Minister of Agriculture at the time who helped pass Law 160, Jose Antonio Ocampo (Interview, 2017), noted that there was no political will for full agrarian reform and so the ZRC model was an overture or step in that direction- an alternative means to ensure campesino access to land. It is highly likely that the absence of political will, which prevented agrarian reform, equally impacted the implementation of the ZRC model. Juan Manuel Ospina (Interview, 2017), the director of the ANTs predecessor the Colombian Institute for Rural Development (INCODER) from 2010-2012, noted that President Uribe's government was opposed to ZsRC, evident from the fact that it removed state funding from these zones and suspended the ZRC-VRC. President Santos reactivated this ZRC, but no state funding followed and no further ZsRC were established until 2018. The most recent addition is Montes de María, which became the 7th official ZRC in June 2018 (see Figure 4.3), after a 16–year hiatus in establishing zones. The signing of the 2016 peace agreement, with its stated

commitment to the ZRC model, was undoubtedly influential in the revival of the ZRC model, as this was an integral part of the negotiations on comprehensive rural reform.

Figure 4.3: Colombia's seven Peasant Reserve Zones (ZsRC)



Source: Adapted from FAO, 2018, p.17, with the author's addition of Montes de María ZRC.

Although ZsRC are very much connected to the state, they are equally a result of campesino agency and resistance against socio-economic marginalisation. Fajardo (Interview, 2017), a leading scholar on the ZsRC, views the zones as a 'compromise' in which 'the state agrees to protect [campesinos], title land and [economically] support

campesinos, whilst campesinos agree to protect the forests because these people are in critical zones' known as *colono* areas.[42] Zamosc (1986) refers to campesinos living in colonised zones as the precarious peasantry who mobilised for state services and credit for the first time because of their spatial and socio-economic marginalisation. The ZRC model was an expression of the movements in colonised zones, which sought state support to formalise colonised land. The ZRC model and its methodology aimed to serve the needs of these *colonos,* by formally linking marginal territories to state institutions through infrastructural development, land titles and credit access. Hence, Ferro and Tobón consider ZsRC to be the 'daughters of colonisation' (cited in Méndez Blanco, 2015, p.57), which explicitly links these zones to a history of campesino resistance, land settlement and social organisation in marginal zones. Although the ZRC model depends on the state for financial and infrastructural support, Ortiz et al. argue that ZsRC were 'born in campesino communities and slowly became more complex, taking on legal characteristics' (2004, p.49). This indicates the centrality of campesino agency in creating the model garnering state support.

This is not to say that differences did not exist among peasant groups mobilising for the ZRC model, as some were located in coca growing regions that had a distinct socio-economic and ecological dynamics distinct from those in areas located in the Andes for instance. The first emblematic push for the model came from coca growing communities in the Amazonian region of the country. In 1987, falling profits from coca resulted in protests against levels of poverty and violence suffered in coca growing regions, particularly in San José del Guaviare (Molano, 1984). The protests called for land titling to enable credit access and state support for rural development. In return, they proposed a pact to preserve the forests and natural resources of the area (Fajardo, 2000), inspired by the territorial caretaker role played by many indigenous communities in the country (Méndez Blanco, 2015, p.71). The ZRC model emerged from these proposals and led to the passing of Law 160, which envisioned communities producing food through agroforestry systems that also stabilised agricultural frontiers. Therefore, ZsRC directly arose from campesino protests against

[42] Virgin lands occupied and colonised by campesinos who were not given land through agrarian reform, but instead were forced to settle in marginal territories.

a discriminatory mode of regulation and state policies that contributed to their structural marginalisation. The state was in many respects forced to concede the ZRC model to precarious campesino communities, who pushed for legal mechanisms that would ensure their right to land and basic social amenities.

After passing Law 160 in 1994, however, the Colombian state did not advance the establishment of any zones, demonstrating a historic conflict of interests between protecting large landholders and creating more equitable conditions for campesinos. Just as *colono* campesinos successfully pushed the Gaviria government to pass Law 160, campesinos in marginalised coca growing regions applied pressure on the Samper administration to follow through on establishing and funding ZsRC in 1996, underlining how popular pressure can alter the mode of regulation (Otero, 2012). In 1996, the *marchas cocaleras* or coca grower protests erupted in South Bolivar, Putumayo, Caquetá and Guaviare- reflecting the spread of protests across the South but also further north to South Bolivar. These were in response to the imposition of commercial limits on the purchase of chemical inputs needed to process coca leaves, as well as against aerial fumigation with herbicides that destroyed both licit and illicit crops (Fajardo, 2000). The extension of protest to northern *colono* and coca areas underlines the shared socio-economic precarity these campesinos faced, as more than 130,000 campesinos demanded an end to aerial fumigation and called for the implementation of the ZRC model.

The *marchas cocaleras* of 1996 resulted in Decree 1777 that reiterated and defined the state's responsibility to the ZsRC. The Decree identified the specific agencies financing and co-ordinating development policies in the zones (Blok, 2016). Agreement 024 in 1996 supplemented this Decree, as it established the general criteria and procedures necessary to select and draw the boundaries of a ZRC. Agreement 024 indicated that ZsRC would be created in areas of social conflict to 'reconstruct social fabric' and to help coca crop substitution on forfeited land; on land that bordered national parks, where models of sustainable farming could be drawn up; on virgin state lands; and in areas that needed regulation and zoning (ANT, 2017). Land inappropriate for ZsRC included national parks, forest reserves, indigenous territories, Afro-Colombian territories, those reserved by the ANT or other public agencies, and land already classified as Business Development Zones or ZIDRES (ibid).

Campesino resistance in the 1990s led to the founding of six ZsRC: Guaviare, El Pato-Balsillas, Arenal y Morales, Cabrera, Valle del Río Cimitarra and Putumayo (the first two in 1997, the third in 1999 and the final three in 2000). The most recent ZRC implemented is in Montes de María in 2018, which also only came about due to consistent pressure over the years for more ZsRC. Table 4.3 summarises the sizes and dates of legal recognition of the first seven fully established ZsRC (see Appendix 3 for prospective ZsRC still in the process of gaining legal recognition). The importance of campesino mobilisation for the formation of ZsRC is evident from the locations of the first three zones, which coincide with the sites of the *marchas cocaleras* in 1996. Despite the absence of political will, coca growing campesinos (in the south and middle regions of Colombia) and those in the Andean region of Cundinamarca pushed their alternative vision for agricultural development onto the national agenda, reflecting agency in resisting the CFR and redefining aspects of the mode of regulation/ regulatory framework that order the regime of accumulation.

Table 4.3: Details of the Seven Fully Constituted ZsRC

ZsRC Name	**Department**	**Municipality**	**Area (ha)**	**Resolution (date)**
Guaviare	Guaviare	San José del Guaviare, el Retorno y Calamar	463,600	054 (18/12/1997)
Cuenca del Río Pato y Valle del Balsillas	Caquetá	San Vicente del Cagúan	88,401	055 (18/12/1997)
Morales-Arenal	Bolívar	Morales, Arenal	29,110	054 (22/06/1999)
Cabrera	Cundinamarca	Cabrera	44,000	046 (07/12/2000)
Perla Amazónica	Putumayo	Bajo Cuembí y Comandante, Puerto Asís	22,000	069 (18/12/2000)

ZsRC Name	Department	Municipality	Area (ha)	Resolution (date)
Valle del Río Cimitarra	Antioquia, Bolivar	Yondó, Remedios, Cantagallo and San Pablo	184,000	028 (10/12/2002) Suspension lifted through resolution 240 (22/02/2011)
Montes de María Polígono II	Bolívar	Guamo, San Juan Nepomuceno, Zambrano and Córdoba	44,481	057 (16/04/18)

Source: Las Zonas de Reserva Campesina, ANT, 2017

Although pressure from diverse campesino groups was central to creating ZsRC, the series of laws that followed engendered dependency on state bureaucracy, leaving state institutions- principally INCODER and now the ANT- with decisive power and sway over the number of ZsRC that can be established, their size, location and characteristics. This is important because the state's control has shaped and limited expressions of resistance through the model, e.g. the fact that additional areas require legislative recognition. In practice, the participatory aspects of the model and bottom-up development approach have been frustrated by the continuation of top-down administered development but also the politicisation of the zones as areas of FARC-EP influence.

The stigmatisation of the zones primarily took place during Uribe Vélez's presidency in the context of a failed peace process with the FARC-EP (1998-2002). For the period 2002-2011 this resulted in no further funding for the model, abandonment of the institutional processes required to establish additional zones and the suspension of one of the six legally recognised ZsRC- the ZRC Valle del Río Cimitarra. This institutional freeze out was accompanied by a media campaign of political rhetoric, violent attacks against campesinos within the zones for being FARC-EP sympathisers, led by the military and paramilitary groups. Thus, just as the state opened up spaces for campesinos to build socio-economic alternatives, it was also instrumental in closing them down, illustrating once again that the nation state is a central terrain of conflict

in facilitating resistance to or integration with the CFR (cf. Otero, 2012; Pritchard et al, 2016).

The construction of discursive strategies that stigmatised the ZRC model took place in the context of a failed peace process during President Pastrana's tenure (1998-2002). As part of this process, the guerrilla group were given a demilitarised zone in the municipality of San Vicente del Caguán, in the Amazonian department of Caquetá. The objective of this demilitarised zone was for peace talks to take place there, but the result was de facto control of the area by the FARC-EP. The guerrilla group were accused of continuing drug production and militarisation within this safe haven, which is one reason of many that the peace negotiations collapsed. The ZsRC were discursively aligned with the demilitarised zone in San Vicente del Caguán because many of these *colono* zones were in FARC-EP controlled areas or in zones disputed by the guerrilla group.

The discursive linkage of the ZsRC with the FARC-EP delegitimised the model and competed with the political objectives of the *colono* campesino movement for closer ties with state institutions, formal access to land and credit. Moreover, campesinos associated or affiliated with ZsRC were dismissed as FARC-EP sympathisers, making them enemies of the state. In so doing, the ZRC model and importantly the areas designated with this status became more embroiled in violence and sites of military interest to expunge guerrilla influence. This context heavily undermined *colono* initiatives to formalise their communities, given they were politically stigmatised by government officials and the Colombian press as rebels and terrorists.

4.6 The ZRC Pilot Project

The only notable funding authorised by the Colombian state for the ZsRC came at the beginning of the failed peace negotiations with the FARC-EP in 1998, prior to the construction of the discursive narrative against the model. State institutions and NGOs including the Sinchi Institute- an NGO working with communities in Guaviare- co-negotiated a US$6.5 million loan from the World Bank (WB), which was viable until 2003. This funding was only achieved with concerted community organisation through persistent interlocution with state institutions over environmental issues. Guaviare and Pato-Balsillas were the first zones to receive pilot funding, while two years later Cabrera became the third. The overarching objectives of the pilot phase sought to

draw up sustainable development plans (PDS) in each zone that were written in conjunction between campesino organisations and state institutions; to implement community planned and led sustainable development (Ortiz et al, 2004). It was also used to develop a replicable methodology and manual for other areas looking to assume ZRC status.

In this case, *colono* resistance moved from protest and mobilisation in the streets to establish links with NGOs, state institutions and external allies (cf. Mier y Terán Giménez Cacho et al, 2018) to seek and obtain financial resources and technical assistance. This provided funding for a number of projects administered by local organisations, such as development workshops, institutional capacity building, project management and stakeholder oversight, project evaluation, land titling, and the 'strategic design of follow on actions…to enable the [Government of Colombia] to apply the concept…on a wider scale' (Méndez Blanco, 2015, p.4). At the end of the project, the WB noted the distribution of 570 land titles by INCORA, the ANT's predecessor, in addition to the investment and implementation of 122 community identified sub-projects (ibid, p.5) out of 145 approved projects. These projects were aimed at improving a number of areas including infrastructure (45% of projects); agricultural production, including the implementation of organic farming systems (26%); the environment (15%); and local organisational capacity building (13%) (World Bank, 2004, p.9).

Although this appears to be a high ratio of project completion, in fact, 531 sub-projects were first identified, of which only 122 were completed. Ortiz et al. (2004, p.146) argue that bureaucratic and administrative procedures slowed down the process of project approval across the three zones, as implementational problems arose between campesino communities and government institutions. Fajardo (Interview, 2017) notes that the National Planning Department- the main institution working with communities- did not accept the pace at which communities were working. Each project was formulated by local groups, which was 'not the way the government operated' (ibid). The teams delegated from the state were very 'averse' to the ZRC project, 'they were not friends of the process, they were almost enemies' (ibid). In addition to this, US$836,302 of the loan was cancelled due to a lack of 'local implementation capacity and intensification of the armed conflict' (Méndez Blanco, 2015, p.4). The use of 80% of the loan but completion of only 23% of all identified sub-projects is indicative of

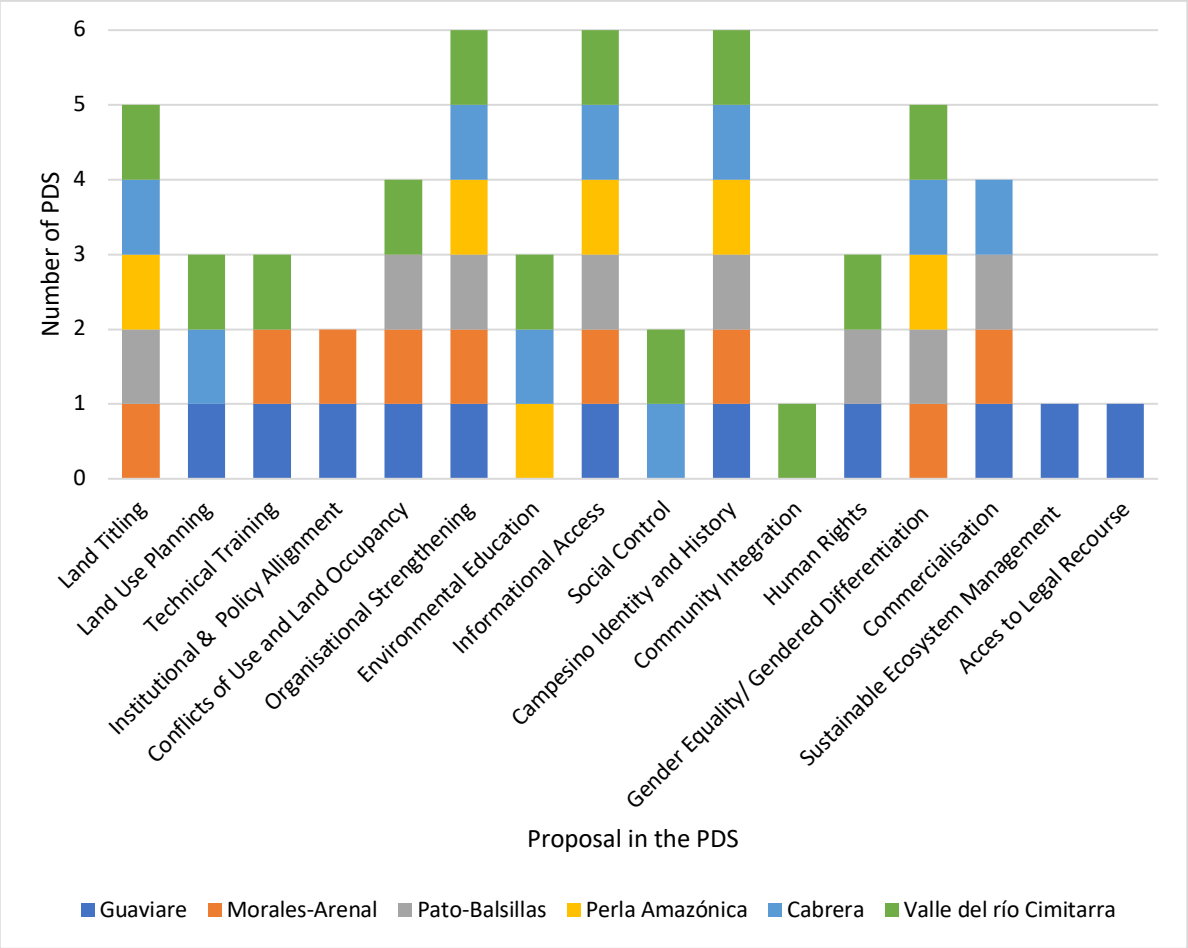
deficient organisational capacity, along with slow institutional implementation and impediments produced by conflict. Therefore, attempts to build resistant socio-economic alternatives in conjunction with the state faced operational and security obstacles, which were later compounded by a strategy of discursive delegitimization of the zones.

Nevertheless, by the end of the pilot project the ZRC model had a 'replicable methodology' with a manual, development assessment tools and established methods to facilitate institutional and social movement interaction (World Bank, 2004, p.7). The WB concluded that the outcomes of the ZRC pilot project were satisfactory, as the goals identified at the outset of the project were met. These included: '(a) achieving agreement among stakeholders in the communities that are exercising management capabilities, regularly planning development priorities, gaining access to state, NGO, and private sector development assistance, and enjoying greater security in their lives; and (b) achieving agreement among authorities and third parties that economic, fiscal, and environmental issues are being regularly addressed, and are prepared to scale the experience up to other regions' (ibid, p.2). The success of the pilot project was judged on the wider mechanisms used to design and oversee bottom-up development initiatives in these zones, methods of interaction and interlocution between state agencies and *colono* communities, as well as organisational capacity building to facilitate management of financial resources and projects. In short, the WB found ZsRC to be an effective 'decentralized and participatory model' (ibid, p.10), able to support the construction of campesino socio-economic projects by linking these areas to state support.

Aside from material development during the pilot project, the bottom-up organisational procedures established in the planning and implementation phases are reflective of the ability of diverse *colono* campesino groups to plan, administer and oversee development in their territories. One of the most important participatory tools from this pilot phase was the *Plan de Desarrollo Sostenible* or Sustainable Development Plan (PDS), a document created collaboratively by key community leaders and external institutions. The PDS characterises the socio-economic and ecological conditions of a given zone and expresses the desired development direction of communities. Figure 4.3 illustrates the range of different objectives in the PDS of the six initial ZsRC. The

PDS of Montes de María ZRC is not included as it has only recently been formally established. The figure indicates that all six PDS aim for organisational strengthening, informational access and projects related to campesino identity and historical memory. Importantly, five ZsRC also prioritise land titling and gender equality in land access, four aim to resolve conflict over land use and to improve commercialisation of crops.

Figure 4.3: Proposals outlined in the sustainable development plans (PDS) of six ZsRC



Source: FAO, 2018, p.86.

Fajardo (Interview, 2017) views the PDS as the most important product to emerge from the pilot project because it was made in participation with community groups, therefore, it strongly reflects the social capital in these areas and campesino agency. For this reason, he argues that the PDS is well accepted by the campesinos living in ZsRC, as it contrasts to the historic tendency to impose externally developed plans (ibid). Contrastingly, one of Colombia's leading economists on rural affairs Balcázar Vanegas (Interview, 2017) asserts that this process was not pluralistic. He suggests a

small nucleus took over the planning process in each zone, which has resulted in low levels of community level compliance with the PDS (ibid). Fajardo has been integral to the construction of the ZRC model, first as director of the Sinchi Institute and then through his continued academic work with the zones, therefore, he has a more fine-grained understanding of participatory processes in the pilot phase. On the other hand, Balcázar Vanegas has led governmental institutions working more generally on rural poverty and has also worked with think tanks but has not been directly involved in the ZRC process.

Nevertheless, Balcázar's criticism fairly points out that campesino communities were not alone in formulating this document- they were heavily assisted by state institutions and other organisations. Moreover, campesino perspectives were represented by delegations from communities- a small nucleus. *Colono* communities are not purely home to the precarious peasantry but also to semi-proletarianised campesinos. This is especially true of coca growing regions, due to the fact that many undertake wage labour as coca pickers or *raspachines*. With this in mind, it is important to question whether the various PsDS represent the interests of diverse peasant groups. This will be further analysed and explored in the empirical chapters (5 and 6). Nevertheless, the ZRC model does have a number of mechanisms in place to avoid the hijacking of the planning process. For instance, community involvement is heavily monitored by the state and international institutions, who triangulate plans through interviews and focus groups. Moreover, the participatory process behind the PDS was studied by academics who found the territorially based design the most sustainable aspect of the ZRC model (Ortiz et al, 2004). A fairer criticism of the planning process is that INCODER acted as the only state institutional representative in the process of putting together the various PDS (Balcázar Vanegas Interview, 2017). The respective PDS would have benefited greatly from other institutional participation, such as from the Ministry of Energy that oversees the development of the electricity grid or the Ministry of Environment, which would have resulted in a more comprehensive rural development plan. The pilot project provides much insight into building and implementing alternative bottom-up development trajectories, i.e. ensuring there is wider state institutional involvement in PDS design.

Alongside this, each of the three ZRC pilots had their own technical assistance teams, primarily composed of campesinos from the area (Ortiz et al, 2004). These teams

oversaw the 'identification, formulation, preparation, execution and evaluation of subprojects' (ibid, p.87). The mix of individuals from state institutions and campesinos allowed for dialogue between local knowledge and more technical expertise in a variety of projects, including the implementation of agroecological farming methods. A number of community organisations also emerged during the pilot project, such as ward level committees, which also scrutinised project administration (ibid, p.106). *Juntas de Acción Comunal* (JAC) or Community Action Groups were the nuclei of local level organisation and acted as direct mechanisms to strengthen institutional links with communities in the ZsRC and their respective projects.[43] The JACs served as interlocutors between local wards, national, departmental and municipal level governments. Multiple state and private organisations worked effectively with local communities during the pilot project, demonstrating the capability of campesinos in the co-administration of agricultural development and environmental management programmes (ibid, p.107).

The pilot project, however, had important failings. The WB assessment report (2004) outlined that the conflict in rural spaces curtailed the full potential of the plan, illustrating how civil war has violently prevented the emergence of development alternatives and in so doing has supported CFR integration by weakening the campesino sector. Moreover, the pilot project did not achieve widespread technological change towards sustainable farming practices- high use of chemical fertilisers in all zones evidences the limited technological and practical changes achieved (FAO, 2018). Literature on the decentralisation of natural resource management provides insights into why practical changes have been limited in the zones. Poteete argues that empowerment to change resource use practices depends on the distribution of responsibilities among local community groups, as a 'lack of responsibility discourages rights-holders from thinking about the consequences of their actions' (2004, p.12). This touches on the fact that there was no 'realm of decision making in which a variety of lower-level actor… [could] exercise some control' (Agrawal et al, 2014, p.273).

[43] Law 19 in 1958 created JACs; these are civil organisations set up to boost popular participation in the management and upkeep of communities.

The ZRC pilot project did have an institutional design in place where locals oversaw the implementation of specific projects, but the model was not designed to promote self-governance or natural resource management. This is evident from the absence of 'clear role[s] and tasks for local level decision makers' (ibid) and the fact that the PDS holds no legally binding powers, nor any guaranteed administrative or financial support from state institutions. Gustavo Ramírez, a civil servant working with INCODER, the ANT and later the FAO on ZsRC, corroborates this. He noted, 'very few regional state sustainable development programmes considered ZsRC…[All] local politics never took them into account, even though they were at the heart of their regions… all local institutions attend the required ZRC public consultation meeting[44] and say how they will work towards the plan but no one fulfilled their promise because there was stigmatisation and no concerted public policy' (Interview, 2017). Ribot cogently argues that effective community natural resource management is about supporting decentralisation and local democracy 'with environmental decision-making, rule-making and adjudication' (2003, p.55), a process that was undermined by the fact that the PsDS were not legally binding. Moreover, ZRC steering committees were not given any additional powers, they were not formally linked to municipal institutions and so the plans formed through multi-sector dialogue have been ignored. Although the ZRC pilot project helped to create a methodology of institution building that brought diverse campesino communities into communication with various state institutions, the fact that power and responsibility were not devolved means that the ZRC model has not challenged top-down development/ natural resource management.

Nevertheless, within the pilot project's time and resource limitations 'the evaluation…demonstrated that…it is possible to carry out different productive practices' (World Bank, 2004, p.121). This is reflected by the fact that producers achieved greater levels of crop diversity and improved their water and forest conservation practices (ibid, pp.127-8), evidencing aspects of Level Three agroecological transitioning (cf. Gliessman, 2016). The pilot project demonstrated that with appropriate support from public institutions, change in farming and community

[44] This public consultation brings together the campesino community and state organisations to debate the PDS and plans for the zone. It is a required step in the formal establishment of a ZRC (see Figure 3.1 for a step by step detailing of how to set up a ZRC).

administration can be undertaken by local farming communities. In light of the changes effected in the participant communities, Ortiz et al. (2004, p.122) call for greater state assistance in bolstering and maintaining the objectives of technological change towards agroecological farming methods, through the long-term development of campesino human capital, more financing for local development projects and technical assistance. The importance of continued assistance is further emphasised by the fact that the majority of social or productive organisations established during the pilot phase fizzled out after investment dried up.

Arguably, a reduction in the number of local organisations after the end of the pilot project points to a fragility in local community capacity building and organisational structures, especially since these organisations were supposed to continue implementing the remaining sub-projects after the end of the pilot phase. This could also be supported by clearer linkages between these producer organisations and state institutions, as well as a more formalised structure of responsibilities and decision making powers. The natural resource governance structures in the ZRC model were not sustained beyond the pilot project, due to the disconnects that emerged between community groups and various institutions as a result of the absence of investment and technical support. This was a considerable failing, given one of the central aspects of the model's design was to better connect community groups/ bottom-up development to state support. As Nury Martinez Silva, a leading member of Colombia's rural workers union (FENSUAGRO) argues: 'while the government does not invest in these plans [PDS], we can have beautiful project ideas that are highly collective in their organisation and planning, but we will not see them materialise' (Interview, 2017).

Instead of campesino projects prospering in ZsRC, land dispossession and displacement have continued to erode community settlements. Much like the national panorama, violence and conflict has cleared the way for CFR integration in these zones, evident through the entry of corporations, such as oil palm companies in the ZRC Valle del Río Cimitarra (VRC) often on the lands of those that were violently displaced (ACVC et al, 2012). The weakening of community organisations in the ZRC-VRC directly facilitated corporate expansion. Furthermore, the state's inactivity regarding ZRC funding, infrastructural development and technical support during the Uribe-Vélez and Santos years emphasised the central influence it has in undermining

CFR resistance. The case of the ZsRC not only illustrates the dichotomous nature of the state (Grajales, 2015) but that it is a key terrain of conflict that can hinder campesino economies as much as it can facilitate their resistance. Whilst the CFR approach posits the power of the transnational sphere, nation states are evidently still key players (Campbell, 2009; Otero, 2012; Pritchard et al, 2016).

4.7 The ZRC Model: Resisting CFR Integration?

Given the model's financial and bureaucratic reliance on the state, one must question how effectively ZsRC resist further integration in the global CFR, especially whilst agricultural neoliberalisation and free trade remain central to the national development strategy. This is because the ZRC model exists within a free market macro-economic framework that marginalises and undermines campesino production in favour of industrial-scale farming producing for export. Moreover, the ZRC model was never given any decision making powers over issues such as natural resource governance, nor were they formally or legally linked to existing municipal level institutions or incorporated into departmental development plans. The latter two points have institutionally weakened the ZRC model, which means that it has not challenged or overturned the more top-down development approach of the Colombian state. Thus, it is questionable how far the model can construct oppositional modes of regulation, although this does not preclude the existence of diverse peasant resistance within these spaces.

The model's dependence on the state became emphasised once again when Santos reactivated the ZRC-VRC on 16th February 2011 and declared governmental support for the model as a tool for alternative development. This highlighted the fact that the state controls the very legal existence of ZsRC. Despite this forward step and the constitution of a new ZRC in Montes de María in 2018, bureaucratic processes remain slow around the formalisation of more zones and institutional support for their locally planned development agendas. In fact, fresh doubts abound regarding state commitment because of the election to the Presidency of the right-wing populist candidate Iván Duque Márquez, who took office on August 7, 2018 (Jerez, 2018). Evidently, significant progress for ZsRC is difficult without institutional and governmental backing because state support is a fundamental aspect of the model's design. This context exemplifies the need for Gramsci's radical state institutions (see

Section 2.3.1), which are able and willing to support the development of alternatives to the CFR.

The history of the ZRC model and the persistence of the zones, however, is reflective of how coca growing, *colono* campesino communities have mobilised through protest and political lobbying to push for change- access to land and services- even when the state apparatus is opposed to it (cf. Otero, 2012). Campesino communities, primarily in the Amazonian regions of the country but also in other coca growing regions in the centre of the country, linked with NGOs to successfully place the model on the government's agenda in 1994 and then again in 1996, despite the fact there was no political appetite for agrarian reform (Ocampo Interview- then Minister of Agriculture, 2017). The importance of ZsRC was also renewed during the Santos administration, due to the peace negotiations and FARC-EP's support for the model, reflecting the influence and weight the campesino sector still has in the country. Even though Colombian campesinos have been marginalised historically and often violently oppressed, the slow progress and survival of the ZRC model demonstrates their resilience and also their agency.

This thesis understands resistance from a socio-spatial perspective, which encourages a contingent understanding, including everyday forms of resistance. For instance, resistance and resilience are also evident through community mechanisms of participation and dialogue that have been constructed in the midst of continuing violence and absence of institutional support. These include accords outlining limits on hunting, fishing and logging; measures to raise alerts against threats of violence; and the use of Community Action Groups (JACs) as spaces to resolve internal community conflict. All ZsRC have their own accords but those in the ZsRC Pato-Balsillas and Valle del Río Cimitarra are particularly developed because of the experience of colonisation and acute violence, which propelled these communities towards self-organisation (FAO, 2018, p.335). Spatially bound expressions of resistance will be further explored in the case study chapters to gain a more nuanced conception of how campesino differentiation impacts expressions of resistance.

The ZRC model evidences a plethora of campesino resistance to construct socio-economic alternatives to the CFR. Throughout the history of the ZRC model, campesino groups have protested, communicated with state institutions, co-designed

sustainable development plans with the state, administered development projects, remained in their territories despite violence and threats, sought external allies to fund their projects and in some cases they have moved towards more sustainable farming. Different to previous revolutionary agrarian projects, such as the armed approach of guerrilla groups, the ZRC model does not seek to overthrow the capitalist system. Instead, it proposes sustainable development within the system to strengthen local campesino economies. On the other hand, poverty alleviation, the creation of niche-markets, campesino associativity, agroecology, conservation and more robust local-governance through JACs present a different way of organising and practising agricultural production and are a significant diversion from the prevailing productive and economic structures of the CFR in Colombia. ZsRC in all their diversity, therefore, exemplify a possible middle way of resistance- a combination of the progressive and radical food movement (cf. Holt-Giménez & Shattuck, 2011).

Despite this, agrarian economist Reyes-Posada (2016) argues that the ZRC model is not an effective development tool because it has not guaranteed campesinos agrarian or rural reform. He also suggests that, in contrast to indigenous peoples' engagement with reserves (*resguardos*), campesino identification with the ZRC model is weak (Interview, 2017). This argument, however, does not unravel the political and structural factors that underwrite the poor realisation of territorially designed sustainable plans in ZsRC. Nor does it recognise the environmental governance discourse in construction across ZsRC, where local communities are establishing community accords and practices to protect their rivers and trees (FAO, 2018). Campesinos have built a discourse of environmental protection and guardianship, and ultimately a territorial identity that links them to their ZsRC. This illustrates the formation of an environmental identity among diverse campesino communities and within the ZRC model more widely. This discursive identity is explored further in each case study.

The transformative reach of ZsRC, however, depends on how effectively campesino communities and organisations can lobby for territorially designed sustainable development and the extension of the model to other regions of the country. If ZsRC are implemented in the most marginal areas alone, it is possible that the model only creates islands of limited change. Currently, over 60 areas have begun the bureaucratic procedure for ZRC constitution, which represents a broad coverage across the country (see Appendix 3). Even with limited resources, political

stigmatisation and state abandonment, the expansion of the network is telling of campesino agency, a broad identification with this model among diverse regions and campesino groups, as well as a desire to implement alternative rural development to the corporate driven one supported by the Colombian state.

In this food regime moment, the ZRC model is not wholly resisting CFR integration because campesino economies remain structurally weak. Nevertheless, its mere persistence and the renewed importance of the model uncover the deep discontent of a differentiated peasantry looking to find ways to avoid further marginalisation. How far it disrupts Colombian CFR integration and contributes to carving out an alternative food system depends on the effectiveness of local organisations, how well they act as interlocutors with the state, avoid co-optation (cf. Giraldo & Rosset, 2017) and strengthen the decision making powers attached to the model. A final inescapable caveat is the situation of insecurity in rural spaces. Whilst non-state armed actors continue their process of internal colonisation, campesinos will pay with their lives, leaving the way open for further corporate land accumulation (cf. Harvey, 2004; Magdoff, 2013). Successful implementation of ZsRC would resist CFR integration in particular spaces by bolstering access to land and providing services such as improved infrastructure, technical and financial assistance.

4.8 Conclusion

The heterogeneous nature of Colombia's corporate sector and competing interests that push a more protectionist agenda are evident in the country's macro-economic policies and levels of agricultural neoliberalisation since the *Apertura* period. The continued protection of certain agricultural commodities reveals the national influence of these sectors and the fact that their interests do not concur with international corporations that favour global free trade. In this sense, Colombia's uneven path towards neoliberalism reveals the heterogenous nature of agricultural corporations (Friedmann, 2005) and the need for contingent studies of the CFR to understand the multiplicity of actors and competing interests that influence integration and resistance.

Slow neoliberalisation means that international agribusiness is not the primary actor motivating economic dispossession or territorial control in Colombia (cf. Harvey, 2004; Magdoff, 2013). The country's enduring conflict and multiple armed actors are instead undertaking violent dispossession (ibid) and expelling campesinos from their land

(particularly those in marginal *colono* territories who do not have formalised land titles). Though not driven by the agribusiness sector, this phenomenon is ultimately favourable to CFR integration because it removes smallholders from land and food production. In turn, this legitimises macro-economic policies that favour greater imports of primary foods to plug the food security gap. Furthermore, it has been empirically proven that much of the land concentrated by criminal groups in large livestock holdings has subsequently transitioned to agribusiness plantations (FAO, 2018). In this sense, non-state armed groups and conflict directly facilitate CFR integration by expanding agricultural markets and pushing corporate assimilation in more of the countryside. This underlines the fact that CFR integration is a contingent process that can be accelerated by non-corporate actors, such as armed groups in Colombia. CFR integration in the country is slow through macro-economic policy, due to resistance from certain corporate national interests, but the conflict is undoubtedly integral to expanding the corporate sector in agriculture and rural spaces.

The ZRC model emerged in Colombia in response to the protests from coca growing campesino communities, due to the lack of guarantees over their right to land, the historic absence of agrarian reform and their existence in precarious/marginal zones. The fact that these groups pushed the Colombian state to adopt this model evidences the agency of the precarious campesino sector (cf. Zamosc, 1986). The endurance of the model and projects of alternative agriculture in the seven official zones, despite continuing violence and state abandonment, is testament to their resilience and resistance. Development in these zones has been impeded by a lack of financial backing, technical assistance and poor infrastructure provided by various Colombian governments. However, the assertion of campesino rights to land, inherent to the model, is radical in the Colombian context because it questions the historic and prevailing modes of regulation and regime of accumulation that have systematically marginalised campesinos, particularly those in areas without access to minimal state services.

The brief analysis of Colombia's regime of accumulation and mode of regulation has offered insight into the complex and uneven processes of CFR integration and resistance nationally. However, it is equally important to understand how things work at the local level if we are to develop an appreciation of the agricultural metabolic rift that CFR integration promotes (cf. Foster, 1999; Schneider & McMichael, 2010,

Clausen et al, 2015). This provides a more focused lens on material and epistemic development in the two ZRC case studies. These additional layers convey richer detail about the processes of integration and resistance to the CFR. Chapter 5 presents fieldwork from the ZRC Cabrera, Chapter 6 reports on the ZRC-VRC, while Chapter 7 brings this together through comparative analysis.

5 Hybrid Agriculture: Contingent Integration and Resistance within the CFR in the ZRC Cabrera

5.1 Introduction

Chapter 5 is the first case study chapter and introduces a site-specific analysis of the CFR to explore the dynamics of integration/resistance, the driving forces behind these processes, the impact they have on the differentiated campesino sector and the environment. Among other aspects, CFR integration denotes campesino use of industrial technologies/methods, participation in export markets and the economic dispossession of smallholder lands that weaken the campesino sector. Resistance to the CFR is explored through evaluation of different expressions of agroecology, along the agroecology transition (Gliessman, 2016), according to the eight agroecology drivers (Mier y Terán Giménez Cacho et al, 2018), and as social movement, science, and practice (Woodgate, 2015). This provides a more incisive account of diverse grassroots agroecological alternatives, as well as the potential obstacles before their more widespread application (Mier y Terán Giménez Cacho et al, 2018). This is undertaken using four dimensions of CFR integration and resistance: land tenure, technology & practice, agricultural markets and nutrition. Environmental feedback is considered in every dimension to bring nature back into firmer dialogue with socio-economic factors. Each dimension is ascribed five aspects to illustrate case specific modes of regulation that give shape to local expressions of the food regime, as well as the impact this has on people and place.

The chapter proceeds by characterising the biophysical characteristics of the ZRC Cabrera. It also offers a discussion of Cabrera's social makeup to understand the differentiated aspects of the peasantry, detailing family agricultural structures, social movement organisation and the legacies of campesino struggles for land access. This provides insight into the health of family agriculture, local organisational capacity to build agroecology as a social movement, as well as how current organisations compare with past movements that fought for agrarian change. The chapter then explores each of the four dimensions of CFR integration and resistance. The chapter finds both integration and resistance against the CFR, with the majority of farms visited displaying hybrid practices (a mix of both conventional and agroecological).

5.2 Cabrera: Physiographical Context

The ZRC Cabrera extends over 47,256 ha and is located at 3.9848° N, 74.4842° W, some 114 km south-southwest from Bogotá. It forms part of the Páramo[46] of Sumapaz, which is considered the most extensive páramo ecosystem in the world rich in natural resources, water, flora and fauna (ILSA et al, 2013). The Páramo is a highly diverse biome, home to 256 species of flora, of which 25 are endemic (ibid, p.59). The River Sumapaz runs directly through the municipality, which is considered to be one of the most important water sources in the country because it feeds into two main rivers- the Magdalena and Orinoco (ibid). Cabrera has ample access to water, due to the River Sumapaz, its numerous tributaries and streams. The municipality is in an equatorial region with monsoon and oceanic climates, situated between 1650m and 4000m above sea level. The average temperature varies slightly across its three plateaux but is between 15.5-16.3ºC for most of the year (ibid, p.56). The warm temperatures are a result of humid and warm air from the Amazon and Orinoquía regions in the east of the country. There are two wet seasons: March- May and September- November; and two dry seasons. The driest season runs from December-February and the less dry period occurs between June and August (ibid, p.57). These ecological conditions endow the area with excellent conditions for agriculture and make it one of the country's biodiversity hotspots.

Cabrera has plenty of land that is suitable for crop cultivation. The municipality has three main soil types: andisols (formed from volcanic ash), entisols (thin topsoils) and inceptisols (more developed soils with the beginnings of a B horizon). Cabrera has five different categories of land capability identified in the *Esquema de Ordenamiento Territorial* (EOT)[47], which are detailed in Table 5.1. The Páramo and Sub-Páramo land is primarily mountainous and situated above the Andean tree line (Alcaldía Municipal De Cabrera, 2008, p.72). Primary or secondary forest land has a mix of native and other trees (ibid, p.73). Intensive agricultural activity is forbidden in the Páramo, Sub-

[46] Paramó refers to tropical, montane ecosystems occurring above the continuous timberline but below the permanent snowline.

[47] This zoning plan is composed by municipal state authorities in communication with technical expertise, thus, it differs from the ZsRC *Plan de Desarrollo*, which has a more participative and bottom-up methodology.

Páramo, primary and secondary forest land, due to their location on mountainsides or slopes and the associated risk of soil erosion.

Table 5.1: Land suitability in Cabrera

Land Capability Categories	Area (in ha)	% of Total Area in Municipality	Main Activities
Páramo/ Sub-Páramo	9,091	20.46	Potatoes, dual purpose livestock
Primary/ Secondary Forest	14,422	32.46	Small-scale logging
Traditional Agriculture	5,705	12.85	Cultivation of fruit, beans, peas, maize, potatoes and other vegetables, extensive dairy cattle husbandry
Traditional Agriculture with Special Management	4,546	10.27	Pulses, vegetables, livestock
Intensive & Mechanised Agriculture	2,769	6.23	Cultivation of fruit, beans, peas, maize, potatoes and other vegetables, intensive cattle rearing

Source: Alcaldía Municipal De Cabrera, Esquema de Ordenamiento Territorial, 2008.

Nevertheless, intensive farming of potatoes has taken place in both the Páramo/Sub-Páramo and primary/secondary forest land, a lot of which has now transitioned towards dual purpose livestock. The traditional agricultural area has highly acidic soil and is devoted to the production of fruit, such as lulo (*Solanum quitoense*), tree tomato (*Solanum betaceum*), raspberry (*Rubus idaeus*), banana passionfruit (*Passiflora tripartita and P. tarminiana*), passion fruit (*Passiflora edulis*), as well as beans, peas, maize, potatoes and other vegetables. Normande is the most common cattle breed in this area. The area zoned for 'Traditional Agriculture with Special Management' requires particular management due to the acidity of its soil. Mechanised agriculture is prohibited in both 'Traditional Agriculture' zones and so is designated its own category. All the aforementioned crops are grown here in addition to intensive cattle rearing (EOT, 2008, p.77). On the whole, the majority of the municipality of Cabrera is farmed in line with land capability, which suggests campesinos have stuck to institutionally designed zoning plans such as the EOT (as outlined in Table 5.1). This

is supported by the fact that the municipality's agricultural frontier is one of the most stable among the seven legally recognised ZsRC (FAO, 2018), the reasons for which are discussed in greater detail in Section 5.9.

5.3 Social Characteristics

The ZRC Cabrera is a vast space that has experienced significant migrant flows over time, and these have impacted the structures of campesino farming but also underwritten the differentiation that exists among peasants in the area. Its 47,256 ha are divided among 16 rural wards (see Table 5.2). In 2010, the municipality had a total population of 5377, with 76.6% living in 1088 rural households and 23.4% in the urban zone (ILSA et al, 2013, p.91). The 2010 census established a decline in the rural population, whilst there was a slight increase in the urban one (ibid, p.92). A primary reason is conflict related displacement (ibid, p.93), which has forced the younger population into urban areas. This rural to urban migration was anecdotally supported by residents, as they reiterated the damage to Cabrera's social fabric inflicted by the conflict.

Table 5.2: Cabrera's 16 rural wards and their respective areas

Rural Ward	Area (ha)
Pueblo Viejo	2,453.21
Quebradanegra	2,898.71
San Isidro	1,840.31
Santa Lucía	2,398.25
Santa Marta	3,066.85
Santa Rita	5,442.91
Alto Ariari	2,699.00
Bajo Ariari	999.27
Canadá	2,849.80
Hoyerías	2,849.80
La Playa	2,493.60
Las Águilas	7,127.00
Nuñez	3,298.85
Paquiló	2,671.42
Peñas Blancas	3,373.37

Rural Ward	Area (ha)
La Cascada	793.54
Total	**47,256.05**

Source: ILSA et al, 2013, p.47.

Nevertheless, Cabrera still has a diverse population in terms of age, as it had a significantly young population in 2011 (see Table 5.3)- close to 50% of inhabitants were aged 25 or less. One notable feature of the municipal population age structure is the significant gap in the 36-45-year category. One might speculate that the conflict particularly impacted this generation of adults, resulting in higher levels of urban migration, as they would have grown up during the height of the Colombian civil war in the late 1980s and 1990s.[48] In 2015, the *Centro Latinoamericano para el Desarrollo Rural* (RIMISP) stated that just less than 25% of Colombia's rural population was aged 14-28. Exact data for this age bracket is not available for Cabrera but it is likely to be similar, as the population aged 13-25 years accounts for 25% of the municipal total (see Table 5.3). In this sense, the population structure in Cabrera is representative of the country at large. In 2010, just under 30% of Cabrera's population was employed in agriculture, whilst 35% was in education. This reveals diverse inter-generational involvement in farming, which is an imperative source of labour for smallholder farmers (Acevedo-Osorio & Martínez-Collazos, 2016).

Table 5.3: Age Structure of Cabreran Population

Age range	Percentage of population
0-5 years	8%
6-12 years	16%
13-18 years	15%
19-25 years	10%
26-35 years	12%

[48] There is no available data on the number of deaths or homicides caused by the conflict in Cabrera.

Age range	Percentage of population
36-45 years	7%
45-55 years	10%
56-65 years	11%
Over 66 years	11%
Total	100%

Source: ILSA et al., 2013, p.93.

5.3.1 Family Agriculture in the ZRC Cabrera

According to Zamosc's (1986) historical categorisation of Colombian peasants, campesinos in the ZRC Cabrera traditionally belonged to the stable campesinado in Cundinamarca. This stable peasantry aspired to achieve formal recognition of their land ownership and consolidate their existing access to some state services and credit. Despite living in Cundinamarca, identified as a department home to more settled petty-commodity producing campesinos (ibid), the *colono* campesinos who first arrived in Cabrera were more akin to precarious peasantry, as they settled in marginal mountainous territories. Over time, these precarious peasants became a more 'consolidated' community, as it transitioned towards petty-commodity production oriented around family agriculture, i.e. the family provides the majority of labour and generally food is produced for both subsistence and sale to regional markets. Given the dated nature of Zamosc's work it is unsurprising that new class categories have emerged in Cabrera, which Akram-Lodhi and Kay (2010) shed light on in their global analysis of the peasantry. They note the existence of peasants that are capitalist farmers, as they farm using industrial methods almost exclusively for export markets and not for subsistence. Numerous families in Cabrera are transitioning towards export-production and more capitalist modes of farming by sacrificing subsistence production. Cabrera exemplifies the fluidity that exists between peasant classes and also the need to engage with Zamosc's categories using a case study approach that caters for the emergence of new class categories, as well as inconsistencies in the original analysis.

Essential to family agriculture is the possibility of generational renewal, which is possible in Cabrera due to its young population. Age and employment statistics, as well as observation in fieldwork, show this is taking place in numerous cases. On most farms younger generations work with parents on a range of tasks, learning whilst contributing their labour. The ZRC Cabrera's Sustainable Development Plan (PDS) also confirms that there is 'continuity in population permanence', which provides social stability and continuity in agricultural practice (ILSA et al, 2013, p.94) but generational renewal nevertheless remains fragile. Interviewee 1 complained 'people do not teach their children the values of the countryside or put them to work on the farm', instead, 'they prepare them to leave'. Countryside values are a discursive construction, the content of which varies depending on different peasant groups, i.e. those who own land, rent or are landless. For these diverse groups life in the countryside can vary significantly, as will be discussed throughout the chapter. For instance, Interviewee 1 is a petty-commodity producer who suggests that those in similar positions to him are not integrating their children in farm work, thus, the next generation is not learning farming from parents. Although this is the reflection of a single petty-comoddity producer, interview data also reveals that Cabrera has numerous cases of young people moving towards professional careers related to the countryside and farming. They are doing so by moving away to cities that have tertiary education facilities and so leaving their family farms behind. This speaks of a slow generational move away from petty-commodity production and an emerging knowledge rift.

New and younger generations are essential to smallholder farming, given the limited pool of resources in rural areas (Wang, 2014). Interviewee 2 also noted that her daughter was simply not interested in farming but that she did want to study a subject related to the countryside in higher education. A rejection of farming but embracing of professions related to the countryside was frequent among youth who had economic possibilities and educational aspirations. A perception of limited economic prospects associated with agriculture, partly explains the move away from farming among the younger generations. This is equally informative about the experience of older campesinos who have struggled for the extension of state services to stabilise their position in these *colono* territories, as many continue to experience the pressures of marginalisation.

Women are also integral to the running of family farms and make up for labour shortfalls, therefore, they should be considered as a distinct analytical category of peasant differentiation (cf. Akram-Lodhi & Kay, 2010). In Cabrera, their principle task is cooking for workers, both familial and hired day labourers. In Colombia, daily farm labour wages are usually inclusive of meals, hence, given local cultural norms around food preparation, female labour is essential to the remuneration of hired labour. Women also participate in agricultural tasks, e.g. fruit picking, feeding and rearing chickens, pigs and milking cows. Many homes in the ZRC Cabrera also specialise in the production and sale of cheese, which is undertaken by women. This is in addition to their domestic roles such as cleaning and child rearing. Women are essential to the day to day running of farms in Cabrera.

Despite the centrality of women to the farms in the ZRC Cabrera, their labour is neither fully recognised nor remunerated. The PDS suggests the vast majority of women are housewives in the ZRC Cabrera (ILSA et al, 2013, p.94), however, their productive labour is hidden within domestic work. This is further evident by the fact that they do not receive equal wages to men- in all but two of the municipality's 16 wards women are paid less than men (ibid, p.187). The distribution of responsibilities by gender is more accurately displayed in farm administration: both genders actively administered farms in 58% of cases, whilst a mere 6% of women were sole administrators (ibid, p.216).[49] Gender discrimination is further conveyed in land titling and renting, as land titles are solely made in the name of men in 58% of cases, whilst only 12% of titles are solely owned by women (ibid, p.214); joint gender land titles fare better at 29%. The category of 'everyday resistances' (cf. Johansson & Vinthagen, 2014) is particularly relevant in the analysis of women's labour because so much of their contribution to the daily running of farms is not recognised by society or themselves. The chapter explores women's everyday resistance and how expressions of resistance may differ according to gender.

5.3.2 Social Movement Organisation

Women's differentiated resistance to CFR incorporation is evident through gender specific social organisations in Cabrera that aim to strengthen the role of women in

[49] The questionnaires carried out sampled 11% of the total ZRC population (ILSA et al, 2013, p.23).

their homes and their communities. In Cabrera, 28 different women's organisations were set up to coincide with the beginning of the ZRC pilot project. Women are integral members of social movements and organisations in Cabrera, representing 41% of all people affiliated to organisations (*Movimiento Regional por la Tierra*, 2015, p.19). They focussed on the production of vegetables, natural soaps, dairy items and chicken rearing. Today only four of the 28 organisations remain; due to a lack of funding after the end of the pilot project (see Section 4.7 for more on the ZRC pilot project). Other plans have also been trialled more recently in the area, such as a joint ANZORC (the National Association of Peasant Reserve Zones)/FAO project in 2016 that provided materials for plastic greenhouses and seeds for women to grow vegetables and herbs for their families.

ORGANICAMPO in Santa Marta and EL PROGRESO in Alto Ariari are two outstanding examples of women's organisations that represent campesino agency and resistance. ORGANICAMPO grows agroecological fruit and vegetables on a small-scale, primarily in-home gardens and greenhouses, which are then sold on a weekly basis in the municipality's urban centre. Similarly, EL PROGRESO aims to recuperate landrace seeds by growing more organic varieties in home gardens, however, they specialise in producing and selling organic soaps and cleaning items rather than food. This thesis focuses on the experiences of ORGANICAMPO, as this organisation's main objective is the production and sale of agroecological produce (ORGANICAMPO is discussed in greater detail in Section 5.7.5). These associations aim to reinvigorate subsistence production by encouraging women to become food producers. This challenges the gender divide that places women in the domestic sphere by supporting their role as producers and helping them to gain economic remuneration. The extra income could also prevent women pursuing informal jobs or urban migration, helping to keep them on their land and practising agriculture, which avoids the development of a metabolic rift (cf. Foster, 1999). While this organisation does not represent the social agency of all women in the ZRC Cabrera, it does illustrate how support for women producers can strengthen family farms, small-scale agriculture and solidarity in communities.

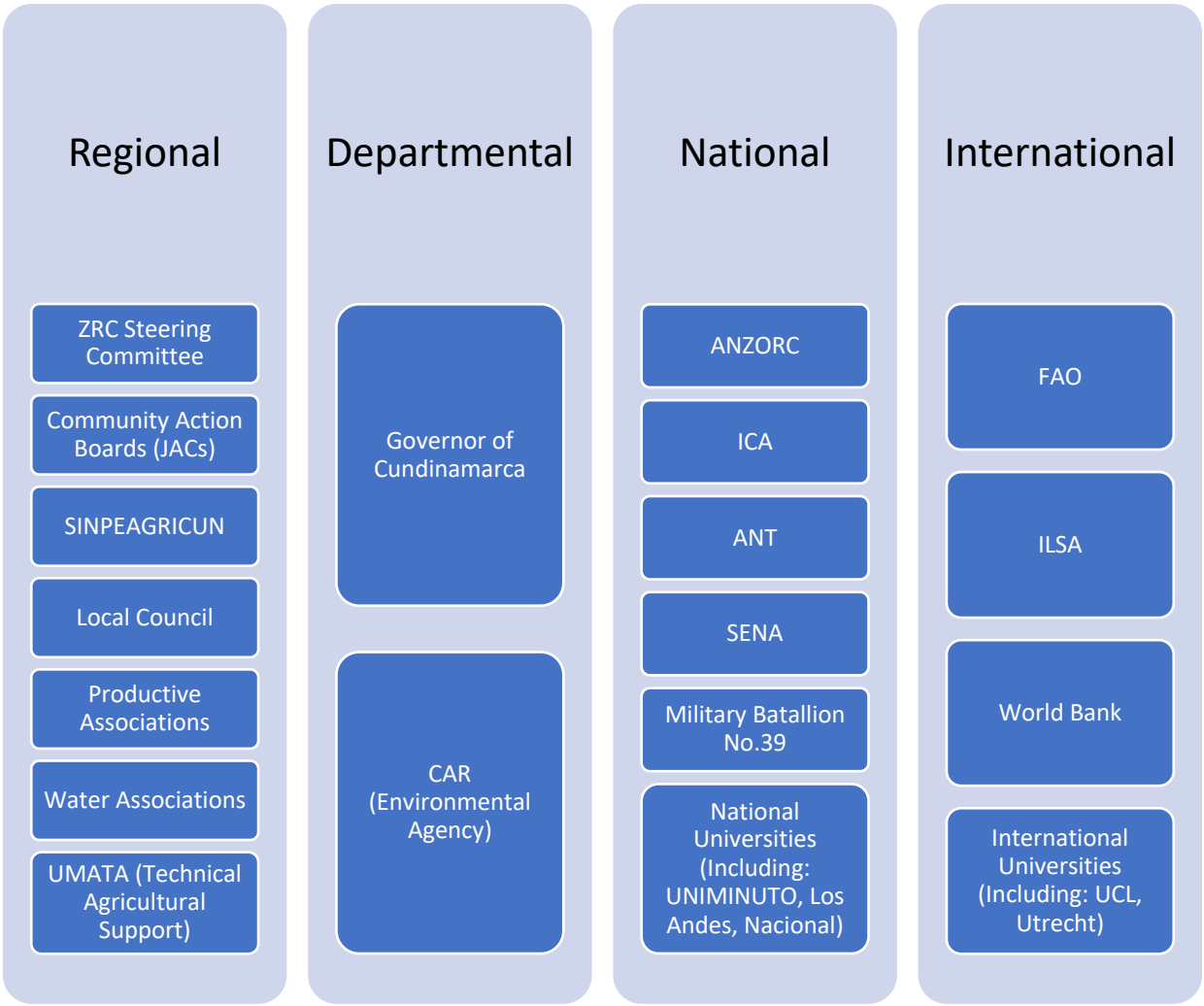
Social movement organisations more broadly have been fundamental to running the ZRC. Cabrera's ZRC Steering Committee was established on 22nd October 2013 and is composed of representatives from ten distinct associations: Association of *Juntas*

de Acción Comunal or Community Action Groups (*Asojuntas*)[51]; the Women's Association (made up of four smaller associations); the Bean Growers Association; the Livestock Association; the Environmental Goods and Services Association; the Elderly Peoples Association; the Alisos Collective (youth group); the Teachers Association; the Fruit Growers Association (made up of three small associations); and the Smallholder Farmers Union of Cundinamarca (SINPEAGRICUN). Affiliates range from 20-78 years-of-age, reflecting broad generational involvement.

The ZRC steering committee has six key policies: 1) to fully operationalise and develop Cabrera's dairy factory 2) to build a central warehouse for farmers to deposit and sell their produce 3) to construct an abattoir 4) to establish a cultural centre for the collection of local histories and seeds 5) to provide alternative waste management 6) to increase women's involvement through public policy (Interviewee 6, 2017- one of the leading members of the ZRC Steering Committee in Cabrera). These targets illustrate the Committee's economic initiatives and infrastructure plans, alongside socio-cultural and ecological priorities. They evidence the commitment of the ZRC Steering Committee to provide infrastructure that stimulates petty-commodity production (particularly livestock holding) but with the aim of promoting some agroecological principles, such as seed saving. The ZRC Steering Committee has regional, departmental, national and international institutional links that have been mobilised to finance some of these projects (see Figure 5.1).

[51] Cabrera has 22 *Juntas de Acción Communal* (JAC) across the municipality. These are civil organisations involved in the management and upkeep of communities. They are tasked with road repairs and solving ward-level issues such as inadequate water access.

Figure 5.1: Primary active organisation and associated groups working more loosely in ZRC Cabrera



Source: Author's Elaboration.

Although the ZRC steering committee has broad links within Cabrera and also outside of the area, its organisational capacity is limited by the fact that its ten, constituent associations do not meet very frequently. In fact, most of the tasks associated with the ZRC are overseen by a small nucleus of five people, who also liaise most closely with ANZORC- the umbrella organisation that links ZsRC nationally. This could reflect a certain level of disaffection with the ZRC model among the wider populace, which is rooted in negative perceptions of the pilot project that took place in the 2000s. Many residents argue that local organisations involved in the pilot project corruptly embezzled money, leaving little material gain for the area (Acevedo-Osorio & Angarita, 2014). The organisation most associated with this accusation is SINPEAGRICUN, which now has a seriously reduced function and social reach.

The new Steering Committee has renewed political capital, as most of its constituent associations did not participate in the pilot project. In fact, the horizontal and pluralistic organisational structure of the Steering Committee differs significantly from the much narrower and less inclusive approach taken during the pilot project, which was mainly led and administered by SINPEAGRICUN. The Steering Committee has a more democratic structure than any of its constituent organisations. This underlines the fact that there are competing interests among campesino communities, which political unity around shared ecological relations can paper over. Moreover, it also suggests that not all campesinos identify with the ZRC model, as some feel they have not benefited from it. This emphasises the importance of interrogating how political organisation attached to the ZRC model engages with the wider community, as this shapes the modes of resistance adopted by different campesinos and how far they feel invested in the ZRC model as an institution that bolsters their socio-economic position. It is for this reason that the new ZRC Steering Committee in Cabrera broadened its structure to represent various different producer organisations, age groups and genders.

Despite the organisational changes that have taken place in the ZRC Steering Committee, the PDS concludes that social organisation in the municipality is weak (ILSA et al, 2013, p.151). This is based on the Organisational Capacity Index (Índice de Capacidad Organizacional- ICO), which was designed during the ZRC pilot project.[52] The ICO result is based on the fact that only 28% of all the ZRC's inhabitants actively participate in any kind of economic, social or political organisation (ibid, p.148). Furthermore, the PDS states that the total number of active socio-economic civil organisations fell from 62 in 1994 to 15 in 2010 (ibid, p.142). Echoing the perceptions associated with SINPEAGRICUN, residents reported that producer associations accumulated funds during the ZRC pilot project, which were embezzled by their

[52] The ICO methodology is calculated by governmental institutions through 'discussion and dialogue with the local community' (World Bank, 2003, p.6). The methodology assesses various categories including human capital, leadership capacity, infrastructure, accountancy experience, financial sustainability, project management capacity, planning and evaluation capacity, mediatic skills, ability to establish links with external institutions and organisations (ibid, pp.14-17).

respective leaders, after which the organisations were abandoned. This experience 'generated distrust, very little collective action [or] genuine organisation among the population', which 'led to the slow disappearance of organisations and of resources' (Acevedo-Osorio & Angarita, 2014, p.13). The lack of perceived gain and poor local organisational capacity building during the pilot project have had negative consequences for social organisation in Cabrera. Although, the World Bank (2004) report found the ZRC model to be sustainable, Cabrera's experience differently highlights the need for greater assistance in building democratic local organisations.

Although Cabrera's organisational capacities are characterised as weak by the PDS, they are recovering from a period of debilitation. This is evident from the fact that an organisation affiliated to the Steering Committee has gained and administered big public grants, with which it successfully constructed a dairy plant. Furthermore, the Steering Committee also successfully organised a municipal-wide campaign for a consultation in response to the construction of a hydroelectric dam in Cabrera (Chohan, 2017; FAO, 2018), highlighting its grassroots reach and organisational capacity. In addition to this there are still a number of active social organisations (see Table 5.4 for a summary). Table 5.4 reflects the organisational and social re-strengthening process that diverse campesino groups are leading in the municipality, as they cooperate around the provision of water, gender, particular crops and livestock.

Table 5.4: Current social, economic and political organisations in Cabrera

Name	Organisational Profile
Acueducto Regional de Cabrera	Community group to improve access to water
Asociación de Subscriptores del Servicio de Acueducto de la Vereda Peñas Blancas	Community group to improve access to water in Peñas Blancas
Asociación de Usuarios del Acueducto Rural de la Vereda Santa Lucía	Community group to improve access to water in Santa Lucía
Asociación de Usuarios del Distrito de Adecuación de Tierras de Pequeña Irrigación Vereda Santa Marta	Association dealing with improved access to small scale irrigation in Santa Marta

Name	Organisational Profile
Asociación de Bienes y Servicios Agropecuarios y Ambientales de Cabrera	Community association improving market access for meat-based product and environmentally friendly activities
Empresa Asociativa Gualcalá	Community group working to better the production and commercialisation of agricultural goods from producer families in Gualcalá
El Progreso	Women's organisation producing organic food and cleaning products in Alto Ariari
Asociación de Mujeres Campesinas de Cabrera	Women's organisation in Cabrera
Organicampo	Women's organisation representing agroecological vegetable and fruit producers in Santa Marta
Asociación de Frijoleros del Sumapaz	Association of bean growers
SINPEAGRICUN	Union of smallholders in Cundinamarca working to guarantee campesino human rights
Asociación de Productores Agropecuarios de la Vereda Santa Marta	Fruit producer's association
Asofruver	Association of fruit growers
Asociación de Ganaderos de Cabrera	Association of small and medium cattle owners, producers of milk and dairy products, which aims to implement environmentally sustainable productive systems
Asomorganica	Association of organic raspberry growers

Sources: Elaborated from the following sources- ILSA et al, 2013, pp.144-45; Vazquez Zea, 2017, pp.68-89; Unidad Administrativa Especial de Organizaciones Solidarias, 2017, p.2; ZRC Cabrera Steering Committee.

5.4 Historic Campesino Resistance and New Legacies

The contemporary 'consolidated' peasantry's resistance in Cabrera is organised around improving market conditions for certain crops and gaining financial assistance through associations- generally speaking to improve the coverage of state financial

and technical assistance (cf. Zamosc, 1986). This settled campesino community has changed from its earlier more precarious condition, since the earliest oppositional movements were led by primarily landless peasants in the area. This transition partly took place due to minor agrarian reform that took place in the 1920s, which was led by landless *colono* campesinos. In 1916, when the entire municipality of Cabrera formed part of the Hacienda Sumapaz, Eufrosina Molina led a campesino movement against land titling for absentee owners (*latifundios)* of very large agricultural estates (*haciendas*) (ILSA et al, 2013, p.42). Such landowners had forced residents to pay taxes and some sexually exploited female campesinos as a form of payment (Acevedo-Osorio & Angarita, 2014). These conditions and unequal tenancy contributed to the revolt.

Shortly after this uprising, iconic campesino leaders Juan de la Cruz Varela and Erasmo Valencia established the *Colonia Agrícola* or the Agricultural Colony of Sumapaz in the 1930s. These were campesino occupations of *haciendas*, calling for state scrutiny of lands owned by *latifundios* who illegally subsumed virgin state lands (LeGrande, 1984, p.40). Consequently, the state forced landowners to declare the size of their properties, facilitating the delineation between private property and virgin state lands. LeGrande argues that the *Colonia Agrícola* of Sumapaz was the most important in the country, as it articulated peasant demands on a scale previously unseen (ibid, p.178). The campesino movement of the 1920s demonstrated the ability of landless peasants to push the Colombian state into revising aspects of the mode of regulation.

Campesino protest and agency in the region continued to mobilise for land reform. By 1928, the Agrarian Movement of Alto Sumapaz and Cabrera extended west towards Tolima, covering a greater area and enlisting more people (Montoya, 2016). The state undertook incipient land titling in 1936 through Law 200, as a consequence of the colony and the wider campesino movement. De la Cruz Varela and his supporters demonstrated the illegality of large landholdings but also the need for a strong and fair tenure system that facilitated access to land for precarious campesinos. As a result, Cabrera and its surrounding areas experienced some land reform. The movement from the 1920s and 30s also inspired later struggles against the concentration of land by five *latifundistas* in the 1950s (Romero, 2017, p.53). In light of this history, Cabrera and Sumapaz are symbolic of how precarious campesinos pushed for change in agrarian structures to stabilise their socio-economic positions as food producers and

against marginalisation: in short, their aim to achieve the status of 'consolidated' petty-commodity producers (cf. Zamosc, 1986). Consequently, land is more equally distributed in the municipality than in other regions of the country because land concentration was dismantled through community resistance supported by the state. The ZRC initiative is a modern-day legacy of this mobilisation and organisation (ILSA et al, 2013, p.42), as it aims to widen the services offered by the state to this region.

Cabrera's PDS explicitly recognises the ZRC model as a result of the historic legacy of campesino mobilisation, as it refers to the model 'as a break against *latifundios* particularly in virgin territories and areas with special environmental status' (ibid, p.32). The ZRC model is a modern permutation of previous movements, as it provides a safeguard against renewed land accumulation. Cabrera's PDS identifies the continuation of land concentration in the country as a potential threat and so seeks to combat the 'decomposition of the campesino economy, due to the effects of the commercial opening that began in the 1990s' (ibid, p.48), in other words it counters the CFR agrarian structures that push out campesino landholding. In this sense, ZRC status is discursively framed as a protective mechanism for precarious campesinos and more stable petty-commodity producers, making it a model that resists CFR integration.

5.5 CFR Dimensions and Place-Based Aspects in the ZRC Cabrera

The following sections assess processes of integration within the global CFR in the ZRC Cabrera and how effectively different agroecological expressions have presented resistance. The chapter explores Cabrera's process of integration and resistance through four dimensions. Each dimension has five aspects, which illustrate place-specific characteristics that have given shape to the local mode of regulation and regime of accumulation.

Table 5.5: Dimensions and aspects for the analysis of CFR integration and resistance in Cabrera

Land Tenure	Technology and Practice	Agricultural Markets	Nutrition
•Violent or coercive land dispossession •Restricted Land Concentration •Weak land titling regime •Problematic Land Restitution •Land Subdivision	•Chemical Inputs •Crop Specialisation and Intensification •Livestock Intensification •Polyculture and Crop Rotation •Agroecological Composts and Fertilisers	•The Weakened Market Square •Export-oriented Production •Deregulated Regional Markets •Intermediaries •Alternative Food Networks: Smallholder Associations	•Food Purchase over Cultivation •Consumption of fruit and vegetables •Consumption of empty calories •Consumption of chemically contaminated foods •Home Gardens

Source: Author's elaboration

5.6 Land Tenure

Cabrera's land-owning system is in many respects a national anomaly, as it is predominantly based on smallholder ownership. The agrarian history in this region slightly differs from Colombia's widespread violent land dispossession after the 1960s. This is reflected in low levels of land concentration, majority smallholder landownership and a weak but existent land titling regime. Together this underlines the fact that it is possible to construct alternatives to widespread land concentration in Colombia. Nevertheless, the landowning regime remains weakened by persisting poverty and a splintered campesino economy, which facilitates global CFR integration in the long-term by making smallholder agriculture less economically viable.

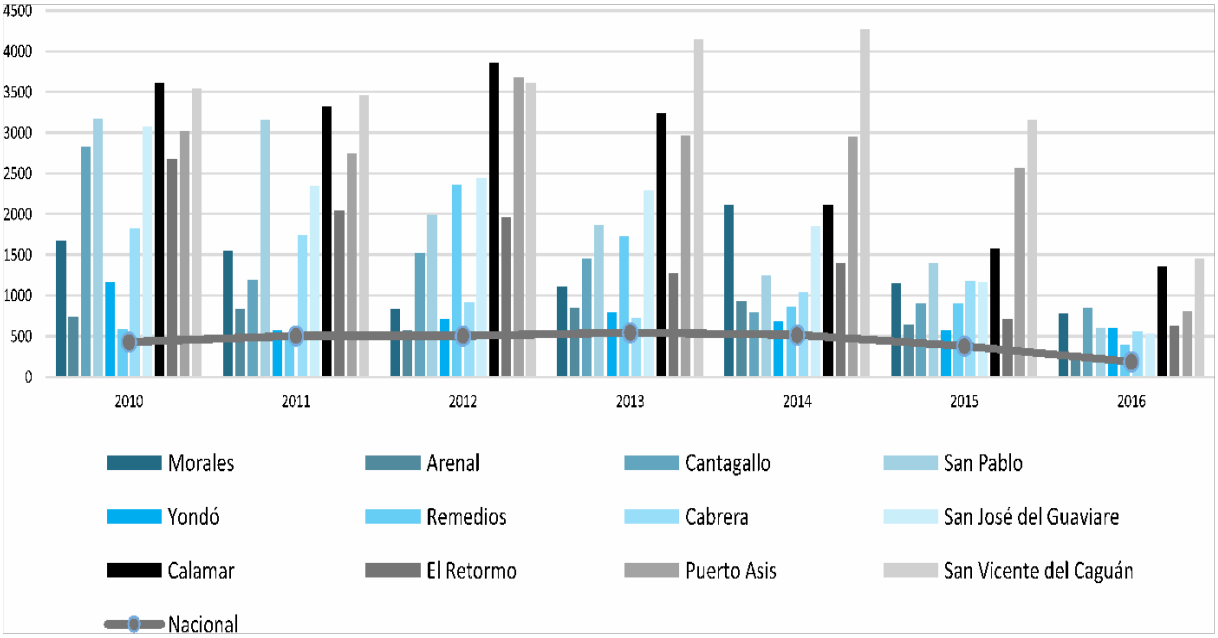
5.6.1 Violent or Coercive Land Dispossession

As argued in Chapter 4, the armed conflict in Colombia has worked in parallel with the CFR and neoliberalisation of the countryside by dispossessing campesinos of land (Thomson, 2011), which in some cases is then converted to agribusiness monocrop plantations. The conflict has violently dismantled diverse campesino communities, economies and displaced people from their land, which has directly impacted the petty-commodity production and the reproduction of knowledge.

In the ZRC Cabrera smallholder land access has been preserved, however, contributing to a more settled land structure, due to the fact that conflict has been more

contained and clandestine in recent years. This is evident through homicide rates in the area, which are below the national average (FAO, 2018, p.87). Figure 5.2. indicates that forced displacement from land is low compared to other ZsRC in Colombia. However, it is still above the national average, which is indicated by the grey line, and the departmental average (ibid)- the latter is not depicted on the graph. Lower levels of land displacement have contributed to a more stable agricultural frontier, as Cabrera has the lowest levels of virgin forest deforestation among the seven established ZsRC (ibid).

Figure 5.2: Forced Displacement (2010-2016): Comparison of Rates in ZRC Municipalities with the National Average



Source: FAO, 2018, p.95.

Although levels of conflict are lower now, Cabrera has witnessed violence, given more than 10% of the total population are victims of the conflict (Polania, 2016, p.6). For instance, armed actors targeted and displaced members of SINPEAGRICUN in the 1990s and during President Uribe-Vélez's tenure campesinos were also accused of collaborating with insurgents (Acevedo-Osorio & Angarita, 2014, pp.12-13). Cabrera also suffered from a discursive strategy against the ZRC model, as it was also stigmatised as a FARC-EP stronghold (see Section 4.5 for more on the link between ZsRC and the FARC-EP), which resulted in financial abandonment from the state. The strength of conflict in the area is further underlined by the fact that Cabrera's Mayor Gilberto Cruz Amaya was killed by FARC-EP in 2003 while in office, during a period

of particularly acute security threats. Subsequently, however, forced displacement has declined, resulting in improved and more secure land access.

5.6.2 Restricted Land Concentration

In addition to lower levels of violence, land distribution and concentration levels in Cabrera have been successfully controlled by the ZRC model and its UAF zoning system (see Section 4.6 for more on the UAF system). The public assembly held in the early 2000s to discuss and ratify the UAF system for Cabrera passed Resolution 46, which set the size of a single UAF at 18 ha. It noted that each family should receive two UAF- one for agriculture and another for conservation, amounting to a total of 36 ha per family (ILSA et al, 2013, p.48). The community and public institutions decided that one UAF should be kept for conservation in line with the principles of the ZRC model, which include preserving the agricultural frontier.

Land concentration has been restricted in the ZRC Cabrera (see Table 5.6), as 86% of farms in the municipality own less than 20 ha, which is well below the designated two UAF. Interviews also suggested that a majority of families own less land than is considered necessary to earn two minimum wages, which is one UAF in Cabrera (the equivalent of 18 ha). Only 20% of farms have more than one UAF, therefore, less than a quarter of the farms make two minimum monthly wages from their land. The four farms in excess of 36 ha are in the region of 100 ha each, underlining how effectively Resolution 46 and the ZRC model have maintained smallholder landowning structures (ibid, p.204). The large farms all predate assumption of ZRC status, which raises questions about how the model manages pre-existing large holdings, as a failure to deal with them undermines the UAF system.

Table 5.6: Structure of land holding in Cabrera in 2011

Size of landholdings (ha)	Percentage of overall ZRC area
Less than 5 ha	38%
6-10 ha	31%
11-15 ha	11%
16-20 ha	6%
21-25 ha	9%
36 ha +	5%

Source: ILSA et al, 2013, p.203.

5.6.3 Weak Land Titling Regime

Although land concentration is limited in the ZRC, campesino ownership of land is by no means guaranteed, as land tenure security remains weak in Cabrera. Although 89% of the municipality has some form of land documentation, only 34% of residents have a complete set of formal title deeds (ILSA et al, 2013, p.211). Most interview participants confirmed this, as they were only in possession of letters of sale, which do not equate to full certificates of ownership. Such conditions weaken ownership rights and open up the possibility of illegal land re-possession, as well as increasing the possibility of deforestation (cf. Agarwal et al, 2014).

The ZRC pilot project did result in some land titling in the ZRC, as state institutions attempted to improve security of tenure. For instance, in 2004 the Colombian Rural Development Institute (INCODER – predecessor of the ANT) carried out four land purchases and redistributions. These included the following farms located in different wards across the municipality: Gualcalá, Albania, San Fernando and San Jorge. The first three totalled 100 ha and benefited 25 families, whilst the final project delivered a further 95 ha to 19 displaced families (ibid, p.213). INCODER also titled 19.23 ha of virgin territory during 2003-2008 and in 2009 28 families were granted an average of 2.93 ha each, followed by the receipt of 2.3 ha by another 23 families in 2010 (ibid, pp. 212-213). Thus, from 2004-2009, state institutions redistributed and titled a total of 349.17 ha in the municipality. This demonstrates the potential of the ZRC model to assist campesino communities in strengthening their property rights through the provision of land and titles, when it is endowed with sufficient resources. The redistribution and titling of land would ensure greater socio-economic security, protection against forced displacement and land re-possession, therefore, fortifying petty-commodity production but this could also move more semi-proletarianised campesinos towards food production, as they could access credit and productive projects more readily.

5.6.4 Problematic Land Restitution

State redistribution and titling schemes, however, have encountered serious obstacles and difficulties in Cabrera. Looking more closely at processes of land restitution reveals the complexities that exist for both the state and beneficiaries in their efforts to gain equitable land access. The San Jorge farm is a particularly interesting case. The *Unidad Restitución de Tierras* or Land Restitution Unit chose this site for victims

of violent dispossession. The farm originally belonged to Jorge Rojas, who specialised in Normande dairy cattle. Before the 95-ha farm was redistributed among landless families, it was one of the biggest landholdings in Cabrera. It was also one of the primary producers of cattle in the area for decades. Interviewee 28 recognised this farm as one of the most highly productive and best managed farms in Cabrera, noting that Rojas had installed a drainage system that helped the pasture flourish. The farm, however, was and still is poorly serviced by roads making market access difficult. In the past, this was overcome by the fact that its produce- cattle- could move from farm to market under their own steam.

It is important to note that Rojas sold his farm voluntarily: there was no forced expropriation. This reflects a weakness of the ZRC model, which has little legal authority for redistributing large landholdings unless landowners are willing to sell. Numerous scholars have argued that similar attempts at market-led-land reform have failed to break up large holdings in Colombia (Fajardo, 2000; Machado et al, 1999; Borras, 2003; Deininger & Lavadenz, 2004), which raises concerns about the sustainability of current redistributive mechanisms available to ZsRC (see Section 4.5). Without stronger laws and relevant legal and political mechanisms, it is questionable how the ZRC model will ensure equitable zoning in territories with pre-existing unequal land structures.

The San Jorge case also reveals other difficulties in ensuring campesinos receive sufficient land, as a number of complications arose after land redistribution. INCODER intended to grant parcels of land to 19 families but this was reduced to 12 because parts of the estate were left in conservation (some 25-30 ha). This meant each family was allotted approximately 5.5-6 ha of land (Interviewee 27), which represents less than one third of a UAF. The head of the General Comptroller's office or *Contraloría General*, Andres Bernal, found it 'worrying' that 'beneficiaries of agrarian reform are not even receiving one UAF' (Interview, 2017). He identified this as a significant institutional error that hindered fair and sustainable land redistribution for campesinos. Furthermore, this underlines the fact that the UAF guidelines have no binding legal authority for state institutions tasked with land restitution and redistribution. This is illustrative of the continuation of a siloed approach to rural reform, as well as the poor integration of the ZRC model and its constituent parts (PDS or UAF system) in the wider institutional framework managing land use and zoning.

Moreover, beneficiaries of the San Jorge redistribution programme disputed the quality and practicality of the land that was given to them. Interviewee 27, one of the original land restitution beneficiaries who is currently living and working on the farm, noted that there is poor road access that makes the sale of agricultural produce very difficult. This is because there is only a single dirt track that leads to the farm, which becomes impassable when it rains. The lack of infrastructural development of tertiary roads has been a significant obstacle for successful land restitution (see Section 4.5). Although the San Jorge beneficiaries were supported by state institutions in their first year- they were given three cows each, assured food provision for a year, housing and a machine to process corn (Interviewee 27)- infrastructure development did not follow, i.e. farms were not connected to the local road network to ensure the viability of smallholder farming. This undermined the redistribution programmes and hindered the long-term development of commercial activity for petty-commodity producers.

The majority of beneficiaries also complained that the redistributed land was not fit for production because of waterlogged conditions (Polania, 2016). Interviewee 27 and another displaced victim from Cabrera seeking allocation of land in San Jorge (Interviewee 28) argued that 11 complainants manipulated the system. Interviewees 27 and 28 suggest that 11 beneficiary families reported the land as unproductive and demanded to be relocated to new sites in another department, whilst still maintaining dominion over the land that was given to them in San Jorge. They suggested that after these 11 families were relocated, they rented out their San Jorge land, as it was still registered in their names. Informational asymmetries between different agencies working on land restitution could explain the loophole that allowed this to take place. The lack of communication between the agencies working on land restitution facilitates manipulation of the system, evidenced by beneficiaries owning multiple lots of restituted lands in different departments (Polania, 2016). San Jorge unveils the challenges that exist around equitable land restitution, as bureaucratic loopholes and informational disconnects between state institutions impede effective redistribution (see Section 4.5 for more information on the national land restitution situation).

Discussions around San Jorge are indicative of an insider vs. outsider discourse developing in the ZRC Cabrera, another criterion that differentiates Cabrera's peasantry and splits the campesino community- regional differences. This is because the majority of the beneficiaries were from outside the municipality, as they were

victims of the conflict that required relocation due to ongoing threats in their places of origin. Interviewee 28 claimed that people from Cabrera should be given priority in land restitution because they understand local ecosystem dynamics and have better knowledge of how to work the land sustainably than those from elsewhere. An INCODER document, summarising the presentation of the PDS to the local community, also recorded this same sentiment as far back as 2012. A man from the ward of Quebrada Negra in Cabrera argued, 'we who need land don't have it, but they give land to people from other departments…but they don't understand it' (INCODER, 2012, p.8).

This perception of outsiders not knowing how to work the land did not hold true in all cases, however, as Interviewee 27 fruitfully farmed his plot despite not being from Cabrera. The above claims could be reflective of a lack of farming knowledge related to those conditions among some of the beneficiaries coming from outside the municipality, but it is equally possible that these opinions illustrate the frustrations of locals at the situation of insufficient land access. The insider vs outsider conflict reveals the tensions that can occur when adequate land is not redistributed among those who already live in a given area, as well as the tensions that arise among petty-commodity producers/landed and landless campesinos. This reflects clear class differences among the campesinos in Cabrera.

5.6.5 Land Subdivision

Inadequate land access is not only an issue among victims of the conflict but is applicable to the wider campesino population. Land subdivision has worsened rapidly in the space of 10 years in Cabrera, which exacerbates the problems that have resulted from inadequate redistribution and the potential for deforestation (cf. Agarwal et al, 2014), as campesinos search for supplementary land to make agriculture more economically viable. In 1998, 12% of plots had less than 5 ha but by 2011 this figure rose to 38%, leaving numerous families without guaranteed access to sufficient land for a subsistence wage (ibid). In 2011, statistics from The System to Select Beneficiaries for Social Programmes or *el Sistema de Selección de Beneficiarios para Programas Sociales* (SISBEN) showed 75% of people in the ZRC Cabrera earnt less than the monthly minimum salary (ibid, p.185).

Cardoza Sanchez (2015, p.16) refers to land subdivision as 'anti-economic fracturing', which forces campesinos away from agriculture and into off-farm work, undermining the productive potential of their own plots and pushing them towards wage labour. The ZRC Cabrera's PDS also identifies land subdivision as a principal cause of local poverty (ILSA et al, 2013). Although theories relevant to understanding the CFR's regime of accumulation focus on the problem of land concentration (Harvey, 2004; Magdoff, 2013), land subdivision is equally problematic for campesino communities, as too little land undermines the economic viability of petty-commodity agriculture.

The literature suggests that the chief cause of land subdivision is inheritance practice, i.e. sharing land between offspring. In the ZRC Cabrera, however, statistics reveal that this is not the only cause, as only 11% of land was inherited, whilst 64% of owners purchased their farms (ILSA et al, 2013, p.208). This points to the probability that land subdivision has been a historic process but also to the state's public land policy (Machado in Centro Nacional de Memoria Historica, 2013, p.38). Machado suggests that INCORA (the predecessor of INCODER and the current institution ANT) purchased very small parcels of land for redistribution and that the 1994 initiative of distributing land through land markets (market-led agrarian reform) contributed to the trend of micro-ownership (ibid). Acevedo-Osorio and Angarita (2014, p.23) echo Machado's point, as they highlight the role of state agencies in re-distributing small parcels of land to campesinos in Cabrera, which they say average 17 ha per family. Although this is close to the 18 ha or one UAF identified as necessary for two-minimum wages in Cabrera, data from San Jorge (where parcels averaged 5.5-6 ha) reveals redistributed land parcels can also be much smaller. The number of state redistributions have been limited, however, which also affirms that land subdivision is strongly related to historic landowning structures. Nevertheless, the fact that 80% of farms consist of less than 16 ha (see Table 5.6), reveals that the state has not devoted sufficient resources nor designed robust redistributive measures that work with the ZRC's land use strategy.

Interestingly, Cardoza Sanchez (2015) suggests that the ZRC model could address land subdivision by helping to foment family-based agriculture and production or sale in co-operatives. In particular, the community engagement structures in Cabrera and the land use planning that has already taken place using the UAF system could provide fruitful means to rethink territorial ordering and planning. This could prove

particularly useful in Colombia's post-peace agreement conjuncture. For instance, the ZsRC's Sustainable Development Plans (PsDS) directly complement the new *Planes de Desarrollo Territorial* or Territorial Development Plans (PDT), which arose from the 2016 peace agreement.[53] Although some economists such as Juan Perfetti (Interview, 2017) argue that the ZsRC should be scrapped in favour of PDTs because they perform similar institutional functions, the latter tool remains in construction and increasingly the future of the whole peace process is shrouded in doubt.[54] Thus, the ZsRC's PsDS can undoubtedly contribute to the PsDT because the former focuses on campesino agriculture and hence is best placed to represent the interests of this sector in future plans. Furthermore, campesino communities living in ZsRC have local structures of engagement (FAO, 2018), such as Community Action Boards (JACs), which could lead initiatives to renew and update local zoning. Therefore, ZsRC are crucial to any peace-building exercises.

Cabrera's land ownership structures evidence hybrid processes of CFR integration and resistance, as the municipality does not have concentrated landholdings, resulting in a more secure agrarian structure of smallholdings. Lower levels of land dispossession compared to other ZsRC have also contributed to this and resulted in a stable agricultural frontier. An established smallholder land tenure system challenges corporate land accumulation- a facet of the CFR's regime of accumulation. In turn, this also means that there is a lower occurrence of people being separated from their land, preventing the conversion of producers of food into consumers (cf.

[53] This is a multi-sector tool designed to bring all key socio-economic actors together in a given geo-political area in Colombia to design more inclusive bottom-up development. It intends to orient the planning and political intervention of departments, districts and municipalities in line with the peace agreement. PDTs outline the 'vision, programmes, projects and development goals aligned with available public resources over a period of four years' (Alto Comisionado por la Paz, 2016). They consist of a local diagnostic of the key socio-economic and ecological necessities of a given area, what strategic action is required and an investment plan (ibid).

[54] In September 2019, key leaders of the former FARC-EP, who had demobilised as part of the peace agreement, re-armed themselves and re-engaged in warfare. This has introduced new complications for the whole peace process and the agreement.

Foster, 1999)- a dimension of the metabolic rift. This also enables the reproduction of knowledge- avoiding a possible knowledge rift (cf. Schneider & McMichael, 2010).

Nevertheless, the ZRC Cabrera has a weak land tenure regime, as few smallholders have full land titles or deeds. In addition, many of the holdings are insufficient in size, in part due to state redistribution policies but also local inheritance practices. Agarwal et al. (2014) note that weak land tenure systems increase the possibility of deforestation. This has not taken place yet, as land displacement rates remain low but is a possibility in the future if land based conflict increases. Moreover, state redistribution programmes have taken place in a context of inadequate infrastructure and consequently poor market access, which has debilitated the campesino economy. Although the land-owning system has resisted CFR integration- corporate land accumulation- campesino land access is undermined by the absence of full land titles and adequate infrastructural development. In the long-term, this facilitates CFR integration, as it does not ensure the economic sustainability of the campesino sector.

5.7 Technology and Practice

The Green Revolution has heavily influenced agriculture in Cabrera. Congruent with the national panorama, this first entered the municipality in the 1960s, as chemical fertilisers, herbicides and commercial potato varieties appeared (Acevedo-Osorio & Angarita, 2014). GR technology only became widespread in the 1980s and early 1990s, however, coinciding with the beginning of the CFR in Colombia (see Figure 5.3). Then use of tractors changed the Páramo landscape for the first potato monocultures, which led to a rise in the use of improved, commercial varieties rather than landrace seeds (ibid). The technological shift towards industrial methods deepened in the 1990s, reflected in increases in agrochemical application and monoculture plantations. Finally, during the 1990s and the 2000s, agriculture intensified significantly, as vertical hanging systems for peas and beans increased yields.

Figure 5.3: Timeline of agricultural change in Cabrera



Source: Author- developed from information gathered during fieldwork interviews

5.7.1 Chemical Inputs

A key element of CFR agricultural practice is the use of agrochemicals. All interview participants use chemical inputs to a greater or lesser extent. Agricultural chemical toxicity is categorised by the World Health Organisation according to the results of acute toxicity studies and ranges from I (extremely hazardous) to IV (slightly hazardous). The owner of a local agriculture store detailed the range of chemicals bought by local farmers. Products in the shop ranged from I-IV in toxicity (see Appendix 4 for more information on agrochemical toxicity and their health impacts). In September and October farmers widely purchased weed killers Panzer and Roundup, both of which use glyphosate as their active ingredient (ai), to prepare for the sowing of crops. Agrochemicals account for between 9 and 32% of variable farming costs (ILSA et al, 2013) because there is an overriding belief that 'profitability comes from monocrop and chemical farming' (Interviewee 3). Interviewee 9 remembers a time when 'plants gave without needing so many chemicals...we changed this to earn more profit'. The interviewee, therefore, implies that farmers had good yields prior to the intensification of agriculture through use of chemical inputs. Importantly, the individual underscores the agency of campesinos in this technological shift towards agricultural intensification, who prioritised profits over possible ecological costs. Nevertheless, these technological shifts were promoted nationally by international organisations, such as CIAT, and the Colombian government through programmes such as DRI, which in turn highlights the structural factors for these changes.

Matamalezas or herbicides, such as Panzer and Roundup, are the most frequently bought agrochemicals in Cabrera; all farmers use them in combination with a power scythe or *guadaña*. Many farmers mentioned the need to 'clean' crops, i.e. keep them weed free, which was paradoxically done using 'poisons'- a vernacular term describing herbicides. The association of chemicals with cleanliness rather than toxicity is an indication of how producers view synthetic inputs as a necessary and positive step in plant health, as herbicides reduce weeds that compete for soil nutrients. Positive reinforcement through language provides a cultural shield protecting the GR. Farmers also choose to use these inputs to save labour, as waged labour is in short supply and is an added expense. It is important not to demonise chemical input use per se, as the application of herbicides can lead to lower tillage (Bajwa, 2014; Giller et al, 2015)- an agroecological practice. However, many of these herbicides are used in excess of the

amount prescribed by their manufacturers. Moreover, chemical containers are often left strewn around fields, instead of being disposed of safely. Together this increases the likelihood of chemical run off and environmental contamination that can impact water bodies and soils.

Despite the positive discourse surrounding the use of chemical inputs, the use of the *guadaña* in combination is illustrative of technological and practical hybridisation- the mixing of industrial practices with adapted traditional practices. The *guadaña* is representative of traditional farming because campesinos with fewer economic resources use the machete to manually deweed, the electric scythe is a modern permutation of this. Even though chemicals are associated with cleaning, the continued use of a non-chemical alternative implicitly conveys a rationale that limits chemical inputs. This is evident from the fact that most farmers applied herbicides twice in a year and the *guadaña* once. This is despite the fact that chemical inputs are cheaper and less labour consuming than the *guadaña.* Interviewee 27 noted that 'people use more herbicides because they're cheaper than the *guadaña*'. He pointed out that spraying of herbicides on 1 ha could cost an average of US$2.92 and would be undertaken in a number of hours, whilst the *guadaña* would take two days of labour, at the total cost of US$17.52 (since the daily wage of a labourer is US$8.76). A SENA agricultural engineer working in Cabrera argued that using the *guadaña* leaves soils moister because weed residue is left as soil coverage, which is why farmers prefer to use this in combination with chemical inputs. Together this reveals a critical attitude towards GR technologies the hybridisation of farming practices in Cabrera.

Pesticides are also frequently purchased and used in the municipality. Interviewee 19 in Santa Lucía sprayed his tree tomato crop with pesticides every 15 days during wet season and every 20 days in drier months. This is more or less the same pattern followed by all farmers interviewed for most crops, regardless of whether they own or rent the land they are working. For instance, Interviewee 3 did this with small granadilla in Pueblo Viejo; Interviewee 21 in Alto Ariari used the same methods with beans, banana passionfruit and tree tomato; and Interviewee 4 in Santa Lucia with his raspberry crop. The 'one size fits all' approach of GR agriculture is evidenced in the similar frequency and quantity of pesticides applied regardless of the crop.

Intensive pesticide use is motivated by the significant labour saving provided by this technology but also by the belief that plants will not grow well without them (Interviewee 19). 'The plant gets used to the treatment we give it, so if in the summer I leave it one month without fumigation, the plant will be consumed by pests...to keep this under control it has to be like this' (Interviewee 4). A possible explanation for the dependency on pesticides is that monocrops can be more susceptible to pest attack, since pesticides kill beneficial insects that might prey on pests. Thus, when a subsequent infestation arrives, there are no predators around to keep the population in check. Heavy use of pesticides can also open crops to pest resurgence, pest resistance and secondary pest attacks (Perfecto et al, 2019)[55]. Agroecologists note that this 'pesticide treadmill' (ibid, p.79) leaves farmers with little recourse other than to apply higher doses of chemicals more frequently.

The narrative of crop-pest relations is contested, however, as Cooper and Dobson (2007) argue that pesticide use can prevent the spread of pests across borders in the case of large outbreaks. In this sense, not using pesticides could also lead to imbalances in crop-pest relations, such as large outbreaks. This is because the use of non-pesticidal approaches for mobile pests, such as locusts, can often be too 'slow and act on too small a scale' to inhibit the growth and migration of this pest (ibid, p.1342). Pest infestations on this scale could ruin harvests over large areas. Clearly, crop-pest relations are not only impacted by the use of pesticides but equally by non-chemical pest management, which highlights the need to interrogate the ecological narratives used by Perfecto et al (2019) and many other scholars (Gliessman, 2015; Carolan, 2016; Altieri & Rosset, 2017) who espouse reduced or zero use of chemical inputs. When pesticides are first applied, the control of pest infestations in crops increases crop productivity (Aktar et al, 2009; Cooper & Dobson, 2007), which is an important motivating factor behind why many farmers use pesticides and herbicides. Increased profit margins are also sustained because herbicides and pesticides 'broaden the range of viable crop options that a farmer can grow at particular times of

[55] Pest resurgence takes place because the pesticide kills not only this organism but also its predators; pesticide resistance is caused by the evolution of pests that resist these chemicals; and secondary pest outbreak is due to the fact that pesticides kill natural controls that had prevented other organisms from becoming pests earlier (Perfecto et al, 2019).

the year' (Cooper & Dobson, 2007, p.1341), therefore, enabling farmers to meet market demands and to earn a living in the context of increasingly volatile market prices. These competing narratives underline largely unquestioned truth claims around the ecological and economic arguments used by agroecologists to encourage a transition away from industrial chemicals.

Nevertheless, some farmers expressed a sense of regret and resignation about using synthetic inputs: 'one would rather not [use] poisons' (Interviewee 19). This sentiment could be because of the rising costs of inputs but also because of emerging health impacts among farmers who largely do not comply with the necessary health and safety measures during crop spraying. Moreover, some farmers felt that poor soils left them with few options other than chemicals, further evidencing the 'treadmill' effect. This is also indicative of the entrenched epistemology of the CFR productive system in Cabrera, as campesinos do not look to agroecological methods or organic soil amendments that could build soil fertility, such as crop rotation, organic manure or leaf litter. GR farming has become synonymous with farming culture in the ZRC Cabrera, as this has largely replaced agroecological methods.

5.7.2 Crop Specialisation and Intensification

The variety and scale of crop cultivation has also changed in Cabrera, as crop choices have become more limited and specialised. Before the 1990s, much of the fruit now grown commercially was wild: cherry, raspberry, passion fruit, sweet granadilla and cape gooseberry (see Figure 5.3). Interviewees 5 and 6 mused about the change in culture around the cape gooseberry (*Physalis peruviana*) in particular. Before intensive cultivation, people thought this native fruit was poisonous and so it was not even fed to cattle. Contact with exporting companies triggered a change in local perceptions, as these businesses assured purchase and export. Now the cape gooseberry is grown extensively across Cabrera, in some cases certified seeds and chemicals are supplied by shipping companies themselves (Interviewee 5). Through technological changes, the process of market integration and the commodification of food (Rosset, 2006; Carolan, 2016), the cape gooseberry, along with the cherry, raspberry, passion fruit and sweet granadilla are more intensively cultivated, and are simultaneously disappearing from the wild. Reductions in levels of wild, planned

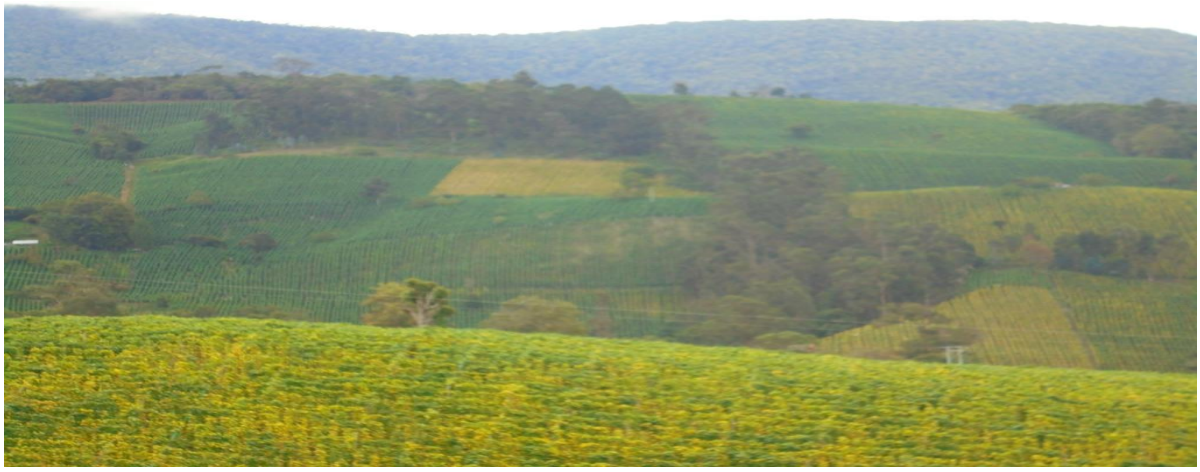
biodiversity due to crop specialisation, and also associated biodiversity[56], reflects significant shifts in local agroecosystems driven by industrial farming methods. This can disrupt species migration between agroecosystems, which encourages extinction among 'populations that invariably exist in a metapopulational context' (Perfecto et al, p.238).

Crop specialisation and the trend towards using certified, commercial seeds is also evident in other crop varieties such as beans. Widespread cultivation of red cranberry beans and red ball beans, varieties of *Phaseolus vulgaris* known locally as *cargamanto* and *bola roja,* have led to a shrinking variety of beans grown for both commercial and subsistence purposes. Cabrera is currently the primary producer of beans in the province of Sumapaz. Their intensive cultivation began in the 1980s in the ward of Alto Ariari and was accompanied by the gradual loss of native bean varieties. This has resulted in a diminution of the local bean gene pool and the imposition of 'biocultural amnesia' (Gliessman, 2015). By virtue of absence, younger generations are unaware of the historic agrobio- and cultural-diversity of farming practices (Pimbert, 2018; Toledo & Barrera-Bassols, 2008). The reduction in bean genetic diversity mirrors what has happened with other crops that have disappeared due to specialisation tailored to both national and export market demands.

Bean cultivation in Alto Ariari illustrates that monocropping is not exclusively linked to large landholdings and that smallholders themselves pursue CFR integration through adoption of GR technologies and practices. In this ward, smallholders have created an extensive bean monocrop, replicating large plantations and breaking with Cabrera's tradition of diversified smallholder farms (see Plate 5.1). This highlights that smallholder farms are not a priori safeguards against monocrop agriculture. Rather, campesinos have actively participated in technological CFR integration by adapting their cultivation patterns to market demands, with the incidental result of replicating industrial monocultures over large areas.

[56] Higher planned biodiversity 'has a positive effect on associated biodiversity' (Perfecto et al, 2019, p.239).

Plate 5.1: Extensive bean (Phaseolus spp.) monocropping in Alto Ariari Ward, Cabrera



Source: Author.

Interviewees noted that deforestation of native trees had increased significantly in line with agricultural intensification, particularly in the ward of Alto Ariari. They noted that deforestation around water sources in the ward had impacted the water cycle, resulting in the incidence of acute draught in 2015 and water shortages more generally. For the first time in the municipality's history, domestic water needs had to be delivered into the area from elsewhere. The perception of campesinos that deforestation exacerbates drought can be explained by the fact that forests intercept rain drops, collect rainfall in their foliage and have deep, penetrating roots, which allow rain to filter down into subsoil. Tree cover also shades water courses and bodies, reducing evaporation rates. At the same time, it is important to note that the causal relationship between deforestation and droughts is more complex. Such a conclusion would require years of analysis comparing rainfall patterns with land use changes. The hydrological impact of deforestation depends on the size and degree of deforestation, which have not been quantified or tracked in the area. Droughts can also occur because of changing weather patterns, fluctuating ocean and land temperatures among other factors. The emergence of a narrative that connects the 2015 drought with deforestation, however, is illustrative of a discursive identity around conservation and tree planting in the ZsRC.

Changes in the kinds of bean grown have also pushed wider shifts in practice and technology towards agricultural intensification. Red cranberry and red ball beans are climbing varieties that are currently grown using a technology known locally as *embrar*

y alambrar. This consists of using vertical climbing wires and wooden posts- a permutation of the agroecological practice of using 'maize stalks as a trellis' (Perfecto et al, 2019, p.217). Instead of polycropping maize and beans, farmers now grow these crops in rotation (maize is planted after beans). This agroecological practice means that the nitrogen-fixing beans leave the maize with ample soil nutrients (see Section 5.8.3 for more on intercropping and crop rotation). The intensification of agriculture but application of agroecological methods, such as crop rotation, evidences the hybrid farming systems that are present across the municipality.

Perfecto et al argue that monocrop systems with 'higher-yielding crop varieties are often less resistant to pathogens and pests' (2019, p.77), which leads to higher levels of pesticide and herbicide application. This process could be reflected in the anecdotal evidence provided by UMATA (state agricultural technical assistance institution), who noted that the number of diseases affecting plants was increasing annually in Cabrera (Interview, 2017). A diversity of plants in any given field helps to disrupt the spread of pathogens, although farmers need to give thought to the variety of species that are planted together. The possibility of disrupting the spread of pest epidemics among bean crops in Cabrera was made more difficult through the replacement of traditional polycropping of maize and beans with post and wire bean monocrops. These practices have altered local ecological communities and also reduced biodiversity. This system could become more agroecological by replacing posts and wires with wigwams or even through the reintroduction of polyculture with maize. This would also reduce the number of eucalyptus trees deforested on-farms for the use of wooden posts.

Although legumes are capable of fixing nitrogen in the soil, Cabrera's monocrop bean fields also require high application of synthetic fertilisers. This could be because the beans sown here are not landrace and may not easily associate with local soil bacteria, limiting their nitrogen fixing properties. They are also grown in monocrop plantations, so any nitrogen they might fix is not available to associated crops as it would be in mixed cropping systems. Synthetic chemicals are used, therefore, to provide nutrients and boost production to meet growing market demand. In this sense, intensive farming begins a vicious cycle of greater dependency on GR technologies and methods.

5.7.3 Livestock Intensification

Shifts towards intensive farming are also evident in Cabrera's livestock sector. This is primarily visible through the increased area of land dedicated to pasture. The PDS estimates that on average farms in Cabrera dedicate 2.45 ha (20.38%) to crop cultivation, 6.31 ha (52.50%) to livestock holding and a further 3.26 ha for pasture (27.12%) (ILSA et al, 2013, p.153). This means a total of 79.62% of land on the average farm in Cabrera goes towards cattle ranching. The average farm still maintains integrated crop and animal agriculture, but the area dedicated to pasture and livestock holdings are far bigger than that used for agriculture.

In fact, the trend towards separated animal and crop farming is increasing in the municipality (cf. Heffernan, 2000; Mancus, 2007; McMichael, 2008, 2013; Schneider & McMichael, 2010; Gunderson, 2010; Clausen et al, 2015; Longo et al, 2015). This is evident in Paquiló, Peñas Blancas, Canadá and Las Aguilas, where cattle ranching has all but replaced the cultivation of potatoes and peas (Lote, 2016). Interviewee 7 from Paquiló noted that only five of the 30 families living in the area cultivate crops, a shift which came about as recently as a year and a half ago. This has also laid the ground for a future knowledge rift (cf. Schneider & McMichael, 2010), as producers move away from the cultivation of diverse native crops towards increased specialisation in livestock.

Intensive livestock holding and the conversion of crop land to pasture has reduced planned and associated biodiversity on farms. 'Clean' pasture - in which all plants other than fodder species are eradicated - is another characteristic of the prevailing agricultural system in Cabrera. The loss of trees and increasing livestock numbers have not only damaged biodiversity but also led to more compacted soils. In response to the 2015 drought and expansion of intensive livestock keeping, the *Corporación Autónoma Regional* (CAR), a regional agency tasked with environmental policy, embarked on tree planting across Cabrera. Various participants mentioned that CAR planted trees along main roads (Paquiló), as well as on farms to support the protection of water sources (Alto Ariari). A further preventative measure undertaken by CAR is the requirement of a permit before felling any trees, even if these are located on private property. Moreover, only non-native trees are allowed to be cut, such as eucalyptus.

Campesinos go to Girardot for this permit- a journey that takes several hours by road. The permit itself is free but to make the journey campesinos must take a full day off work and cover their own travel expenses. Additionally, the permit takes some time to process, which delays work in cash crops and pastures. More often than not, campesinos take the risk of felling trees without permits because of the monetary costs incurred by applying for the permit and the inconvenience involved. The low levels of compliance with this permit highlights the need for more communication between state institutions and farmers to avoid negative economic consequences for campesinos, i.e. travel costs or the loss of time otherwise dedicated to farming activities. Moreover, conservation mechanisms should be linked to wider agroecosystem and farm planning (Perfecto et al, 2019). This entails connecting conservation to agroecology discourse and practice to enhance land matrix biodiversity, instead of agricultural intensification (ibid).

Smallholder producer associations are attempting to implement more bottom-up measures of conservation to enhance biodiversity in pastures. A local livestock association, called ASOGNAC (see Section 5.9.4 for more on this association), is promoting agroforestry by encouraging tree planting in pastures to provide shade for livestock but also the creation of hedges and windbreaks (Gliessman, 2015). They are also advising members to have small divided lots of land and to rotate animals daily. On small farms, rotational grazing ensures livestock consume pasture with less waste and enables grass to grow quickly in areas allowed to rest. This also prevents animals from compacting land by limiting the area and period of access. Interviewee 6 uses this method on his farm, which has ensured that his pasture remains healthy, diverse and with abundant fodder. In addition, enhanced pasture productivity reduces the need for further deforestation because campesinos do not seek more land for grazing. Division of pasture is commonplace across the municipality, but daily rotation remains infrequent.

Other agroecological methods used in Cabrera include conservation and reforestation projects. In 1992, community accords were established through JACs, which implemented protection measures against deforestation of native trees, hunting of animals and pollution of water sources, which were all enforced through the threat of fines. The FARC-EP also supported these accords by imposing sanctions on non-compliant individuals (FAO, 2018, p.346). Additionally, 15 natural reserves have been

declared by Cabreran civil society, nine of which are in the ward of Canadá in areas designated as Páramo (ibid, p.307). Reforestation and conservation measures are directly attributable to the establishment of the ZRC model, as community assemblies determining UAF sizes agreed to maintain forested land in parcels because the model was explicitly designed to provide stronger environmental protection to biodiverse frontiers. Although the average farm size in Cabrera is around 6 ha, most have at least half a hectare of forest, conveying compliance with that commitment. Such schemes exemplify the landscape matrix that Perfecto et al. (2019) describe- pockets of wild forest interspersed with biodiverse agroecosystems. They note that this is effective in preserving biodiversity, whilst also responding to the socio-economic needs of local populations by not inhibiting agriculture. These bottom-up measures, together with more top-down enforcement from the CAR, have also contributed to the agricultural frontier remaining stable from 1990-2006 (ibid, p.287). As Agarwal et al. (2014) note, enforcement together with social measures, such as those designed by campesinos, enhances the likelihood of lowering deforestation rates.

5.7.4 Polyculture and Crop Rotation

Although GR technology and practice have rapidly altered local agriculture, agroecological farming is still noticeable in combination with conventional methods. Agroecology was particularly evident in subsistence home gardens, which cover an average of 20% of total farm area (Acevedo-Osorio & Chohan, 2019). Agroecological methods used include polycropping, crop rotation, landrace seeds, organic fertilisers, biological controls against insects, hoes and scythes for weeding and oxen for tilling.

Polycropping was most frequently observed during farm visits in smaller home gardens for family consumption. What was grown in the home garden depended on the climate. In the hot climes of Bajo Ariari, Interviewee 15 grew *arracacha* (*Arracacia xanthorrhiza*), green beans, cassava, avocado, mandarin trees, guava trees, maize, bananas, squash, spring onion, lemons and sugar cane. In the same ward Interviewee 1 also grew plantain, banana passion fruit, tree tomato, beans, coffee and coriander. Interviewee 10's home garden in Pueblo Viejo was the most typical for campesinos: onions, carrots, avocados, broad beans (*Vicia faba)*, other varieties of beans and marigolds (*Calendula officinalis*) for tea.

Polyculture provides ecological and economic benefits, as it boosts both planned and associated biodiversity[58], helps farmers exploit soil and light more efficiently, and also boosts total yield per hectare. It acts as a deterrent against serious insect infestation because individuals of each crop species are intermixed with individuals of other species, which slows the rate of infestation (Gliessman, 2015). Such practices also tend to increase soil micro-organism diversity, leading, in general to healthier soils (ibid). Polyculture systems also tend to have a higher leaf area index[59] than monocultures, meaning that more light is intercepted by crop leaves, such that less light is available to any emergent weeds. In these ways, it reduces the need for commercial pesticides and herbicides, as well as farmer dependency on synthetic industrial inputs.

Polyculture in home gardens is a remnant of traditional subsistence farming, but the existence and maintenance of these spaces is endangered by intensive commercial production. In response, state institutions like UMATA and the FAO have acted as top-down agroecological promoters by encouraging the cultivation of home gardens through the distribution of seeds and the provision of technical assistance. They are also supporting agroecological scaling by creating a positive policy environment (cf. Mier y Terán Giménez Cacho et al, 2018) that promotes methods such as polyculture (see Plates 5.2 and 5.3). The social movement organisation ANZORC has led more bottom-up initiatives because these projects are overseen by social movement leaders. This project provides five women producers with greenhouses and seeds, including marigold, basil, rue, lettuce, mint, tomato, celery and melissa or lemon balm seeds. Interviewee 25 aims to sell these seedlings in cities to reintroduce urban gardening and herb gardens to city homes. This exemplifies the creation of direct relationships between urban and rural spaces, which is indicative of Level Four in the agroecology transition (Gliessman, 2016). The difference between the top-down

[58] Some plants boost wildlife biodiversity more than others. In particular, native plants tend to support a greater diversity of insect species and greater insect diversity supports greater small mammal and birdlife diversity.

[59] Leaf Area Index – L.A.I. = leaf area / ground area in a standard unit of measure, usually m^2. The higher the index the greater the amount of total solar radiation is intercepted by crop plants.

projects and those led by ANZORC is that the latter worked with the ZRC Steering Committee.

The projects led by state institutions look to revive a pre-existing facet of the Cabreran petty-commodity peasant farm- the home garden, in so doing recuperating spaces on farms for subsistence production. In terms of material contributions, the state institutions provide seeds, whereas the ANZORC project requires additional materials and constructs a space that is more temporary- the greenhouse. The institutional projects also provide follow up technical assistance, whereas the ANZORC project does not. Thus, the fact that the greenhouse project is more politically aligned and explicitly linked with the ZRC model, does not automatically make it more suitable for long-term agroecological transitioning. This highlights that state institutions also have experiences to engage with and build upon for agroecological transitioning.

Plate 5.2: Intercropping of maize, beans and tree tomatoes (Interviewee 4's farm)



Source: Author.

Plate 5.3: Intercropped peas, Cape gooseberry, maize and lulo (*Solanum quitoense*) in the home garden of a farm belonging to an ORGANICAMPO member



Source: Author.

There were a number of examples of farmers using polyculture as an agroecological solution to insect pest problems, i.e. as an alternative to using chemical herbicides. The women's organic farming association, ORGANICAMPO employed 'companion planting' with species such as marigolds (*Tagetes spp.*), chamomile (*Matricaria chamomilla L.*) and common rue (*Ruta graveolens*) as a natural pest deterrent. Interviewee 9 in Santa Marta planted these around the outer edge of her vegetable patch, claiming the scent would repel insect pests. Similarly, Interviewee 10 had a red chilli bush amongst his banana passionfruit crop- a common companion species among those who seek non-chemical methods to ward off insects. ORGANICAMPO especially used the combination of chilli and garlic as companion plants for crops plagued by any given bug. These species seemed less effective on Interviewee 9's spinach crop, which highlights the fact that polycropping is not a de facto deterrent for all pests. However, she was prepared to try different combinations and described her way of practising agriculture as an 'ongoing experiment', which is diametrically opposite to the more prescriptive approach of GR agriculture.

Some campesinos used polyculture in commercial crops also, although this was in a minority of cases, evidencing more advanced expressions of agroecological resistance. These individuals were convinced that polyculture would yield better quality produce because this system was beneficial to boosting planned and associated biodiversity in agroecosystems. Interviewees 1 and 8 in Bajo Ariari both intercropped coffee plants with orange trees to provide their cash crop with shade. This is a permutation of early coffee cultivation practices in Latin America, where beans were planted 'in the understorey of natural forests when first introduced' to the continent (Perfecto et al, 2019, p.169). Moguel and Toledo developed a classification or biodiversity scale for coffee systems (cited in Perfecto et al, 2019). They argue that rustic coffee plantations have the highest levels of biodiversity, followed by commercial polycultures, then shaded monocultures and finally open grown monocultures. Rustic plantations consist of coffee 'planted under the canopy of a previous existing forest' (ibid, p.170) that consequently have a 'high diversity of planted shade and fruit trees with a heterogenous canopy' (ibid). They argue that as the amount of shade provided in each plantation system decreases, so does biodiversity.

It is important to be critical about the terms rustic and traditional, however, which provide a romanticised and static vision of these ecosystems, thus, contributing to a simplistic/ binary narrative. Moreover, the causal link between shade and biodiversity does not adequately unpack the complex reasons behind biodiversity changes in coffee systems. For instance, planting coffee under an existing forest canopy does not automatically result in high levels of biodiversity, as this does not consider wider farming practices such as the quantity and frequency of pesticides used. Moreover, increasing the amount of shade in a coffee plantation does not guarantee a rise in biodiversity levels, as 'the conservation value of shade coffee is dependent on a variety of factors such as the distance between coffee plantations and forests…food availability [for diverse species]…and canopy tree species composition' (Tejeda-Cruz et al, 2010). Perfecto et al (2019) do not go into any great detail about these factors, which impoverishes the link between levels of shade in coffee plantations and biodiversity.

Nevertheless, this classification provides an insight into differences between coffee systems employed by campesinos in the ZRC Cabrera, as well as the perceived benefits or costs of these cropping choices. Interviewee 1 planted his coffee in a

previous forest that has a heterogenous canopy, including wild native trees and orange trees, whilst, Interviewee 8 planted her coffee in a non-forested area, where she had simultaneously planted orange trees. Importantly, Interviewee 8's trees were planted more sparsely than Interviewee 1, where there was more dense vegetation. Both noted that they polycropped their coffee plants and used shade to produce plumper coffee beans. Neither explicitly mentioned biodiversity as a motivating factor for implementing these systems.

Interestingly, the two campesino farms had different motivations in using shade trees. Interviewee 1 designed his coffee plantation with advice from his parents but also mentioned that he had spoken to other campesinos. On the other hand, Interviewee 8 was a beneficiary of a state development programme that provided technical assistance for organic farming. As part of this programme, she received seeds and guidance on how to plant coffee, including the suggestion to use shade trees and fruit trees in polyculture. Both cases evidence aspects of Level Three agroecology (cf. Gliessman, 2016) and illustrate how varying drivers help to scale out agroecology. The different agroecological expressions or drivers can be partly explained by the fact that Interviewee 8 is a woman farmer, who has been encouraged to engage in crop production by becoming a beneficiary of a state programme. In this case, the fact that she has reintroduced her family to farming and recuperated her once derelict farm evidences agroecological resistance. Her prior isolation from farming makes campesino to campesino dialogue difficult for her to access, as previous to the state project she was largely devoted to domestic chores. Now, she not only grows intercropped coffee but also sells it to her neighbours. The state project not only catalysed this woman to become a petty-commodity producer, but she also built upon this by constructing an AFN. The differentiated circumstances of both farmers explain why the state was an important agroecological driver in one case and why campesino exchange was more effective in the other. Understanding more about the campesinos themselves illuminates different aspects of resistance.

Crop rotation with maize was another frequently used agroecological technique, even in areas dedicated to commercial crops. As mentioned previously, in Alto Ariari maize is grown in rotation with bean crops. Maize is a very nutrient hungry crop and can take advantage of the nitrogen fixed in the soil by legumes such as beans. To replenish soils, some Alto Ariari farmers leave maize canes to decompose in the soil after

harvest, as it 'creates beneficial fungus' (Interviewee 11, 2017), i.e. it feeds fungi that fix nutrients in the soil. Corn is also beneficial in crop-rotation as it is a deep-rooted crop. Its deep and lateral spreading roots absorb nutrients from the soil, moving them to the soil surface for the benefit of other plants. Deep rooted crops can also improve water filtration in soils. An agricultural engineer working for Bayer noted that planting beans in rotation with maize could have protected Alto Ariari's soils from over exploitation (Interviewee 12, 2017). Crop residues and crop rotation provide campesinos with alternatives to chemical fertilisers, again reducing reliance on expensive commercial products and exemplifying the hybridisation of farming techniques. These demonstrate the agency of farmers in adapting CFR methods, which means that campesino farmers engage with these prescriptive methods critically. These agroecological practices are most often found in home gardens but sometimes are also visible in commercial crops in combination with conventional farming methods.

5.7.5 Agroecological Composts and Fertilisers

Campesinos in Cabrera also use other agroecological and CFR resisting practices to build and maintain soil fertility. Natural, organic, soil amendments used by interviewees included: rice husk and forest soil[61]; rice husk, egg shells and forest soil; animal excrement (from cows and pigs); ash from firewood; leaf litter; maize cane; and bokashi (a liquid fertiliser created from food waste, animal waste and molasses through a process of anaerobic digestion)[62]. These practices are essential elements

[61] The humus layer in forests, which is composed of decaying plant and animal matter.

[62] The FAO agroecology handbook for campesinos states that bokashi should have about 100 kg of stubble, kitchen food waste, bagasse or pasture- all of which must be dried, chopped and mixed together; 100 kg of fresh cow excrement; 100 kg of sifted soil from the farm; 50 kg of charcoal broken into small pieces; five kilos of any cereal saved from a harvest (wheat, maize, rice or rice bran); five kilos of either fire ash, agricultural lime or dolomite lime; five kilos of forest soil; four kilos of either molasses, eight litres of honey, sugar cane juice or even a strong mix of water with sugar cane; 200 g of yeast used for baking; and finally water (FAO, 2014). The guide mentions that forest soil should be eliminated once the farmer has enough practice and knowhow and replaced by the last batch of Bokashi compost. The majority of the ingredients used in this come from on-farm resources.

of the agroecological transition (Gliessman, 2016), as these methods reduce and replace synthetic fertilisers with agroecological alternatives.

State institutions and NGOs have once again been actively involved in creating a positive policy environment to support this transition. The National Training Service (*Servicio Nacional de Aprendizaje*- SENA), Municipal Agricultural Technology Assistance Units (*Unidades Municipales de Asistencia Técnica Agropecuaria*- UMATA) and the FAO have taught both female and male campesinos how to prepare the bokashi anaerobic digestion process. This is representative of agroecological scaling from above, given state institutions are organising and leading these workshops. They have held workshops on various farms across the municipality to illustrate the making of organic composts and fertilisers in situ. Whilst attending one such SENA workshop, participants were observed learning practically. They were encouraged to use bokashi on their cash crops to expand use beyond home gardens. Although SENA's impact in the area is limited, their workshops are helping the transition towards more agroecological production in select farms and they are reducing farmer dependence on costly external inputs (cf. Gliessman, 2016). Moreover, they are also encouraging women to participate more actively in commercial crop production by reducing input costs. This also evidences the fact that a positive policy environment can encourage farmers along the agroecology transition (cf. Mier y Terán Giménez Cacho et al, 2018) and also help women to reconnect with their roles as food producers.

Another agroecological soil amendment that SENA has taught farmers about is vermicompost. Campesinos have been taught to assemble worm farms to convert organic waste from kitchens and the farm into a nutrient rich fertiliser. The majority of elements used for this process are on-farm, except the worms themselves, which are bought. The main variety of worm used was the red Californian worm (*Eisenia Fetida*).[63] Interviewee 30 had a worm farm, which she used to make vermicompost

[63] There are four main varieties of earthworm: compost worms, epigeic, endogeic and anecic. As the name suggests, the first is most often found in compost or rotting vegetation. The second is found on the surface of soils, usually in leaf litter. The third variety lives deeper in the soil and burrows to move

that she then applied to both her cash crop and coffee plants for family consumption. She noted that where vermicompost was used plants would last longer and fruit was bigger. This is because this fertiliser is not only rich in nutrients such as nitrogen and phosphorus but also because 'the mucus left behind [by worms] in their tunnels changes the texture of the soil…which enhances water retention' (Lane, 2018, p.3). Worm farming helps decrease use of synthetic amendments and also encourages the recycling of food waste, resulting in improved soil nutrient cycling. The on-farm production of vermicompost was a minority practice among interviewees, however, as more farmers chose to buy it instead. Once vermicompost is purchased instead of produced, this represents organic input substitution rather than agroecological farming. There are a number of intensive worm farms in Cundinamarca, which supply vermicompost. In so doing, these farms separate animal and crop agriculture, instead of integrating the two. Organic input substitution continues to engender smallholder dependency on the agribusiness sector.

In addition to vermicompost, other commercially produced organic fertilisers are widely bought wholesale by farmers in Cabrera. For instance, *gallinaza*, chicken excrement, is used to fertilise various crops (fruit trees, beans and peas), as it provides key nutrients such as nitrates and phosphorus. It arrives to Cabrera from intensive poultry farms in neighbouring Fusagasugá and Arbelaez, which further exemplify the separation of animal and crop farming. Many farmers use this organic fertiliser for a variety of crops to reduce synthetic inputs, however, they also complain it increases fungal infections. The likely reason for this is that the uncomposted *gallinaza* is too rich in nitrogen, which burns the crop plants and appears like a fungal infection.

Composting of poultry manure reduces its phytotoxicity (Delgado et al, 2010). Interviewees 10, 22 and 21 confirmed this, as they further composted *gallinaza* to make it suitable for crop use. These farmers suggested that the agribusiness companies sold immature *gallinaza* to make more money. The need to further compost the purchased *gallinaza* was not known by all farmers. Interestingly, Interviewees 21 and 22 were farming associatively, therefore, they shared this information between

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around. Finally, anecic earthworms burrow vertically in the soil, as they feed on leaves in the surface of the soil.

each other, evidencing an informal process of campesino to campesino knowledge exchange (cf. Martínez-Torres & Rosset, 2014). More exchanges of this kind could diffuse knowledge around how to use immature *gallinaza*.

It is possible that the majority of campesinos in Cabrera using *gallinaza* did not have previous experience with it, which would explain the inability to recognise when it is ready to be used. This highlights a problem with purchasing off-farm inputs- chemical or organic: farmers may not have the necessary knowledge or understanding of their modes of action, which creates barriers to effective utilisation. It also emphasises why purchased organic input substitution does not necessarily help agroecological transitioning, as this focuses on industrially produced market-based solutions. Agroecology, instead, encourages farmers to utilise on-farm resources, with which they have prior experience and learn from the examples of others.

Organic input substitution is also being encouraged by state institutions. SENA taught Interviewee 5 in Gualcalá to make a homemade liquid fertiliser.[64] However, many of the ingredients in this soil amendment consist of commercially produced organic inputs such as dolomitic lime, copper sulphate, magnesium sulphate, zinc sulphate and boric acid or borax. This example underlines the way in which state institutions can also facilitate organic input substitution, which engenders dependency on the corporate sector. 'Greener' forms reduce the amount of chemical inputs, but at the same time the industrial processes involved in producing these can have negative ecological consequences. For instance, *gallinaza* and vermicompost both use intensive animal farming, which separates crop and animal agriculture and so prevents soil nutrient cycling through the use of their manure as fertiliser (cf. Heffernan, 2000; Gunderson, 2011; Longo et al, 2015). The use of commercially produced organic

[64] This mix is made in a 250-litre container using a kilo of dolomitic lime, copper sulphate, magnesium sulphate, zinc sulphate, boric acid or borax, bone meal, fresh beef liver; 65 kg of fresh cow excrement that has not been impacted by sun, rain or wind; one litre of fresh milk or whey; 250 litres of fresh water that has not been chlorinated; and all this mixture is placed beneath a leafy and healthy native tree to ferment (FAO, 2014, p.29). Although many of these ingredients are commercially produced, they are primarily organic simple salts and an organic fertiliser (boric acid).

inputs also facilitates expansion of the corporate regime of accumulation by encouraging campesino dependence on the agribusiness sector.

Technology and practice as a whole are encouraging CFR integration in Cabrera, as GR and NGR technologies are widespread. Despite the predominance of a smallholder land tenure system, campesinos are transitioning towards intensified agriculture through monocrop farming, the use of certified seeds and indiscriminate use of agrochemical inputs. Monocropping and crop specialisation reduce planned and associated biodiversity, which produce meta rifts such as the removal of habitats and the alteration of food webs that obstruct species migration through agroecosystems (Perfecto et al, 2019). The high use of pesticides can produce numerous dimensions of the metabolic rift such as reducing biodiversity and disrupting the food web. The excessive use of herbicides can also generate additional dimensions of the metabolic rift, as the eradication of weeds disrupts soil structures and can also reduce the availability of nutrients to plants near soil surfaces (Mancus, 2007; McMichael, 2008, 2013; Clausen et al, 2015). The excessive application of synthetic fertilisers can also generate metabolic rifts in the nitrogen and phosphorus cycles. Excessive application of all three types of chemical inputs results in pollution of waterways that intoxicate aquatic ecosystems, as leaching of nitrates and phosphorus into waterbodies can result in de-oxygenated dead zones.

GR technologies and prescriptive agriculture also impose a bio-cultural amnesia (Toledo & Barrera-Bassols, 2008; Pimbert, 2018). This fosters a knowledge rift (Schneider & McMichael, 2010), as industrial technologies replace situated agroecological farming practices and prevent the reproduction of local knowledge. There is evidence of campesinos resisting this through the hybridisation of agriculture, highlighting the fact that knowledge rifts are by no means inevitable in the CFR, as traditional practices are adapted to the new technologies available. Nevertheless, GR technology and practice remain fundamental to CFR integration in Cabrera because they entrench the influence of agribusiness in the area, as earnings from this productive model contribute to the corporate regime of accumulation.

Despite the deep penetration of GR farming, there are numerous examples of agroecological resistance against CFR integration, which encourage a reduction and removal of industrially supplied technology. Polyculture is widely used in home

gardens and by some in cash crops. The increase in planned and consequently associated biodiversity can be very beneficial for increasing soil organic matter, which reduces the need for synthetic fertilisers. Depending on the crops used, polyculture can have a higher leaf area index, which intercepts more light, leaving less for emergent weeds- reducing the need for herbicides. The increase in biodiversity can also disrupt pest outbreaks (but this is not always ensured), which can decrease the amount of pesticide applied. In all cases, this also lessens the chance of polluting waterways. In addition, crop rotation and crop residue left in soils reduces nutrient cycle rifts, as the former prevents the exhaustion of specific nutrients and the latter adds to organic matter in soils. The combination of crops used is crucial to determining the impact of these cropping choices on levels of organic matter. Crop residue also prevents soil erosion from rain and wind. These practices are key to facilitating the reproduction of place-based knowledge, as they reconnect farming practice to ecological processes, thus, preventing the development of a knowledge rift (Schneider & McMichael, 2010).

Agroecology must be clearly distinguished from organic input substitution, however, as these inputs are often produced industrially and so support corporate capital accumulation and CFR integration. ZRC status in Cabrera has introduced various agroecology-oriented projects, such as the development of on-farm organic fertiliser production from state institutions, which have been essential to encouraging women to return to petty-commodity production using organic methods. However, these very organisations are also promoting organic input substitution, which undermines sustained and ‘effective agroecological practice’ (Mier y Terán Giménez Cacho et al, 2018, p.1) in Cabrera. Without clear guidelines for agroecological production in ZsRC and appropriate enforcement, GR discourse and practice are unlikely to be more forcefully challenged, therefore, undermining CFR resistance. Agroecological farming must form part of a wider ‘mobilising discourse’ (ibid) that is reinforced through community accords to shape practice.

5.8 Agricultural Markets

Market integration has deeply impacted agriculture in the ZRC Cabrera, shaping the variety of crops grown, the nature of inputs used, the aesthetics of food, cultivation methods, how crops are sold and in what quantities. Markets work hand in hand with the productive elements of the CFR paradigm, as demand pushes increased yields,

which in turn facilitates the entry of industrial practices such as monocropping and chemical inputs. This section analyses the influence of diminishing regulation by the state on wholesale purchases and also retail markets in Cabrera, as well as the impact of global free trade policies on smallholder production. It also considers how effectively campesinos have organised collective negotiation and alternative market access in their efforts to resist CFR integration.

5.8.1 The Weakened Market Square

In line with the national shift towards exports, Cabrera's market square- principally a wholesale market- has experienced a steady reduction in the volume of products and people participating since 2000 (Acevedo-Osorio & Angarita, 2014). This represents a significant change coinciding with the shift towards export-trade. Market relations have transformed significantly from the 1930s-1950s, when bartering was the common form of value exchange between those who farmed in distinct climatic zones (ibid). From the 1960s onwards, however, the local market in Cabrera has been held at least once a week in the town's main square and many residents talked about the business it used to bring the town. It was a meeting place for farmers and a central wholesale point for the food produced in the municipality, uniting producers, consumers and merchants. From the late 80s and early 90s, livestock production intensified at the expense of crop cultivation, due to the falling prices of staple crops, and so the volume of crops arriving to the market square decreased. This was a consequence of the neoliberal turn, which increased imports of cheaper commodities from the world market.

Macro-economic policies favouring global free trade have resulted in a lower volume of crops in Cabrera's wholesale market located in the central square. Mayor Carlos Cárdenas Muñoz, a long-time resident of the municipality confirmed this: 'our square is not the same as it was over 20 years ago because it was bustling, everyone would bring their products. Now, they bring their goods to the square but not in the same quantity as before…it mostly passes through in trucks' (Interview, 2017). This alludes to the fact that more secondary and tertiary roads have accelerated Cabrera's regional, national and even international market integration. The road network has allowed intermediaries to source produce directly from farms (Acevedo-Osorio & Angarita, 2014), which has in turn reduced use of the market square as a central point of wholesale in the municipality.

A number of campesinos argue that these changes have been beneficial for the local economy and importantly for producers. The mayor suggested that farm collections save the cost of transporting goods to the square, he noted: 'it is much better for farmers because they are avoiding transporting [goods] and [selling] at the same price as in Cabrera's centre [without] spending on transport' (Interview, 2017). Additionally, goods are transferred straight from farms to trucks belonging to intermediaries, instead of from farmers' trucks to those of the intermediaries in the market square. This means that boxes of fruit are less likely to be damaged, in what is a bustling market square (see Plate 5.4). Furthermore, collections are more flexible for buyers, as they are able to collect produce from farmers on different days, rather than on a fixed market schedule. Although the market square has become less frequented, in fact these changes save campesinos time, labour and transportation costs.

Plate 5.4: Cabrera's Market Square and Campesinos Selling from their Trucks



Source: Author.

The market shift, however, has resulted in informational asymmetry in price-setting because without the physical convergence of both goods and producers in one place there is no transparent process to set prices (cf. Guarín, 2013). Although the Mayor intended to enhance the market by extending it to two days- Thursday and Friday- this has had the unintended consequence of further disconnecting producers. Instead of

congregating in one place on one day, and immediately discussing prices, information sharing has become more asymmetrical and atomised because some producers arrive on Thursday, whilst others a day later.

5.8.2 Export-Oriented Production

Integration in regional, national and export markets have also led to a lower diversity of crops sold in the market. From the 1990s onwards, the principal products purchased by intermediaries have been banana passionfruit, tree tomato, raspberry, beans, peas and potatoes (Acevedo-Osorio & Angarita, 2014), which has in turn influenced crop specialisation in the municipality (see Figure 5.3). Contact with exporting companies and free trade macro-economic policy initiated a shift towards commercial fruit production. Interviewees mentioned that farmers produced passionfruit, sweet granadilla and cape gooseberry for export companies, who subsequently send this fruit on to Spain, Switzerland and Canada. Passionfruit was not previously grown in the area and cape gooseberry was a wild fruit viewed as poisonous. Export production, therefore, shaped crop varieties in Cabrera, resulting in a cultural and economic re-evaluation of food, in addition to reduced planned and associated biodiversity.

The same re-evaluation process has also begun with avocados, which are seen by locals as the new opportunity crop (FAO, 2018), due to increasing interest from both European and US consumers. The Haas avocado first appeared in Cabrera ten years ago, coinciding with a macro-economic shift towards export produce (Interviewee 13). Currently producers are provisioning regional and national wholesale markets but with the aim of exporting- with aspiration to assume more capitalist forms of production. This is the case with Interviewee 13 from Peñas Blancas who has 120 mature plants giving fruit, and another 700 saplings. He is producing Haas avocadoes in association with 25 other members to maintain a constant supply for intermediaries and negotiate better prices collectively. Interviewee 13 said both his wife and he were ‘excited...to export this crop’ because it was good to send abroad. This is because the avocado’s tough exterior allows it to be exported easily over longer distances without being damaged (ibid). In contrast, the native or *criollo* avocado has a thinner skin and is more easily damaged. Due to increasing market demand, as well as integration into regional and international wholesale markets, the *criollo* avocado variety is all but disappearing from Cabrera. The proliferation of the Haas avocado, instead of native varieties, underlines how export-orientation informs crop selection, which negatively

impacts agroecosystem biodiversity. The emergence of a sector of petty-commodity producers who are already producing or trending towards export production underlines another class differentiation among Cabrera's peasantry.

Furthermore, the export market has aided the commodification of food, as produce destined for external markets 'must be very clean', i.e. without marks or bruises of any kind (Interviewee 5). This has deeply affected the aesthetic perceptions and value of certain foods among producers. Aesthetically worse looking food is left for the national market, reinforcing the idea that local or national markets are worthy of lower quality produce. In fact, export companies also shape wider farming practices, as they expect their suppliers to comply with health and safety standards, including the volume of herbicides, fungicides and insecticides used. Although market integration has reduced biodiversity levels in the ZRC Cabrera, it is interesting that integration in export markets particularly has imposed stricter quality standards that have reduced chemical inputs. In these cases, agribusiness is pushing farming towards more sustainable methods, but the scope of these changes is limited, as these companies still require campesinos to purchase certified seeds from them, use prescribed agrochemicals and quantities. Thus, agroecology is not reinforced by these revised best practice standards, as the aim is not to reduce dependence on the corporate sector, rather prepare produce for the requirements of export markets.

Campesinos are willing to alter farming practice and fruit handling for export companies because they earn more from selling abroad. For instance, Interviewee 3 suggested that a large box of small granadilla is sold in the local wholesale market for US$10.50 to intermediaries linked to regional and national markets. This is the price at which goods are sold regardless of whether they are transported down to the market square in the urban centre or sold from farms directly. The same sized box is sold for US$21 to export companies, who buy directly from farms and transport items to collection centres in Bogotá. This produce, however, needs to be produced to the aesthetic and best practice standards outlined by export companies. Interviewee 14 also confirmed that he earns in the region of US$6-9 more for each large box of small granadilla sold for export. The higher sale price is reflective of the difference in quality and practice that export companies require. With this in mind, better crop prices in regional and national markets, alongside stricter regulations on chemical inputs, could incentivise wider changes in farming patterns. This could be ensured through market

boards and guaranteed purchase of crops from state institutions- policies that existed prior to the *Apertura* in Colombia. However, this represents a fundamental U-turn from neoliberal policies and CFR integration towards a more statist approach.

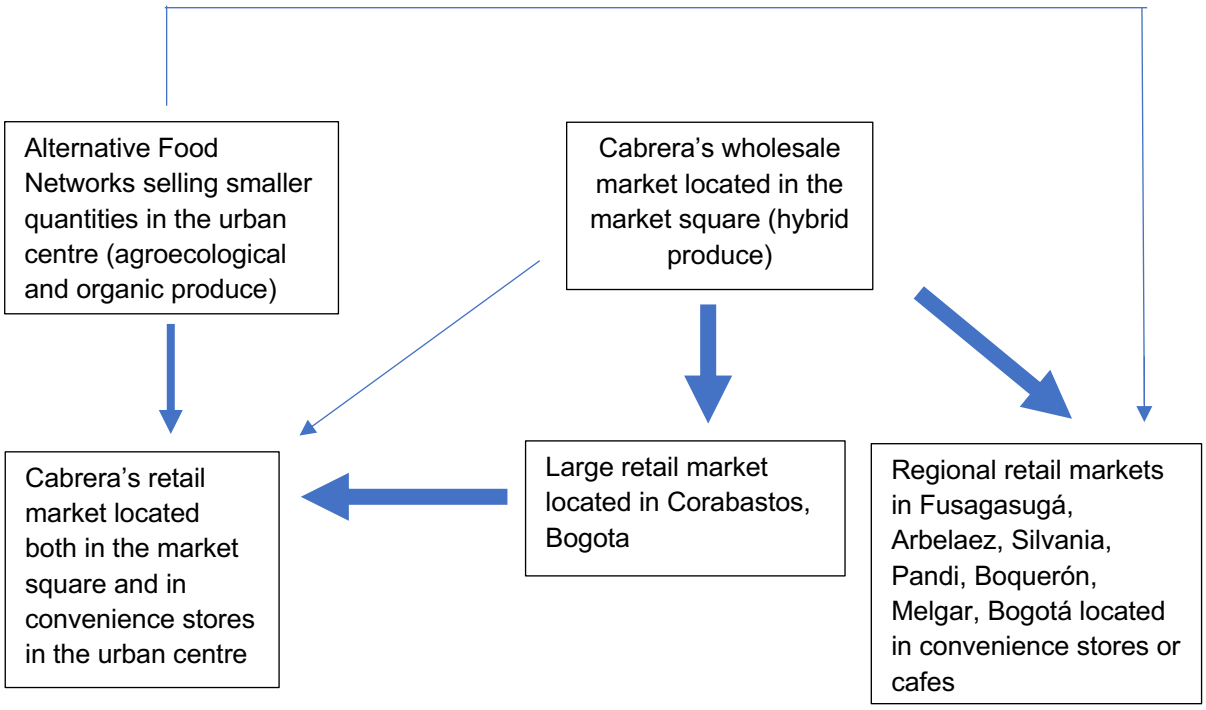
National and local markets are outbid by international buyers, which in one sense is a good outcome for campesinos because they earn more but long-distance trade widens the space between consumers and sites of production (Foster, 1999). It also increases campesino exposure to international market fluctuations, volatile demand and prices. Finally, it results in lower quality produce for domestic consumption, as Colombian consumers are eating food that is less regulated, thus, more likely to have been produced with higher levels of pesticides.

5.8.3 Deregulated Regional Markets

Deregulation of regional food markets has had lasting effects on trading patterns in Cabrera's wholesale market, as much of the food produced locally is now sold from individual farms. The lower volume and shrinking diversity of food converging in the market square in Cabrera has also had consequences for the local retail market. The market square where wholesale takes place, also houses three retail market stalls with fresh fruit and vegetables principally for those who live in the urban centre. Of these, two owners bring all their produce from Corabastos in Bogotá, while only one sources directly from the wholesale market in the square (see Figure 5.4 for the movement of goods in wholesale and retail markets- the thickness of the arrows illustrates the volume of goods traded). As Cabrera's Mayor Cárdenas Muñoz pointed out, 'there is no longer [local] commercialisation, this is drying up … all produce, and sales are directed outside' (Interview, 2017).[65] By this he means that food grown locally is supplying Cabrera's retail market less and less. Cárdenas Muñoz argues that Cabrera's retail market is small, and people prefer to sell to 'big buyers' to ensure their produce is sold (ibid). For instance, beans are absent from Cabrera's retail market in the town centre, despite being Sumapaz's primary producer, which is also the case with other key crops.

[65] 'Outside' refers to markets other than Cabrera, e.g. in Bogotá and other regional cities such as Quindío and Armenia.

Figure 5.4: Food circuits in Cabrera (wholesale and retail)



Source: Author's elaboration (NB: the thicker arrows depict larger volumes of goods and the thinner arrows reflect smaller volumes of goods)

Cabrera's local ombudsperson argues that no matter what local project is running in the municipality, food tends to come from Corabastos (the central market) in Bogotá (cited in FAO, 2018, p.252). They go on to state that food produced in the municipality will first be sold in Corabastos before eventually returning to Cabrera at an elevated price in the local retail market (ibid). This is partly motivated by the fact that the retail market in Cabrera is small, so campesinos sell to wholesalers from around the country to guarantee purchase, which leaves little for the retail market in the local town. Moreover, the quantities sold in the wholesale market may be too large for local retail businesses and also less diverse. Therefore, smaller quantities and greater diversity of food from Corabastos is likely cheaper for retail businesses than buying from the wholesale market in Cabrera, even factoring in the cost of transport. In any case, it appears food produced locally can end up in the local retail market but through a longer food circuit. This obscures the identity of producers, further undermining producer-consumer relations by preventing the construction of relationships around food production and consumption, as well as reducing the freshness of food.

Some local producers, such as the women's organisation ORGANICAMPO, resist market deregulation by selling smaller quantities of food directly to retail shops in the town. The comparative advantage here is that retail businesses save costs related to travel to and from Bogotá, as well as buying fresher organic food for the same cost as conventionally farmed produce. Every Thursday they bring a shopping trolley of organic food, wearing visible jackets with the organisation's insignia, they go from door to door and sell to local shops and people. This greatly differs to the above example because it makes their role as producers highly visible to retail purchasers and also to consumers who directly buy from them. Other organisations and individuals who sell directly to the local retail market are: ASOGNAC- one of the main livestock associations that also runs a local dairy- who produce and sell cheese in the town (see Section 5.9.5 for more detail on ASOGNAC and the dairy plant); Interviewee 16 who sells a crate of tomatoes to a specific shop in town; Interviewee 8 sells her own coffee directly to neighbours; and Interviewee 9 sells whey directly to consumers in town every week. Renting et al. (2003) identify short-food circuits such as these as face-to-face alternative food networks (AFN). While they represent an effective form of resistance to deregulated markets, such transactions are limited because the local supply of this food is not as voluminous and steady.

The movement of food in and out of the ZRC Cabrera- local goods exported, only for the same or similar products to be brought in from regional markets- underlines that local and regional markets are not synonymous with AFNs. Robbins suggests that local markets themselves are not perfect mechanisms to overcome the contradictions of capitalism, as these 'may demonstrate contradictory characteristics… [which are] not automatically synonymous with food sovereignty' (2015, p.458) nor agroecology. Cabrera's market exists within regional, national and global food markets that draw farmers towards bulk, monocrop production for export or larger domestic markets, such as Corabastos in Bogotá. This extracts nutrients from soil nutrient cycles and requires higher inputs of fossil fuels, due to the transportation of produce. The ZRC model could ensure producers sell locally first, whilst also supplying regional, national and export markets. This would require significant market regulation from municipal and departmental authorities, as well as participation from smallholders and other key economic actors. The Territorial development Plan (PDT) and the post-peace agreement conjuncture could provide an opportunity to ensure the ZRC model also

has an economic component that helps forge more ecologically friendly AFNs. Currently, Cabrera has a strong regional market network, but this differs from other local examples of AFNs because these markets are not oriented by agroecology or food sovereignty principles, instead, they tend to undermine local solidarity projects and the moral economy.

5.8.4 Intermediaries

Intermediaries have had a shaping role in the ZRC Cabrera's process of market integration, as they are key bridging points between rural and urban spaces. Intermediaries are potentially the only way to sell for those who are structurally disadvantaged- without the means or finance for the transportation of goods. This context gives intermediaries significant transactional power- an issue mentioned repeatedly by interviewees. Numerous campesinos noted that intermediaries exploited them. They associated them with theft and metaphorical violence, which is poignant in a setting of rural conflict. Interviewee 15 said, 'one is robbed by intermediaries', whilst Interviewee 1 asserted *'el intermediario nos tiene a machete'.* A direct translation of this is 'the intermediary holds us at machete point', illustrating the perception of coercive and exploitative power held over campesinos. Interviewee 16 echoed this saying, 'they pay us whatever they want to', underlining a lack of regulation in relation to the activities of intermediaries. Guarín (2013) argues, however, that intermediaries often assume great financial risk and marketing expense because supply can vary. In addition to this, they absorb 'losses due to poor handling' (ibid, p.522), which casts a different light on campesino claims of exploitation.

Although campesino interviewees tend to blame all intermediaries for the poor prices they receive, many of these individuals are also campesinos, actively engaged in agricultural production. Interviewees tended to depersonalise intermediaries, referring to them as 'the intermediary', even though the majority operating in the area are actually residents of Cabrera. Of those that purchase goods directly from the market in Cabrera, five are from Bogotá, three from Villavicencio, three from Fusagasugá, two from Ibagué and six from Girardot but the majority are from Cabrera itself. These destinations are an average 2.5 hours by car, whilst Villavicencio is the most distant, situated some six hours drive from Cabrera. Since the majority of intermediaries are people from Cabrera and neighbouring areas, whose livelihoods equally depend on local agriculture, underpaying producers to the point of extinction is equally

unfavourable to them. Thus, analysis of local intermediaries provides contrasting insight to that derived from interviews with producers and suggests that intermediaries pay prices that cover their costs, including any losses they may incur during transportation, while at the same time seeking to offer a price that will be attractive to producers.

The rejection and negative projection of intermediaries, small wholesalers and large wholesalers could be explained by the fact that they act 'in an individual and uncoordinated fashion' (Guarín, 2013, p.521). In a context of informational asymmetry both consumers and producers fear they 'end up paying for logistical inefficiencies and unduly high transactional costs' (ibid). It is very likely that producers blame intermediaries for their falling profit margins because they have the most direct contact with these actors. It is easier for local farmers to find these individuals culpable for speculation, rather than the wider structural and global reasons that lead to economic marginalisation for smallholders. The ZRC model could do work around connecting producers and intermediaries in a more formal manner, possibly by encouraging the formation of cooperatives and the institution of collective bargaining. Most farmers also have access to smart phones, which could be used to combat informational asymmetry. So far, however, this technology is not used to gain insight into food prices set in Corabastos, as this would require established relationships with wholesalers in Corabastos or with intermediaries visiting the site who are willing to share this information.

5.8.5 Alternative Food Networks: Smallholder Associations

Mier y Terán Giménez Cacho et al. suggest that alternative food networks (AFN) 'have often been central to the advance of ecological farmers' markets and the socioeconomic viability of agroecology' (2018, p.16). These are networks that promote agroecologically-produced, smallholder goods in international or local/regional markets (Renting et al, 2003). These networks are not 'a necessary condition for the widespread adoption and adaptation of agroecological practices' but they do 'determine the rhythm at which agroecology goes to scale' (Mier y Terán Giménez Cacho et al, 2018, pp.16-17). The ZRC Cabrera has a few examples of AFNs, such as the cheese project led by ASOGNAC and the weekly sale of organic fruit and vegetables by ORGANICAMPO. These are campesino associations administering

production and building local or regional trade networks through face to face sales (cf. Renting et al, 2003).

ASOGNAC's production of *Queso de Cabrera* or Cabrera Cheese, as well as yoghurt and cream cheese is a particularly outstanding example of a successful AFN. Cheese is made every day, whilst the latter two products are made less frequently, as only one member of the association is trained for this preparation (who is not always available to offer her labour). ASOGNAC has existed since 2005 and in 2017 had 33 affiliated families. The dairy project began in September 2014, when the association drew up plans for a plant, sourced potential associates who could provide milk on a daily basis and approached various state organisations for funding including INCODER, the Governor of Cundinamarca, the Department for Social Prosperity, the Ministry of Agriculture, *Fundación Populorum Progressio* and the FAO. The plan to build a dairy plant was motivated by the increase in livestock holding in Cabrera (Section 5.8.3 notes the intensification of livestock holding in the municipality from the 2000s onwards). Construction of the dairy plant was completed in March 2017 and two female employees from Cabrera were appointed to undertake cheese processing. This project created two new jobs, as well as a new, local market for those with livestock, thus, enhancing the campesino economy.

There are numerous tasks involved in the daily production of cheese. First, milk collections are undertaken in the early hours of the morning. The milk is then decanted from large specialised cannisters, manually poured and passed through filters into large receptacles where it is heated, during which cultures are mixed with the milk to make it curdle. The curds and whey are separated when cooled and the curd is transferred into cheese moulds (see Plates 5.5a and 5.5b). These are left to cool until they set and are then transported down to the town for storage in industrial fridges, as the factory did not have access to electricity at this point. By August 2017, there were daily collections of 500 litres of milk from 13 farms in one ward, which was transported to the urban centre in a small pick-up truck owned by ASOGNAC. The objective is to increase collection capacity to 3000 litres a day. Associates have bought more cows to increase production, as a consequence of having the means to collect milk and having a factory to process this. Together, this reflects the strengthening of

commercial petty-commodity production but also an increase in food security, as milk and dairy products are more steadily available for producer families also.

Plate 5.5a: Transferring curd into moulds



Plate 5.5b: Packing the Cheese



Source: Author.

ASOGNAC's distribution methods have improved over time. In the early stages of the project a motorcycle was used to deliver cheese to shops, but the association now has its own tuk-tuk, which increases the amount of cheese that can be transported (see Plate 5.6). ASOGNAC has developed a network of buyers, consisting of convenience stores in nearby towns, such as Arbelaez, Fusagasugá (where most is sold), Silvania, Pandi, Boquerón and Melgar. Occasionally, it is also sold in Bogota in the Café de la Reserva - a coffee shop in the historic centre and tourist frequented area of the Candelaría- that sells produce from ZsRC around the country. It is the only AFN in Cabrera that sells to regional markets, all others sell in the urban centre alone. These routes, nevertheless, are constitutive of a face-to-face regional AFN.

Plate 5.6: ASOGNAC's Cheese Distribution Tuk-Tuk



Source: Author.

Selling associatively has permitted ASOGNAC to make slightly more profit than individual campesinos selling artisanal cheese, which highlights the importance of associations and cooperatives. ASOGNAC sells 600 kilos of cheese a week at US$3.30/kg, whilst intermediaries pay US$2.30/kg to non-associated campesinos that make artisanal cheese in their homes with rudimentary equipment. ASOGNAC's product has risen in cost due to new, airtight packaging, which carries the association's logo and ZRC logo, giving the cheese a more commercial appearance but one that discursively links petty-commodity production with the ZRC model (see Plate 5.7).

Plate 5.7: ASOGNAC's "Campesino Cheese from Cabrera: From the Peasant Reserve"



Source: Author.

ASOGNAC, however, is still in the process of developing their cheese production, as was evident from the lack of electricity in the plant during the fieldwork period. This limited the amount of cheese made and stored, as they kept it in industrial fridges in town and not in the plant. Nevertheless, ASOGNAC developed good practice by collecting milk samples from each farm and testing them for purity every week. The two female workers boil and filter milk in the plant and operate to the relevant hygiene standards, dressing in white overalls and keeping their hair covered at all times (see Plates 5.6a and 5.6b). Associates are also encouraged to farm more agroecologically by employing daily rotation of pastures to reduce or avoid the use of herbicides. This prevents animals from grazing selectively and can help control some weeds, as livestock are more likely to graze weeds when they are small (Popay & Field, 1996). Associates are also informed about agroforestry (silvopastoralism), educated about reducing the use of antibiotics in livestock and integrating animal/crop farming systems. ASOGNAC has shown steady learning and improvement towards best practice, emphasising the fact that campesino associations can successfully construct and run AFNs.

ASOGNAC's project stands out as an example of campesino resistance, providing the means to transform agricultural produce and add value through a process that is led and organised by campesinos. These socio-economic and agroecological objectives qualify this food circuit as an AFN, as ASOGNAC frames the production and sale of cheese beyond profit. While the socio-cultural credentials of the cheese are strongly promoted, particularly its origin in the ZRC Cabrera (see Plate 5.8), there is no mention of agroecology on the packet nor of ecological sustainability. If packaging also pointed to the cheese's ecological credentials, this would provide another indication of quality and open an alternative marketing niche. It would also act as a pedagogical tool for locals buying the cheese and may convince other non-ASOGNAC artisanal cheese makers to farm more agroecologically to tap into this market. Nevertheless, the prevailing marketing message is that this cheese is produced by campesinos pertaining to the ZRC Cabrera, which explicitly links the AFN and petty-commodity production to the ZRC model. This discursively boosts the profile of the ZRC model, as an institutional tool that enables petty-commodity farming and commercialisation.

The women's association ORGANICAMPO is another successful AFN in Cabrera. This association is smaller in size and has fewer resources than ASOGNAC. It was

first allocated funding as part of the ZRC pilot project in the early 2000s to grow raspberries and develop its organisational capacity. Subsequently, they engaged with projects from the Bogotá-based Corporación Universitaria Minuto de Dios (UNIMINUTO), FAO and ANZORC and through these later projects began planting lettuce and coriander, expanding to vegetables and fruit. Currently they produce eight crates of diverse produce a week, with each crate measuring 60 cm x 40 cm x 15 cm (the equivalent of 36 litres). Interviewee 9 recounted that at first people were averse to buying ORGANICAMPO's vegetables because they thought they were weeds. ORGANICAMPO responded by educating prospective clients and providing recipes when selling their vegetables. In this way they challenged the shift in consumer preferences to processed food, addressing the lack of fresh fruit and vegetables in Cabrera's retail market.

This is an example of campesino-led social and cultural change, where the women took initiative to educate their clients and also improve their own economic prospects. They use agroecological techniques in their home gardens; their labour is both collective and individual. Each week they take it in turns to go in pairs to sell their produce in the urban centre. Interviewee 9 said, 'we do not want to be rich through this, we look to be working in association, we are trying to do our little bit to improve the health of the environment and people. We are looking to gain status in our homes…we are like one big family, we talk about our problems with each other, we have solidarity with each other'. Although Interviewee 9 underplays economic motivations for establishing the association, this is somewhat idealistic. This is evident from the fact that further into the interview she notes how helpful the extra income has been for her family, a point that was repeated by numerous ORGANICAMPO associates. Arguably, the association has been an essential means for these women to assert their role as food producers both in their families and also in larger society, as Interviewee 9 notes. ORGANICAMPO has directly provided the women associates with money, which is empowering in itself because they no longer need to depend solely on their husbands as breadwinners. They also gain experience by taking a lead in influencing decisions about what and how crops are grown, as well as through the sale of their produce.

ORGANICAMPO's associates have gained social status among Cabrerans by the fact that they are the only women selling agricultural produce in the urban centre's retail

market, which is an otherwise male dominated space. In so doing, they not only resist smallholder expulsion from food production but also gendered norms that confine women to the domestic sphere. Moreover, Interviewee 9 clearly reflects the notion that ORGANICAMPO uses the market for 'socio-political action' (Mier y Terán Giménez Cacho et al, 2018, p.17), aiming to overcome the ecological, nutritional, social and cultural shortcomings they identified in their daily lives- namely the fetishization of food and disconnection from the food production process. They differentiated 'agroecological production from the general market' (ibid, p.16) by viewing the food system as a whole, linking the well-being of their families, community and wider environment. The different social, economic and also ecological focus of production and sale qualifies this food circuit as an AFN.

ZRC status has provided certain benefits to the AFNs in Cabrera. ORGANICAMPO received funding from the ZRC pilot project in the early 2000s, technical support to set up an organisation and assistance in implementing agroecological methods on farms. ASOGNAC came into existence after the pilot project but the association profited from the links that had been constructed between the ZRC Cabrera and various rural development institutions. This was directly useful in gaining funding for the dairy plant. Moreover, ZRC status has garnered Cabrera more attention from academia, such as UNIMINUTO, who have supported ORGANICAMPO through agroecology workshops for crops and poultry. The ZRC Cabrera has received some state funding for the dairy plant, which gained contributions from the Governor of Cundinamarca, but this has been the only significant investment since the area assumed ZRC status. This illustrates the disconnects between wider state institutional framework and the ZRC model (see Chapter 4 for more on this). Lack of state follow through in supporting the sustainable transition of the petty-commodity sector is congruent with the national treatment of ZsRC.

According to a civil servant working on sustainable development in the ZsRC for the state's *Agencia de Desarrollo Rural* (the Rural Development Agency- ADR), more financial resources have been allocated to the model as part of the peace process (Paola Salazar Interview, 2018). ASOGNAC is in discussion with the ANT and the ADR to secure money for an abattoir, which is one of the Steering Committee's six priority projects for the area. If social organisations build around and upon state initiatives, working with state institutions through pre-existing methodologies designed

during the ZRC pilot project, they can strengthen the ZRC as a form of democratic institution building. ASOGNAC (the association leading this project) could design this industrialisation project through a linked process that assesses how to integrate agroecological production in livestock farming, and how to connect agroecological produce to consumers in Cabrera as ORGANICAMPO has done. In so doing, the creation of AFNs can be used to bolster and scale out campesino exchange and dialogue.

In addition to formal co-operatives and producer associations, campesinos in the ZRC Cabrera also have their own models of associative working. Different to formal associations, those with and without land join their resources in joint ventures, with the latter providing labour. Those who proffer land also cover the cost of seeds, infrastructure and chemical inputs because labour is given the same value as property. Profits are then divided among *socios* or associates. This system is popularly referred to as *paramberismo* and has roots in the agricultural colonies of the 1920s. The *parambero* model is a collaborative mechanism that fills in for lacking state credit and financial services, as well as ineffective land redistribution policies, by linking those with land to those with labour in a devolved and horizontal process. *Paramberismo* ensures the continuance of petty-commodity production in this area, as it overcomes the issue of land shortages and the absence of creditor support for the development of agricultural initiatives.

A similar collaborative campesino practice is undertaken with cows: owners who do not have adequate access to land or the time to raise cattle enter into arrangements with neighbouring campesino families. The latter feed and milk the cattle, selling or converting it to cheese, to cover feed and veterinary costs and generate an income. Any calves or mature steers, ready for slaughter are returned to the owner. This way one family benefits from the sale of milk and cheese as a return on the investment paid for the cow's upkeep, while the second benefits from the cow's slaughter. These joint ventures, along with co-operatives and formal associations, present interesting alternatives to corporate contracting and the subordination of smallholders to agribusiness food circuits. Strengthening these models of co-operation would be another way of combating the splintering and debilitation of petty-commodity production by utilising and strengthening existing local practices.

In recent history, Cabrera has become highly integrated in regional, national and international markets. This has generated a metabolic rift (Foster, 1999), as nutrients are exported out of the area preventing soil nutrient cycling, whilst also enlarging distances between sites of production and consumption. Integration in neoliberal markets has also subjected producers to price volatility and a shrinking profit margin, which undermines the long-term economic sustainability of the petty-commodity production. This process facilitates CFR integration in the long-term, as it corrodes this sector, which is evident by the fact that the wholesale market taking place in the local square has a reduced volume and diversity of goods. The atomisation of the local wholesale market has produced a social rift between producers, as the convergence of all the municipality's produce in the market square helped campesinos to communicate over price. The reduction in volume and diversity of food has also meant that it is often cheaper for retail purchasers in Cabrera to buy food from Bogota than the wholesale market in Cabrera, even if this means that they are bringing back food originating from the municipality. This elongated food circuit anonymises producers and disconnects them from consumers, which contradicts Gliessman's (2016) Level Four of agroecological transition. This generates a separation that prevents consumers from knowing who produced their food and how, leading to the fetishization of food instead of its placement in specific socio-economic and ecological contexts. Additionally, the anonymisation of producers is particularly problematic in the case of ZsRC because it undermines the discursive identity of the ZsRC as a model that foments campesino food production, as food is not linked back to the ZRC Cabrera.

Externally oriented trade has also intensified agricultural systems through crop selection and wider farming practices. Smallholder farms in the area now cultivate a shrinking variety of food in line with market demand, which has reduced planned and associated biodiversity. In turn, this makes agroecosystems more vulnerable to pest attacks, causing farmers to rely more heavily on pesticides (Mancus, 2007; McMichael, 2008, 2013; Schneider & McMichael, 2010; Gunderson, 2010; Clausen et al, 2015; Longo et al, 2015; Perfecto et al, 2019). Export companies have also imposed their own framework of farming best practice, which includes the reduction of chemical inputs. This has resulted in the export of better-quality food, which is likely to have reduced pesticide residue, and the relegation of all other more blemished items for the national market. In so doing, the export market has generated a nutritional

metabolic rift, as healthier foods produced with less chemicals are saved for wealthier consumers in the Global North, whilst Colombians consume food produced according to more lax regulatory standards.

Nevertheless, the municipality has a number of successful AFNs that bolster the petty-commodity sector and resist these socio-ecological rifts. ASOGNAC and ORGANICAMPO are effective social enterprises, employing a range of agroecological methods that are reducing rifts in the nitrogen and phosphorus cycle through the reduction of chemical inputs, which leads to less leaching in waterbodies. These AFNs demonstrate the viability of campesino agriculture, as well as their ability to construct alternative socio-economically and ecologically just markets. Additionally, the *parambero* system of labour and resource sharing redraws links between landed petty-commodity peasants and landless peasants to collectively overcome structural impediments to campesino agriculture, such as insufficient land and poor credit access. In so doing they resist smallholder atomisation. This is a social rift between smallholder producers that pushes them towards individualised production and sale, which can lead to economic dispossession (cf. Magdoff, 2013) and CFR integration in the long-term. The collaborative response to structural obstacles faced by diverse campesinos illustrates how they strengthen associativity in their own creative ways.

5.9 Nutrition

Shifts towards export and regional market demands have engendered changes in farming practice from crop specialisation to the intensive use of GR and NGR technologies. Consequently, the types of food the local population has access to in the local retail market, as well as the kinds of food grown for subsistence also differ. Crop specialisation has led to the cultivation of fewer species and varieties of fruit and vegetables, which directly impacts the range of food available to families on their own farms. The ZRC Cabrera's Sustainable Development Plan (PDS) argues that the 'specialisation and the orientation of crops to international markets is a risk that could be detrimental to food security and sovereignty' (ILSA et al, 2013, p.199). It fails to mention that this could also result in malnutrition from imbalanced diets.

5.9.1 Food Purchase Over Cultivation

Crop specialisation on farms has influenced how food is accessed. The municipality does not have a significant issue with food security, as 95% of its inhabitants eat at

least three times a day (ibid, pp.97-8). This suggests that even if portion size differs, residents are indeed eating frequently. However, the majority of families acquire this food through purchase rather than subsistence farming because small holding sizes and increasing demand for export crops have tended to see land used for commercial rather than subsistence production (FAO, 2018, p.230). Even crops such as potatoes, which were once widely grown across the municipality, are now bought. Interviewee 11 mentioned that his family 'buys what they do not grow' but given cultivation has become so specialised, most food stuff is purchased. Over the last few decades, during the period of the CFR, Cabrera has undergone a cultural shift away from subsistence farming towards cash crop cultivation.

Butler and Dixon (2012) note that industrially produced food can have lower nutritional value than subsistence produce. They provide the example of industrially reared chickens, which have higher levels of fat, as they move around less. This argument, however, is too broad to be analytically relevant for all scenarios and foods, as many subsistence economies also produce crops that have low nutritional value (see studies that look at the nutritional impact of subsistence farming in Ethiopia, Sri Lanka and South Africa- Malkanthi et al, 2007; Abebe et al, 2008; Gibson et al, 2009; Aliber & Hart, 2010; Sibhatu & Qaim, 2017). Moreover, subsistence crops vary greatly depending on location, climate and infrastructure, thus, to test this assumption nutritional studies in both case studies are needed. A more nuanced conclusion would therefore be that nutritional diversity of fresh fruit and vegetables has reduced in Cabrera, given the shrinking range of foods grown for family consumption. Subsistence farming still takes place, but this is usually limited to home gardens. The Agricultural Census of 2014 indicates that 51.6% of families in the area produce for home consumption (Poveda, 2018, p.3), whilst the PDS places this figure at 48% (ILSA et al, 2013, p.200). Studies conducted by professors from UNIMINUTO concur that subsistence farming is still very much practised in the ZRC Cabrera (Acevedo-Osorio & Chohan, 2019) but observation from fieldwork confirms that this is mainly taking place in home gardens, as fields are predominantly used for cash crops.[66] Thus,

[66] Acevedo-Osorio and Chohan (2019) analyse 55 farms in four producer associations in Cabrera. The average amount of land dedicated to home gardens varies among each association, ranging from 578.2

home gardens represent a continuation of a subsistence rationale and resistance against capitalist forms of production that dedicate all arable land to cash crops. This practice also maintains a firm link between sites of production and consumption, thus, healing this aspect of the metabolic rift.

5.9.2 Consumption of Fruit and Vegetables

Shifts in how food is accessed have also impacted local nutrition and dietary habits, such that the consumption of fruit and vegetables in the area is now considered 'minimal' (ILSA et al, 2013, p.98). Arguably, this is a result of production for sale rather than a change in tastes. Mayor Cárdenas Muñoz contested this analysis, suggesting that rural families still consume everything they make (Interview, 2017). He said families frequently drink fruit juices, due to greater cultivation of fruit. This could be the case but the crop specialisation has resulted in a shrinking variety of home-grown foods. Moreover, a trend towards cultivating for market demand has altered local perceptions and consumption of food that does not have high exchange value. For instance, pumpkins grow freely in the municipality, requiring little to no chemical input. Upon visits to various farms, pumpkins were observed strewn across plots of land and left to rot. During interviews, participants were asked why this nutritious vegetable was abandoned. Many said it was only for animals, it was akin to weeds and only some included pumpkin in their diets. Interviewee 18 remembers how central pumpkins were to local diets some 40-50 years ago. According to this respondent people frequently ate maize, squash, potatoes, beans, peas, chayote (known as the poor potato/*papa pobre*) and pumpkins. Today, however, chayote and pumpkin are rarely eaten, reflecting a more general trend to consume a reduced variety and generally fewer portions of fruit and vegetables. Cabrera's previously balanced dietary culture is changing, as less space is dedicated to subsistence crops on farms.

Nutritional education is limited in Cabrera but this is being resisted by a small group of campesino women. ORGANICAMPO reveal how a shift in a few families can have a wider impact on the local community. Interviewee 9 recounts that the association began by planting their own home gardens to reduce the necessity of buying salad

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m^2– 1318.8m^2 (2019, p.13). In terms of the number of subsistence crops, this varies from an average of 8.5-10.6 (ibid).

vegetables. ‘We did this to improve the nutrition of our own families… [then we thought] why not sell this…to all the municipality because there were also people in the ward that wanted to buy our vegetables’. They taught people new recipes and began to challenge a culture of consumption that was moving away from fruit and vegetables. This was done by taking a shopping trolley of fresh produce door-to-door each week and talking with customers about how to prepare them. The horizontal sharing of knowledge is evidence of campesino to campesino teaching and agency, which is necessary to create long lasting change in productive patterns and consumer habits (cf. Martínez-Torres & Rosset, 2014).

5.9.3 Consumption of Empty Calories

The quantity of ‘empty calories’[67] consumed in the ZRC Cabrera remains low. Nevertheless, the urban centre still has a handful of hamburger restaurants, convenience stores, as well as bakeries that sell a variety of confectionary (crisps, chocolates, cakes and sodas). During fieldwork, business in these shops was consistent. All families interviewed in rural wards stated that neither they nor their children consumed junk food frequently because they were removed from the urban centre. Very few interviewees mentioned avoiding empty calories due to health reasons, which is suggestive of a lack of consciousness around diets and the health impacts of eating empty calories. Fewer families in the urban centre were interviewed, hence, it is not possible to verify the exact difference between the two. Consumption of fast food is likely to become an increasing problem in the ZRC Cabrera, however, if nutritional education is not improved.

5.9.4 Consumption of Chemically Contaminated Food

Changing production patterns have altered the quality of food that people consume. In particular, much of the food produced for national markets is grown using excessive amounts of chemical inputs. There is a shortage of data, however, about the effects of consuming chemically contaminated food in Cabrera. Anecdotally, a number of participants commented on farmers suffering from intoxication, due to poor safety measures during crop fumigation. There was also mention of an individual dying from

[67] Most processed foods like snack bars, crisps, sweets and sugar-sweetened drinks are classified as ‘empty calorie foods’ because they have little or no nutritional value but contribute to excess calories and weight gain.

blood poisoning as a result of pesticide poisoning (Interviewee 19). Farmers were consistent in their claims that they did not consume their cash crops, due to the high quantities of agrochemicals applied. When walking around campesino fields, Interviewee 20 warned me to wipe and wash any fruit picked straight from the plants. He pointed to the white sheen that most small granadilla had and said it was safer to walk alongside these crops, rather than under their hanging canopies because of the levels of chemical residue they still contained. Interviewee 29 also remarked that she was 'sick of eating food bought from the market', as it was 'full of chemicals'. Chemical use in cash crops was incentivising her and her husband to grow their own food.

A number of farms used different farming practices for crops grown in bulk for regional markets and home gardens for subsistence: particularly reducing the amount of chemicals used. Interviewees 4 and 10 applied little to no chemicals in their home gardens, as these were designated for family consumption. These examples illustrate a growing awareness of the health hazards related to food produced using chemical inputs. Furthermore, the reduced use of chemicals in subsistence crops highlights an awareness of the possible negative consequences of eating chemically contaminated food. In this context, the cultivation and consumption of organic food represents campesino resistance against the tendency to buy more chemically enhanced food produced using GR technologies.

5.9.5 Home Gardens

State institutions are supporting dietary diversity by initiating projects around home gardens. UMATA, FAO and ANZORC have all been encouraging home gardens on individual farms, providing seeds and some technical assistance. UMATA has between 100-150 beneficiaries to whom they have given onion, coriander, lettuce, carrot, beetroot and cabbage seeds. The aim of this project is to reduce the costs associated with vegetable production, which is a stated cause for low levels of consumption (ILSA et al, 2013). Efforts around home gardens have been insufficient, however, as this needs a strategy 'tied to organic and diversified production, thus, contributing to the improvement of the population's health' (ibid, p.190). This exemplifies a top-down progressive food movement, which has a specific objective, but does not link to wider socio-economic issues of food production (cf. Holt-Giménez & Shattuck, 2011). The home gardens policy does not necessarily emphasise the importance of biodiverse farms, as it focuses on spaces that are more isolated from

cash crops. ORGANICAMPO, in contrast, has developed a clearer strategy with significant results, placing agroecology and healthy eating at the heart of their production. Emphasising the importance of consuming a variety of organically grown vegetables is an area that needs particular attention, given the lack of safeguards and limits on the use of agrochemicals both nationally and locally.

Changes in farming practice have not only generated various dimensions of the metabolic rift in the environment but also in the nutritional habits of the local population. Less space for subsistence crops on farms has resulted in reduced dietary diversity that is often substituted with purchased food, a practice that pushes petty-commodity producers more towards becoming consumers. Moreover, purchased fruit and vegetables are likely to have higher levels of chemical contamination, as food destined for the national market is not regulated for chemical input use, thus, the metabolic rift equally takes place in human bodies (Butler & Dixon, 2012; Scales, 2014; Sharp, 2016). This exposes populations to greater risks of pesticide poisoning. Fundamentally, purchase of industrially produced food facilitates CFR integration, as this expands the corporate regime of accumulation. Consumption of industrially produced goods also separates sites of production and consumption, which is reflective of the metabolic rift (Foster, 1999).

5.10 Conclusion

CFR integration is taking place in the ZRC Cabrera across three of the four CFR dimensions outlined in the analytical framework (technology & practice, agricultural markets and nutrition). Simultaneously, various expressions of agroecological resistance are also present across all four dimensions (land tenure in addition to the ones mentioned above), resulting in hybrid agroecosystems across the municipality.

CFR integration is not taking place through spatial accumulation of land in Cabrera, since smallholder landownership forms the basis of the **land tenure** system. This was protected through the assumption of ZRC status in the early 2000s, which explicitly recognises campesinos' right to land. Therefore, local lobbying and appropriation of the ZRC model represents campesino resistance against land accumulation by both corporate and other entities. Nevertheless, a weak land titling regime threatens the campesino economy. Additionally, the increasing problem of land subdivision undermines the economic viability of the campesino economy. This situation has been

brought about by inheritance practices, poor state land redistribution programmes, a lack of state investment in enforcing the ZRC's zoning model and a weakness in the ZRC model's institutional design that does not provide it with any binding legislation to enforce the UAF zoning plan. Although Cabrera has a smallholder-led system, in fact, context specific factors weaken the long-term sustainability of the sector.

Although corporations are not actively accumulating land in the ZRC Cabrera, corporate influence is palpable through the **technology and practice** used by farmers. GR technologies are key to CFR integration because they connect campesinos to global commodity chains that are controlled by a handful of multinational agribusinesses. Use of GR technologies, such as certified seeds, engenders dependence on a plethora of other industrial methods. Excessive use of herbicides can contribute to soil desiccation and compaction, due to the removal of weeds that facilitate water filtration. This also generates rifts in the nitrogen and phosphorus cycle, which can lead to declining soil organic matter content and fewer earthworms. In turn, this can cause compaction, reduced soil porosity and increase risks of erosion. Monocrop agriculture also reduces planned and associated biodiversity (Mancus, 2007; McMichael, 2008, 2013; Schneider & McMichael, 2010; Clausen et al, 2015), which can make ecosystems more vulnerable to pest attacks. Intensive farming has resulted in the separation of animal and crop agriculture, which also generate rifts in the soil-nutrient cycle, as animal manure is not used to fertilise crops (Heffernan, 2000; Gunderson, 2011; Longo et al, 2015). Finally, the intensive use of GR and NGR technology can create knowledge rifts (Schneider & McMichael, 2010), as it displaces knowledge synched into situated agroecosystem processes.

Agroecological resistance has not disappeared altogether, however, as most farms still practice some low or no external input strategies in their subsistence farming in home gardens and some in cash crops. These spaces evidence a plethora of agroecological techniques, such as polycropping, crop rotation and use of agroecological fertilisers. These methods increase organic matter in soils, thus, reducing the need for synthetic fertilisers. The presence of agroecological farming methods underscores the possibility of scaling agroecology -out and -up in Cabrera, as this resists the prescriptive logic of industrial practices. This is because farmers adapt these technologies with tried and tested farming methods from the area.

Crop specialisation and intensive agriculture more generally in the ZRC Cabrera has been driven by CFR **agricultural market** integration. Farmers have re-oriented their production towards export and regional markets, limiting the diversity of food available in both the wholesale and retail markets in Cabrera. Integration in these markets has also left campesinos open to market price fluctuation. This increases financial risks for campesinos, making agriculture less economically sustainable and CFR integration more likely in the long-term. In Cabrera, deregulated regional markets have elongated food circuits, as campesino producers prefer to produce for wholesale, rather than the smaller retail market in Cabrera. This means that much of the food produced in Cabrera leaves the municipality, only for it to eventually return in smaller quantities from large retail markets such as Corabastos through intermediaries and direct purchase from retail business owners. This anonymises and alienates producers and consumers, which works against Level Four Agroecology in Gliessman's transition (2016)- the formation of closer links between consumers and producers. Thus, the elongation of the food circuit prevents consumers from knowing where and how food has been grown, as well as by who. The latter point in particular undermines the discursive foundations of the ZRC model, as a space in which campesinos are supported to produce food because this food is not linked back to the ZRC Cabrera.

Campesinos have resisted CFR integration by working in association and also farm-specific joint ventures called *paramberismo*. The latter is the structured partnership of campesinos with land and those that can only contribute labour. This bottom-up campesino resistance has been a means to ensure the continuation of the campesino economy, despite land subdivision and the absence of sufficient agricultural credit. Furthermore, the campesino association ASOGNAC has constructed a successful AFN, by sourcing money from various entities to fund a dairy plant. The cheese produced by this association is sold to a wide regional market, as well as the local one, exemplifying campesino agency in reconnecting local producers with the retail market and so bridging the distance between sites of production and consumption. ORGANICAMPO is another promising example: an organic agricultural association that sells fruit and vegetables in the local town, recreating face-to-face exchanges between producers and consumers

Changes in productive practices and the local market have impacted local food consumption and **nutrition**. As crop selection has become more specialised and

farming practice more intensive, fewer crops are grown for subsistence. This has resulted in reductions in the diversity of local diets, which increasingly incorporate fewer wholefoods such as fruit and vegetables (cf. Butler & Dixon, 2012; Scales, 2014; Sharp, 2016), This facilitates CFR integration by contributing to the corporate regime of accumulation. This case also reveals an alternative nutritional metabolic rift, namely, the tendency to purchase fruit and vegetables instead of growing them, resulting in the consumption of inorganic foods that often have higher chemical residues, due to the deregulated state of the Colombian market. ORGANICAMPO is at the forefront of a bottom-up campesino initiative attempting to re-educate locals about the importance of wholefoods and arrest an emerging cultural tendency that devalues fresh fruit and vegetables. State institutions are also undertaking more top-down projects to encourage the cultivation of fruit and vegetables in home gardens. Mier y Terán Giménez Cacho et al. (2018) argue the state is not always fundamental in furthering agroecological solutions, but Cabrera's case also emphasises that it can have a positive impact.

The case study of the ZRC Cabrera reveals the many ways in which CFR integration and resistance proceed in hybridity. Despite evidence of integration in three of the four CFR dimensions, petty-commodity producers are resisting through AFNs and the application of hybrid farming methods, whilst semi-proletarianised/landless campesinos are doing so by joining associative ventures with campesinos who do have land. In so doing, the latter group is maintaining a stake in agriculture, instead of moving towards other forms of wage labour. This provides a stronger potential for avoiding a wider metabolic rift (cf. Foster, 1999) and consequent knowledge rift (cf. Schneider & McMichael). Additionally, women are assuming roles as food producers, thus, bolstering the income of families from agriculture but also combatting the gender divide. To bolster these different expressions of resistance, the ZRC model needs to build stronger community spaces to experiment, share and implement diverse agroecological practices. This could be undertaken through demonstration farms, or what Altieri (1999; see also Nichols & Altieri 2018) terms 'agroecological lighthouses', trialling more agroecological methods in home gardens, and creating groups that visit different farms to learn from each other by expanding or modelling the workshops led by SENA in the municipality. Through more community capacity building and campesino to campesino education across the gender divide, the legitimacy of these

cases can be reinforced and politically articulated with the ZRC model to strengthen its discursive identity as a model through which to strengthen petty-commodity production. These would be cohesive steps towards scaling agroecology -up and -out to resist CFR integration.

6 Erasing Campesino Agriculture: CFR Integration in the ZRC Valle del Río Cimitarra

6.1 Introduction

Chapter 6 explores CFR integration and resistance in the ZRC-VRC. This zone is located in the Middle Magdalena Valley, an intermontane basin, located in north-central Colombia, between the Central and Eastern Ranges of the Andes. The ZRC-VRC is extensive, encompassing four municipalities in two departments and incorporating a total of 184,000 ha. Its tropical climate and varied ecology make the land suitable for diverse agricultural activities. Furthermore, it is rich in natural resources such as valuable timber, oil and gold, which has attracted armed and unarmed illicit actors. The area is an intense site of conflict and space of convergence for almost all of the principle actors in Colombia's civil war. Consequently, numerous violent atrocities have taken place here, as well as large-scale displacement. For this reason, the ZRC-VRC's social composition also differs greatly to other settled regions of the country, as it has undergone numerous waves of inward and outward migration. This case is markedly different from the ZRC Cabrera in terms of climate, socio-economic conditions and security, and offers a contrasting setting in which to analyse the processes of CFR integration and resistance. To allow for the two case studies to be compared, the analysis is conducted in relation to the same four dimensions of CFR integration and resistance: land tenure, technology and practice, agricultural markets and nutrition, whilst environmental feedback is considered throughout. Context-specific aspects are ascribed to each dimension.

This chapter proceeds by outlining the physiographical particulars of the ZRC-VRC: its geographical and ecological conditions, its administrative characteristics, as well as the historic social organisation of the area, which is closely aligned with waves of migration and land occupation. This is to elucidate key social differences among the peasantry in the ZRC-VRC. Once this context has been established, subsequent sections of the chapter explore CFR integration and resistance using the four dimensions of CFR integration/resistance that furnish the analytical framework: land tenure, technology and practice, agricultural markets and nutrition, each consider socio-economic impacts on the wider environment. Section 6.6 investigates contemporary land tenure in VRC, particularly how the ZRC model has impacted

landholding patterns and zoning. This provides the background for a study of applied farming practices and technologies (Section 6.7), which analyses the impact of the Green Revolution (GR) in the zone, the development of agroecology in resistance to this model and the impact of coca proliferation on campesino farming. Section 6.8 focuses on agricultural markets in the ZRC-VRC, especially the influence of market liberalisation on the campesino economy. It also analyses the construction of alternative food networks (AFNs) and solidarity economy projects to examine the impact these have on supporting the smallholder economy and resisting CFR integration. The final substantive section (6.9) explores the impact of the productive model on human nutrition. Together, these dimensions and their associated aspects illustrate CFR integration and resistance in the ZRC-VRC, facilitating assessment of how the global paradigm interacts with campesino farming in this particular locale.

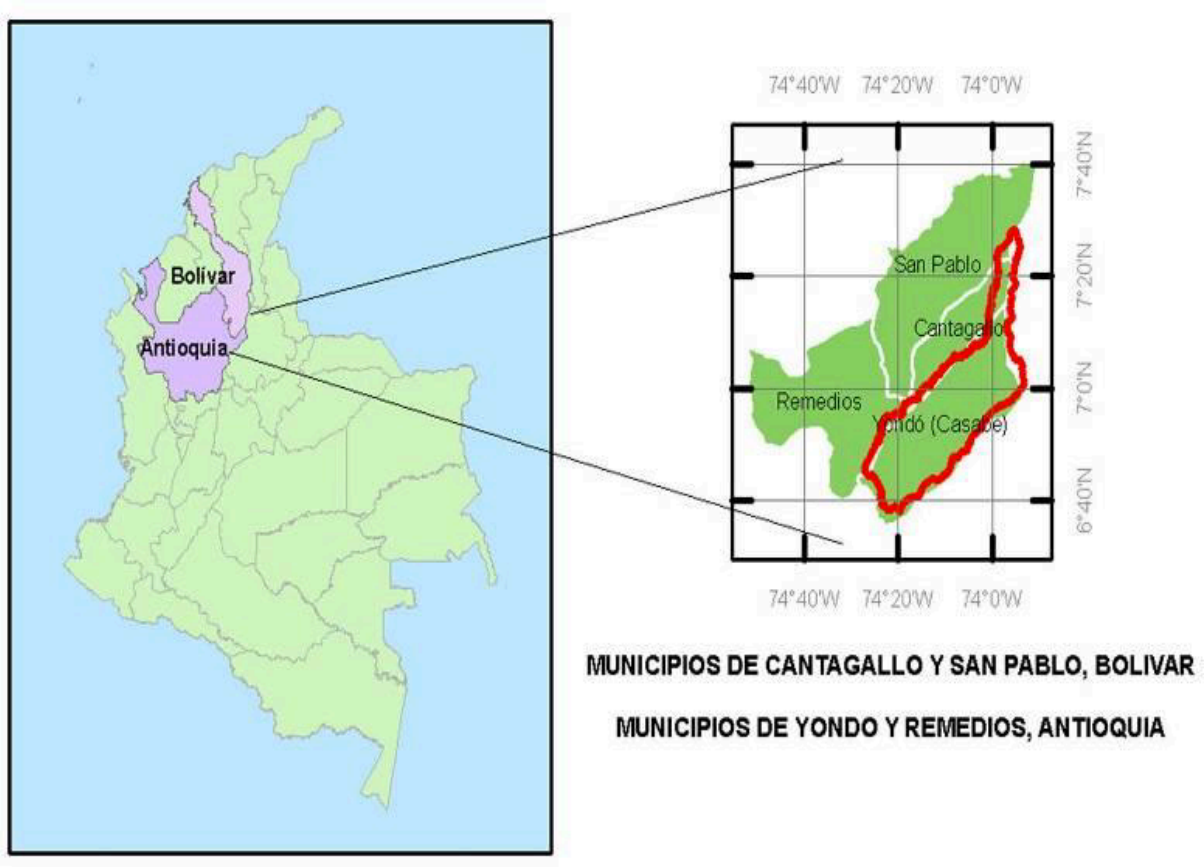
This case differs from the ZRC Cabrera in many respects: in extension – it is four times larger; it is more isolated due to poor infrastructural development, climate, human population and land use. Before embarking on fieldwork, the research hypothesised that there would be little CFR integration, due to infrastructural isolation, the conflict itself and the transitory nature of its population. Despite the conflict, corporations have accumulated land, production for export markets and use of GR technology is prevalent. The conflict and presence of illicit coca crops has fuelled CFR integration in many respects. In this complicated context of conflict, campesinos are resisting and creating alternative food networks in the most asymmetrical conditions. This case illustrates how variegated and contextually specific CFR integration and resistance is.

6.2 Physiographical Context: Geography Climate and Ecology

The ZRC-VRC is located in the departments of Bolivar and Antioquia, encompassing land in the municipalities of Cantagallo and San Pablo, and Yondo and Remedios respectively, between 6°37.38’ and 7°28.02’ Latitude North and 74°27.3’ and 73°52.92’ Longitude West and (see Figure 6.1). The ZRC-VRC is a vast tropical area with a variety of different landscapes including the San Lucas mountain range, valleys, wetlands, plains, and three main rivers (Ité, Tamar and Magdalena), as well as a vast network of tributaries. The zone contains large areas of dense tropical vegetation and is home to numerous species such as the jaguar (*Panthera onca*), Armadillo (*Dasypussp*), South American Tapir (*Tapirus terrestris*), Lowland Paca (*Agouti paca*), Black Agouti (*Dasyprocta fuliginosa*), Venezuelan Red Howler (*Alouatta seniculus*),

Giant Anteater (*Myrmecophaga tridactyla*), Brazilian Porcupine (*Coendou prehelensis*), White-lipped Peccary (*Tayassu pecari*), Little Red Brocket (*Mazama rufina*), Long-Tailed Weasel (*Mustela frenata*), West Indian Manatee (*Trichechus manatus*) and Neotropical Otter (*Lontra longicaudis*) (ACVC et al, 2012, p.45). Similarly, the ZRC-VRC has a tremendous variety of shrubs, trees, herbs and natural forest that are detailed below according to the landform in which they exist.

Figure 6.1: The location of the ZRC-VRC in Colombia



Source: ACVC et al, 2012, p.21.

A variety of landforms, soil types and land uses are present in the ZRC-VRC. The local Sustainable Development Plan (PDS) briefly details the geology of the region (ibid, pp. 32-37) and illustrates the ZRC's soil conditions and grades of fertility depending on landform (see Table 6.1). Igneous and metamorphic rocks are prevalent in the Antioquian hills. The land is used for extensive livestock in both natural and sown pastures; this soil has a high aluminium content, is strongly acidic, low in nutrients and fertility (ibid). Natural vegetation has been largely removed and only exists around water courses. The most common plant species here are: *gualanday* (*Jacaranda sp.*),

cañafístula (*Cassia fistula*), *ceiba* (*Pachira quinata*), *guamos* (*Inga spp.*), *olla de mico* (*Lecythis ampla*), *carbonero* (*Cojoba arborea*), *hobo* (*Spondias mombin*), *zarza* (*Pisonia aculeata*) and ferns.

Table 6.1: Landform, soil characteristics and land use in the ZRC-VRC

Department	Landform	Soil Characteristics	Land use
ANTIOQUIA	Hills	Igneous and metamorphic rock, high aluminium content, medium to low organic matter, acidic, low fertility and imperfectly to well drained	Extensive cattle ranching, pasture
	Foothills	Rocky, medium to low organic matter, moderate fertility, moderately alkaline, well drained	Extensive cattle ranching, pasture, corn, sugarcane, banana
	Lowlands/ Flatlands	Medium to low organic matter, moderately alkaline, low fertility, moderate to poor drainage and frequent flooding	Unsuitable for agriculture
BOLIVAR	Hills	Mudstone, claystone, medium levels of organic matter, extremely acidic, medium fertility and poor drainage	Cattle ranching, pasture, corn, plantain, cassava and yams
	Lowlands/ Flatlands	Low organic matter, strong acidic to neutral, fertility moderate to high, drainage poor to well drained	Extensive cattle ranching, pasture, bananas, rice, maize sorghum, loquat, guavas, sapote and papaya

Source: Information extracted from Sustainable Development Plan, ACVC et al, 2012, p.35.

The Antioquian foothills suffer from a lack of soil moisture and stony soils (ibid, p.36). This land has low levels of phosphorus and organic matter. It is mostly used for extensive cattle grazing on natural pastures but also has some corn, sugarcane and banana crops; natural vegetation here is sparse. The most commonly found plant species are: *mataratón* (*Gliciridia sepium*), *cañafístula* (*Cassia fistula*), *dormidero* (*Enterolobium cyclocarpum*), *guásimo* (*Guazuma ulmifollia*), *uñadegato* (*Uncaria sp*.) and xerophytic plants (ibid). Short-term flooding occurs in the valleys of the foothills. Again, there are high quantities of aluminium and low levels of nutrients. The land is used for extensive improved and natural pasture, but crops are limited. Natural vegetation has been removed from all but the wetlands. The most common species are: *pisquín*, *yarumos* (*Cecropia paltata*), *gualanday* (*Jacaranda sp*.), *guamos* (*Inga sp*.), *olla de mico* (*Lecythis ampla*), *zarza* (*Pisonia aculeata*), *pringamosa* (*Urtica baccifera*) and reeds. Finally, the Antioquian flatlands have poor drainage and are susceptible to frequent flooding, making them largely unsuitable for agriculture (ibid).

In the Bolivarian hills the soil is formed from mudstone and claystone bedrock. The majority of this land is pasture, secondary vegetation and virgin forest. Typical plant species include: *vara santa* (*Triplaris americana*), *dormidera* (*Enterolobium cyclocarpum*) and *pepa'e burro* (*Xylopia frutescens*). Despite serious erosion due to steep slopes, subsistence crops are grown such as corn, plantain, cassava and yam. Agriculture is limited by ‘abrupt [soil] textural changes, extreme acidity and therefore low fertility’ (ibid, p37). Farms located in the Bolivarian foothills need effective soil cover to mitigate against erosion, making the area apt for conservation and reforestation (ibid). Meanwhile, the flatlands in south Bolivar, which are situated in the floodplains of the Rivers Magdalena and Cauca, are used for large-scale cattle ranching.

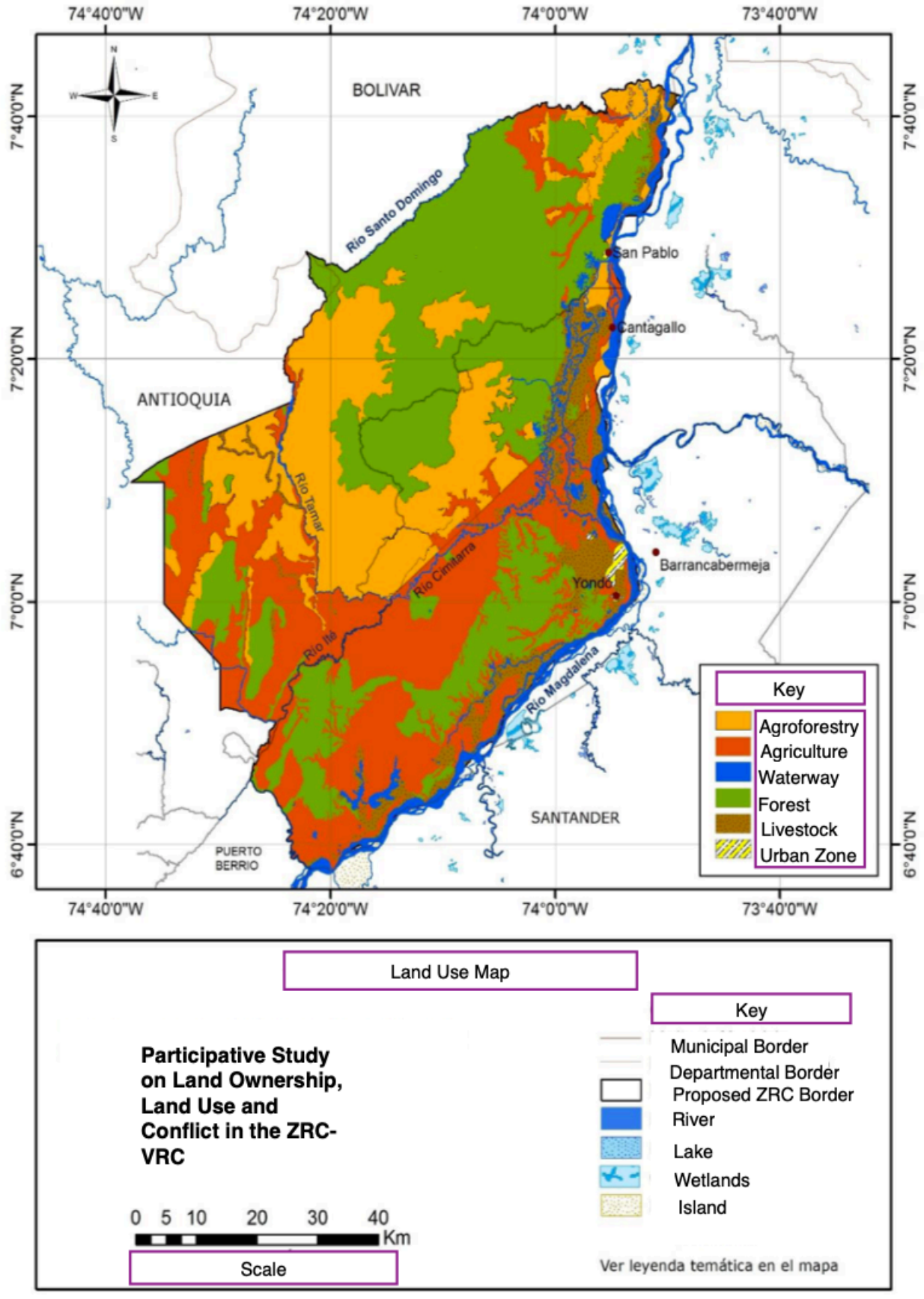
In addition to extensive pasture, subsistence crops such as banana, rice, maize and fruit trees are found in parcels of less than 4 ha (ibid). These agricultural units are ‘elongated’ and ‘narrow’, inhibiting the use of heavy machinery. Most of the area has access to irrigation water and is suitable for intensive crop cultivation, rice, maize, sorghum, banana, loquat, guava, sapote, papaya and fodder crops but it is also prone to flooding (ibid). This is the most fertile land in the ZRC. Other parts of the flatlands remain flooded, except in the summer months, when it is used for grazing. Aquatic plant life is the most common here, although raised areas in the flatlands also support

oak trees (*Quercus spp.*) and *mamoncillo* (*Melicoccus bijugatus*). Overall, the ZRC is rich in water resources, as it has access to three main rivers and numerous tributaries (ibid, p.41). It also has a bounteous array of native flora and fauna (ibid, pp.41-42).

The ZRC-VRC has a hot and semi-humid climate, evident from the crops grown and native wild species (ibid, p.40). Temperatures are largely consistent throughout the year. The hottest months are January, February and March, with temperatures above 28ºC, while the coldest month is October when the average temperature is closer to 27ºC. The wettest months of the year are April-November and the driest December-March. VRC's tropical climate is conducive to the cultivation of a wide range of crops and animal agriculture.

Despite complicated conditions for agriculture, smallholders have lived from farming over decades, exemplifying an ability to withstand infrastructural limitations and socio-political threats. Figure 6.2 illustrates the complex assemblage of agroecosystems across the ZRC: orange represents cropping systems, yellow mixed agroforestry systems and brown concentrated livestock rearing, which is principally in Yondó and Cantagallo (along the river floodplains). The map also shows that large areas of virgin forest (shaded green) remain within the ZRC.

Figure 6.2: Land use in the ZRC-VRC



Source: ACVC, Estudio de Suelos, 2014, p.46.

6.3 Administrative Context

The ZRC-VRC was officially established in 2002 by Resolution 028, which incorporated 188,259 ha of land- the majority of this in the municipality of Yondó, Antioquia (see Figure 6.1: red line demarcating the ZRC). The principle campesino organisation active in the zone (the *Asociación Campesina del Valle del Río Cimitarra*- ACVC) has consistently argued that the boundaries of the ZRC should be expanded to encompass areas in three other municipalities (Remedios, Antioquia; Cantagallo, Bolivar; and San Pablo, Bolivar). The ACVC considers the ZRC's total area to be 504,259 ha, which includes a further 316,000 ha. The four municipalities together encompass 134 rural wards (see Appendix 6 for a full list of the ZRC-VRC's rural wards).

Expansion of the area that has official ZRC status is currently impeded by the fact that this land is classified as a Forest Reserve Zone, a land category established under Law 2 of 1959. Law 2 prohibits the issuing of land titles to campesinos in areas recognised as Forest Reserve Zones. The ACVC, however, argues that these territories have been colonised, occupied and cultivated by campesinos for decades. They are negotiating with National Parks and the Land Institute (ANT) for the re-classification of 316,000 ha designated as a Forest Reserve, so that this can be incorporated into the ZRC and land titles issued to the campesinos residing in this territory. This chapter follows the ACVC's administrative definitions and spatial limits of the ZRC because their projects and organisation cover the expanded area as well as the formally established core of the ZRC. The chapter discusses the implications of competing land use ordering on CFR integration and resistance in greater depth in Section 6.7.2.

6.4 Socio-Cultural Context: Colonisation and Conflict

Campesino permanence in the ZRC-VRC is a result of a long history of struggle in the Middle Magdalena (MM) region. The ZRC model is a direct offspring of historic struggles that have arisen from the land colonisation movement (Ferro and Tobin, 2012). Molano (2009) notes that the first colonisation of the MM began in the early 19th century, due to the river Magdalena, which is an artery for the country's trade. Settlement and economic activity took off in the early 20th century with the first oil concessions and large livestock *haciendas* (Méndez, 2015). The intervention of transnational petroleum companies such as Shell in Yondó and San Pablo in 1945,

led to the 'violent expulsion of colonisers' (ibid, p.87)- an agrarian conflict between precarious coloniser campesinos (cf. Zamosc, 1986) and multinational corporations. In response to land dispossession, from the 1960s campesinos in the MM protested for their right to have land. Influenced by union movements and the agrarian context of the time[68], colonisers mobilised to take land owned by Shell. In 1963, as a result of campesino mobilisation, the company transferred land to the Colombian Institute for Agrarian Reform (INCORA), which divided it among the landless population (ACVC et al, 2012, p.142). This was the first move towards the formalisation of *colono* access to land in the MM region.

Colonisation in areas such as the MM was further encouraged by the *Pacto de Chicoral* in 1972 (see Section 4.6 for more on historic land reform projects), which endorsed settlement on virgin lands rather than the appropriation and redistribution of large landholdings. The *colono* movements of the 1960s were the precursors of subsequent *colono* mobilisation in coca growing regions in the 1980s, which led to the creation of the ZRC-VRC (Méndez, 2015). Many of the settlers arriving in the 1980s were victims of displacement and paramilitary aggression but were also participants of social movements from Antioquia, Santander, North Santander, Córdoba and Chocó. The process of colonisation in the MM was based on the experience of self-organisation that these individuals had cultivated in their respective places of origin.

The colonisation movement necessitated organisation, as campesinos were constructing communities in the middle of virgin forests. One part of this organisational framework was a land committee, which was established between 1988 and 1993. It identified large *colono* landholdings in the area (some totalling over 800 ha) and assigned land from these ranches to the landless. The land committee was composed of five individuals chosen by the community who charted 'the rivers, the mountains, the heights, land fertility and natural treasures to more or less know what the region had to offer and what nature was going to give [them] for [their] subsistence economy' (Méndez, 2015, p.97). The land committee and the *Juntas de Acción Communal* (JAC) oversaw decisions on how much land to give newly arrived landless campesinos

[68] Asociación Nacional de Usuarios Campesinos de Colombia (ANUC) mobilised nationally for agrarian reform using land invasions and occupations (Zamosc, 1986).

depending on the size of their families; they also organised community home building for new families and the provision of food until their crops could be harvested (ibid). *Colono* settlers in the MM were highly organised, undertaking land zoning through community accords, discussion and debate, ensuring families farmed an average of 30 ha each. Without incurring any cost, they redistributed approximately 150,000 ha in Yondó, Remedios, Cantagallo and San Pablo (ibid, p.107). Leading *colonos* of the time said that they gave away parcels of land, since they realised land without people would condemn the community to eternal poverty and marginalisation (ibid, p.104). The *colonos* in this area were able to negotiate differences of origin and land holdings through the construction of informal institutions, such as the land committee, to ensure the survival of this settlement. The fact that this was not a pre-established campesino community receiving an influx of landless peasants, arguably facilitated organisational processes.

The history of social organisation in the area is further highlighted in the *Cooperativa de Pequeños y Medianos Agricultores de Antioquia* (Co-operative of Small and Medium Farmers of Antioquia- COOPEMANTIOQUIA), which arose in 1978, re-consolidating in 1985-6 and 1998-2002 (ibid, p.90). Campesinos designed this co-operative to overcome paramilitary and military economic blockades, which severely limited the transport of food and goods into and out of the area. It oversaw a barter scheme: providing primary goods to campesinos in exchange for sesame, maize, wood and gold (ibid). Fajardo suggests that the experience of colonisation, including COOPEMANTIOQUIA, has helped those living in the ZRC-VRC to have 'stronger forms of co-operation' (Interview, 2017) and social organisation.

Campesino organisational competence in the MM has operated in a context of violence and internal displacement. The constant flux of people entering and leaving the zone has resulted in high levels of cultural mixing between those from the Pacific and Caribbean regions of Colombia, as well as neighbouring Santander, Cundinamarca, Tolima and Boyacá. Each group has brought different farming traditions and crops, which has introduced a cultural challenge around farming, i.e. inconsistent availability of knowledge and experience to cultivate particular crops. For instance, sugar cane is not widely grown near the Colombian Caribbean coast, which principally has livestock, maize, cassava, yam, banana and palm (Banco de la República, 2013). Interview participants noted that those living near the settlement of

Puerto Matilde were *costeños* (from the coast) and lacked experience with growing sugar, leading to poor sugar cane crops (Interviewee 25).[69] This impacts the kinds of crops that can be grown, the markets that campesinos can access, how diverse campesinos work together and campesino knowledge exchange- all of which influences the contours of CFR resistance.

Conflict has widely affected the MM, particularly coercive and violent land dispossession and displacement. In 2016, the *Unidad de Víctimas* stated that 173,184 people had declared themselves victims of forced displacement in the MM (p.2), which also includes communities living outside the ZRC-VRC. Displacement directly impacts agriculture, as it undermines the long-term planning, continuity and profitability of farms, as well as the removal of producers from their land. Many interviewees told stories of abandoning farms with their crops in mid-cycle, only to return and find them ruined or livestock gone. Additionally, the conflict has disrupted family structures. In 2011, the local population was mainly young, with 42% of the total between the ages of 10-18 and a comparative absence of people in the 19-35 age cohort, which total 24% of the population (ACVC et al, 2012, p.272). Thus, there is a generational gap, which may impact the transmission of local agroecological knowledge.

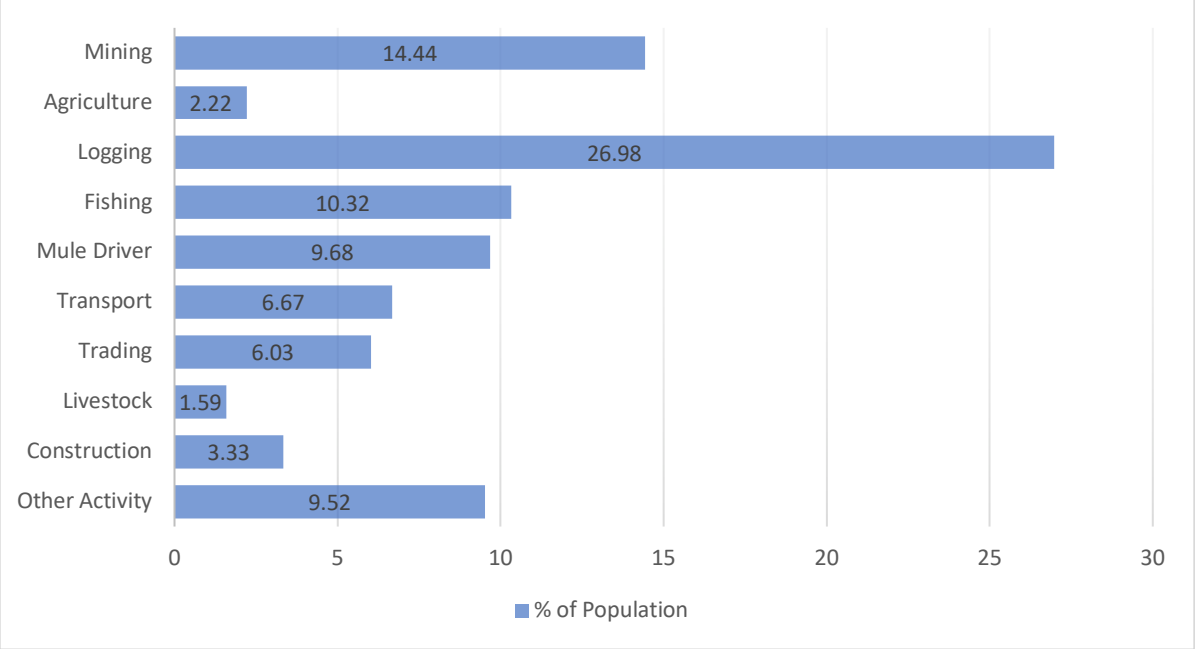
The conflict more recently has been driven by the coca crop, the presence of which has altered agricultural systems. As Richani notes, '"coca culture" lives in tension with revolutionary ideas based on self-sacrifice…[it] is based on a crude form of capitalism where "easy money" is the goal, and the means are irrelevant' (2014, p.70). Subsistence agriculture has felt the impact of the coca crop because many prefer the higher profits of coca to the less profitable work of subsistence farming. Thus, coca as a commodity chain differentiates campesinos in terms of income, whilst also altering cultural and practical relationships with subsistence farming. The coca crop has blended aspects of capitalist farming with petty-commodity production through the intensive cultivation of a cash crop using industrial technologies, although some farmers still grow subsistence crops at the same time (to provide cover to the coca

[69] This example is specific to the area near Puerto Matilde where there was a higher population of *costeño* residents, rather than a general assessment of the sugar cane crops across the zone.

plant and for food security). The chapter explores how these internal class differences impact resistance against the CFR.

Understanding this link is particularly relevant in light of the fact that the majority of the ZRC has slowly abandoned coca cultivation. Community accords have ensured a steady decline in the area devoted to coca, which is now only grown extensively in San Pablo. This chapter considers how a move away from coca cultivation intersects with CFR resistance, given the culture of 'easy money' induced by the coca crop partly explains the decrease in subsistence farming, in favour of other activities such as gold mining or logging. As Figure 6.3 illustrates, in 2012 only 3.81% of the population practiced agriculture or livestock as their primary economic activity, whereas 41.42% undertook either mining or logging. Since the introduction of the coca crop to the MM, there has been a consistent move away from agriculture and a favouring of other extractive enterprises, which has weakened campesino agricultural output significantly. The consequential emergence of semi-proletarian campesinos has also altered the socio-economic landscape of the ZRC-VRC, how these campesinos relate to CFR resistance and fundamentally the ZRC model itself. The latter point is relevant in understanding whether the model addresses the needs of differentiated campesinos.

Figure 6.3: Percentage of population by primary economic activity in the ZRC-VRC



Source: ACVC et al, 2012, p.170.

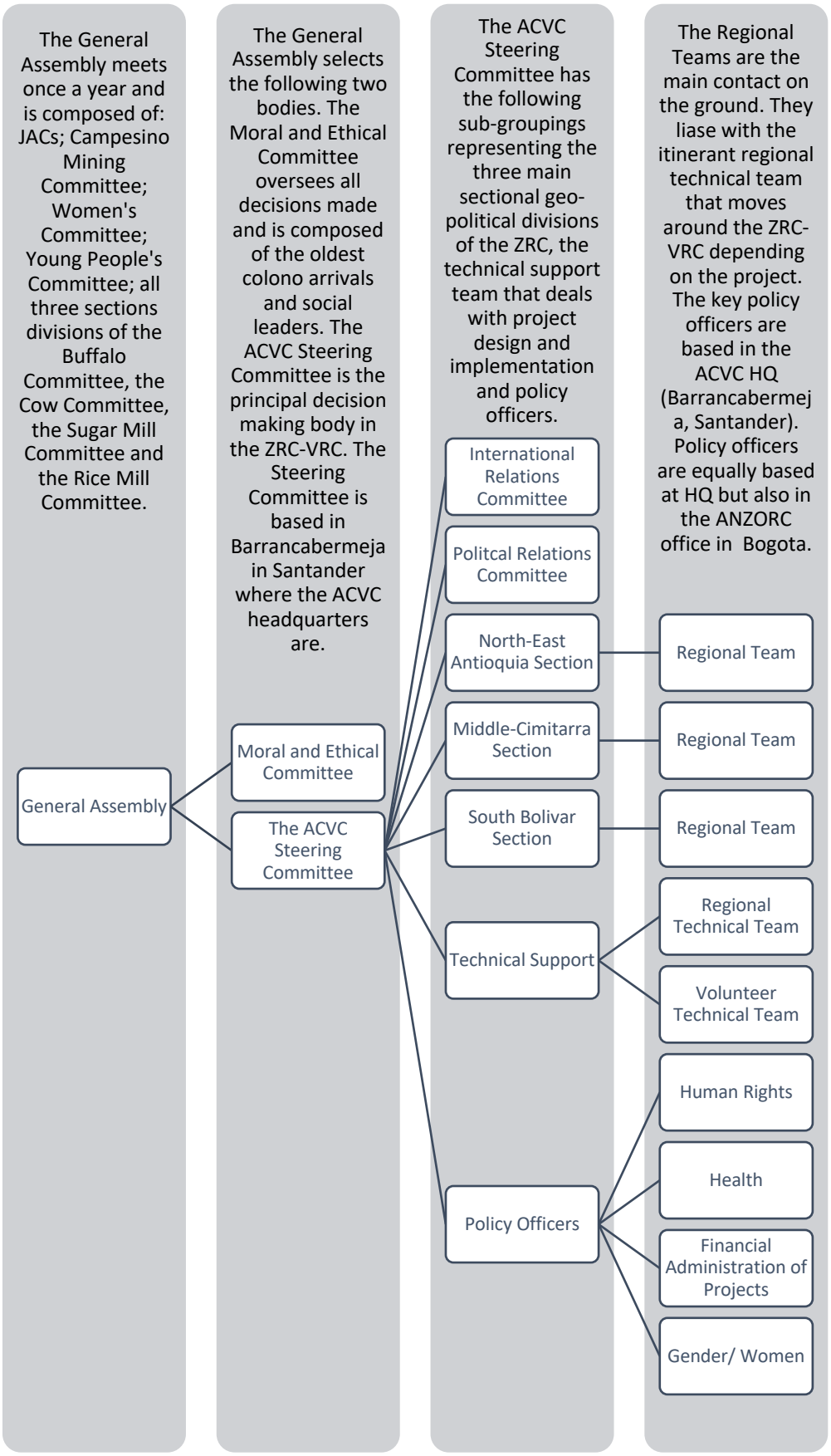
6.5 Social Movement Organisation: The ACVC

The ACVC is the principle campesino organisation working to implement and strengthen the ZRC model in VRC. The ACVC was integral to the VRC gaining ZRC status and to the production of the ZRC's Sustainable Development Plan (PDS), which identifies key issues and solutions for the ZRC. The ACVC runs the ZRC Steering Committee, which administers socio-economic and cultural projects across the zone, overseeing the implementation of the PDS, sources funding, organises technical assistance for projects across the Zone and lobbies municipal, departmental and national governments to enforce compliance with regulations attached to the ZRC model.

The ACVC arose from decades of campesino mobilisation, particularly from the *colono* movement. The ACVC was founded in 1996 after protests in coca growing areas such as Putumayo, Caquetá, Cauca, South Bolivar and Guaviare. These protests were against price hikes and increased purchase controls on chemical inputs used to process coca leaves, as well as against aerial fumigation of coca fields with herbicides that were also damaging subsistence crops and pastures (ACVC et al, 2012, p.16). In 1996, some 10,000 inhabitants marched to Barrancabermeja, the biggest provincial city in the vicinity of the ZRC, calling for social investment and the creation of long-term alternatives to coca crops. Campesino mobilisation continued into 1998 to protest against paramilitary violence and forced displacement.

These campesino protests and the ACVC itself were key to convincing the government to create the ZRC model. The ACVC is a centrally run association whose presidents are chosen from regional campesino leaders- many of whom were *colono* leaders. It represents the interests and decisions made by campesinos in various organisational spaces across the ZRC-VRC such as JACs, co-operatives, committees related to fishing, mining and other rural economic activities (ACVC et al, 2012, p.18). It has three main sectional divisions, reflecting the three geo-political territories within the ZRC-VRC: North-East Antioquia Section, Middle-Cimitarra Section and South Bolivar Section. The ACVC works with a number of different community level bodies (see Figure 6.4).

Figure 6.4: ZRC-VRC's Organisational Structure



Source: Author- with data extracted from Ortiz, 2017, p.34.

The ACVC uses a number of community level institutions to work across the ZRC but JACs are one of the main organisational bodies where community accords and norms are debated. In total there are 120 JACs in the ZRC-VRC. The municipal Communal Bureaux for a Dignified Life (*Mesas Comunales por la Vida Digna*- MCVD) is used for more direct discussion between campesino communities and local state institutions. The MCVD allows communities to debate public policy, such as investment and compliance with the ZRC constitution, more generally, it holds municipal governments to account. The ACVC uses the MCVD as a tool to initiate projects involving different municipalities, as this enables simultaneous discussions with their respective administrations. Presidents of various JACs attend the MCVD, which corresponds to their municipality, to feedback the ideas of their community and transmit proposals and responses from the JACs. The ACVC supports this process by disseminating communiques and decisions from MCVD meetings, as well as facilitating discussion with public institutions. These two local bodies are pivotal to democratising the ZRC model among diverse and sparsely located campesino communities. They also help to link grassroots organisations and the ZRC model to the wider state institutional framework, enabling a more consistent and continuous dialogue.

The ACVC has also created an organisational space for women- the Women's Committee (see Figure 6.4). This committee works on women's empowerment within communities, preparing them for greater involvement in social organisation and political participation. The women's committee focuses on gender equality issues, such as equal access to land and tenancy rights and the creation of economic opportunities for women, as well as addressing issues around gendered violence and adequate preventative measures to stop this. The creation of a separate committee within the ACVC illustrates the differentiated problems that female campesinos face. With this in mind, this chapter discusses how gender impacts CFR integration and importantly campesino resistance in the ZRC-VRC. The work of the women's committee is directly informed by the ACVC's first women's meeting in August 2017 that saw 250 women attend two days of panel discussions and workshops, which culminated in the construction of the women's committee and its regional nodes (see Plate 6.1). The different themes debated at the meeting included: political participation, implementation of the peace agreement, land tenancy and titling, sexual and reproductive health, education, environment and agroecology, historical memory

and human rights, economics, and the eradication of all kinds of violence against women.

Plate 6.1: First Women's Meeting in the ZRC Valle del Río Cimitarra: United in Defence of the Territory, Equality and Peace with Social Justice!



Source: ACVC, 2017.

The ACVC works on multiple geo-political levels. It engages in grass-roots activism with local campesino organisations, co-operatives and committees but also brings these into dialogue with municipal and departmental institutions. Additionally, they work in conjunction with other NGOs operating in the region, such as El Programa de Desarrollo y Paz del Magdalena Medio (Programme for Development and Peace in the MM) and Emprender Paz (a Colombian NGO that promotes peace). The ACVC also lobbies and works with national institutions through ANZORC, in which it is actively involved as one of the parent-organisations, as well as charities such as

Fondo Acción.[70] The national network encompasses various universities across the country including the Universidad Nacional, Pontificia Universidad Javeriana, Instituto Universitario de la Paz, Universidad Industrial de Santander and the Universidad Externado de Colombia. This underlines the organisational strength and reach of the ACVC across multiple sectors in Colombia.

The ACVC has extensive connections with international organisations and bodies, which have provided project funding and personnel who assist across the organisation. These include: Caixa Bank, FIAN, FAO, *Asociación Catalana per la Pau*, Peace Brigades International, United Nations Women, United Nations Office for Project Services, Swedish-Norwegian Cooperation Fund, *Manos Unidas*, *Heks-Eper*, International Action for Peace, Global Environment Fund and We Effect (ACVC, 2018). The success with which the ACVC has developed its international network is evident from the large sums of money it manages to source and administer. In 2017-18 alone it won grants totalling US$3,476,064 (ibid). They have also established international links with universities including the University of Brescia, which has sent environmental engineering students to the ZRC. One such student contributed to the development of local farms by building an anaerobic digestor (see Section 6.8.4). This speaks of the ACVC's knowledge of international funding processes and ability to build networks with external allies (Mier y Terán Giménez Cacho et al, 2018).

6.6 CFR Dimensions and the ZRC-VRC's Place-Based Aspects

This chapter analyses CFR integration and resistance using the four CFR dimensions developed in Chapter 3, each furnished with ZRC-specific aspects (see Table 6.3). The four dimensions and their related aspects evidence CFR integration taking place due to factors related to the conflict, the changes to agriculture brought about by the coca crop and also factors such as poor infrastructure. Campesino resistance and agency are also evident across the dimensions, as smallholders have remained in the VRC in spite of highly violent and asymmetrical conditions.

[70] A Colombian non-profit organisation created in 2000 within the framework of the Bilateral Agreement of the Initiative for the Americas. The agreement was signed by the US and Colombian governments which established a fund through a debt-for-nature swap. The Fund finances conservation and sustainable development; and child protection and development projects.

Table 6.2: CFR Dimensions and factors pertinent to the ZRC-VRC relating to CFR integration and resistance

Land Tenure	Technology & Practice	Agricultural Markets	Nutrition
•Land Concentration •Forest Reserve Zone •Violent or Coercive Land Dispossession •Oil Palm Plantations •Campesino Land Accumulation	•Green Revolution technologies •Coca Crop •Coca Crop Substitution Programmes •Agroecological Scaling •Bottom-up Conservation	•Difficult Market Access •Market Deregulation •Campesino Co-operatives & Associations •Local and Regional Niche Markets •EcoBúfalo Campesino	•Migration and Diet •Conflict & Short Cycle Crops •Consumption of Empty Calories •Consumption of Fruit and Vegetables •Consumption of Animal Protein

6.7 Land Tenure

The MM is home to a number of different conflicts over access to land. Throughout its history it has experienced the accumulation and concentration of land by multinational oil companies prompting the emergence of bottom-up campesino land redistribution led by *colonos* and also counter agrarian reform exercised through violence and land dispossession. The legacy of campesino struggle for land, partly informs the permanence of *colono* communities in this zone. These movements were central to achieving ZRC status, which explicitly recognised campesino rights to land and provided some legal guarantees of their property rights, somewhat stabilising precarious land settlements. However, this has not resulted in formal land titling, nor has the model erased the historic problem of land concentration in the MM, which has been underwritten by unabated violence.

6.7.1 Land Concentration

The ZRC model was designed to resist land concentration. Campesinos have supported the ZRC model because it provides them with certain guarantees in a context of scarce and highly insecure property rights, as the model's norms give clear guidelines on farmland extensions through *Unidad Agrícola Familiar* (UAF) sizes. The size of a UAF varies in each municipality according to land quality and infrastructure to ensure farmers are able to earn two minimum monthly salaries from their holdings. Table 6.3 distinguishes between mixed farms (livestock and crops) and livestock farms because the number of UAFs designated to farmers changes depending on land use.

Furthermore, single UAFs are delineated by ranges because land holdings have not been accurately measured in the ZRC-VRC. This is because the area lacks a comprehensive cadastral survey and accompanying land titling regime. Yondó is the only municipality in the ZRC-VRC that has broad land-titling because ZRC status was only formally given to this area.

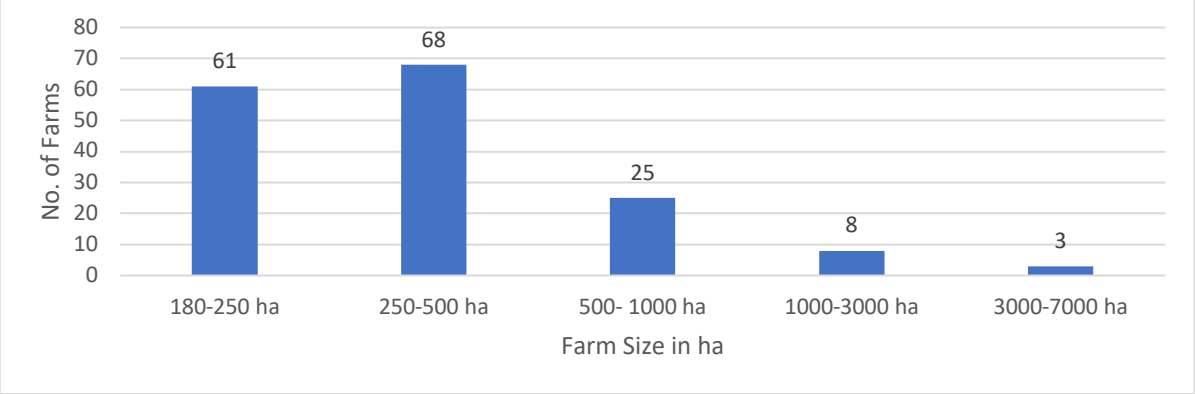
Table 6.3: UAF Extensions in ha According to Municipality

Municipality	Maximum no. of Permitted UAF	Extension of 1 UAF (ha) in Mixed Farms	Extension of 1 UAF (ha) in Livestock Farms	Total Possible Range of Mixed Farm Sizes (ha)	Total Possible Range of Livestock Farm Sizes (ha)
Yondó	2.5	53-72 ha	-	132.5-180 ha	-
Remedios	3	23-31 ha	29-53 ha	69-93 ha	87-159 ha
San Pablo	2	25-47 ha	-	50-94 ha	-
Cantagallo	2	25-47 ha	-	50-94 ha	-

Source: Author- Data extracted from ACVC et al, 2012.

Landholding sizes on the whole have conformed to the specified number of UAFs in the ZRC-VRC but 189 farms across the four municipalities have not (See Figures 6.5 and 6.6; Table 6.4 and 6.5). This suggests that the ZRC zoning system has not been strictly enforced. Taking Yondó as an example, 5% of farms (165 farms) have exceeded the theoretical maximum of 180 ha, whilst 2855 farms comply with this. Although only a small number of farms have exceeded the maximum limit, the total estimated area of land reveals whether land concentration has been halted. Figure 6.5 details the structure of land concentration in Yondó- exact figures are not available because there has not been a full cadastral survey. The agricultural area occupied by farms that comply with the 2.5 UAF limit in Yondó is somewhere between 156,827 and 213,048 ha, whilst those that exceed the limit account for 57,480 to 119,250 ha. While just five percent of farms exceed the UAF limit, they account for somewhere between 30 and 40% of the total agricultural area. Although the UAF system has shaped landowning patterns in this municipality, it has not prevented the concentration of land.

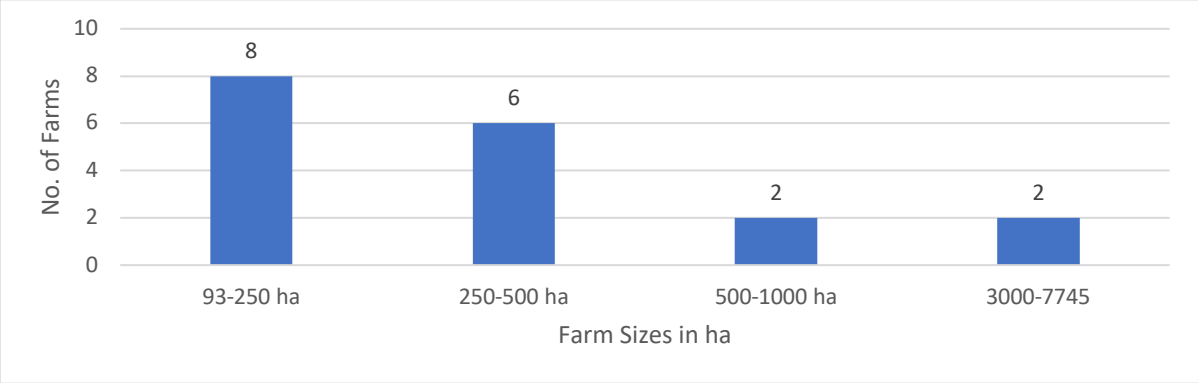
Figure 6.5: Sizes of Farms Exceeding UAF Limits in ha in Yondó



Source: Author- with data extracted from ACVC et al, 2012.

In Remedios, 66 farms comply with the maximum UAF limits, whilst 18 farms (both livestock and crop farms together) exceed this. Figure 6.6 looks at the extent to which farms in Remedios exceed maximum UAF size limits. Viewing this in terms of land area, it is evident that large farms occupy the majority of agricultural land in the municipality, somewhere between 75 and 85% of the total area. Clearly, in Remedios, the ZRC model has not been effective in constraining land concentration.

Figure 6.6: Sizes of Farms Exceeding UAF Limits in ha in Remedios



Source: Author- with data extracted from ACVC et al, 2012.

Meanwhile, Cantagallo has a high rate of compliance with the UAF system in comparison to Remedios, as only four farms out of 349 exceed the two UAF limit. The total amount of territory complying with this zonal system is within the range of 8625-16,215 ha, whilst just 2156 ha pertain to farms that exceed size restrictions (see Table 6.4). The proportion of total land area in farms exceeding the UAF limit is much smaller in Cantagallo than in Remedios but similar to that in Yondó, even if the actual area is

much smaller. Finally, San Pablo has a range of 575-1081 ha of land in 23 farms complying with the UAF limit and 573 ha in two farms that exceed it (see Table 6.5). Thus, overall, while the ZRC model has not been entirely effective in Yondó and Remedios, it has provided some resistance to land accumulation in Cantagallo and San Pablo.

Table 6.4: UAF Extensions in Mixed Farms and Farm Sizes in ha in the Municipality of Cantagallo

Municipality	No. of Farms Complying with UAF Limit	No. of Farms Exceeding UAF Limit	No. of Farms Sized 272 ha	No. of Farms Sized 365 ha	No. of Farms Sized 468 ha	No. of Farms Sized 1051 ha
Cantagallo	345	4	1	1	1	1

Source: Author- with data extracted from ACVC et al, 2012.

Table 6.5: UAF Extensions in Mixed Farms and Farm Sizes in ha in the Municipality of San Pablo

Municipality	No. of Farms Complying with UAF Limit	No. of Farms Exceeding UAF Limit	No. of Farms Sized 255 ha	No. of Farms Sized 318 ha
San Pablo	23	2	1	1

Source: Author- with data extracted from ACVC et al, 2012.

The overall land tenancy structure for the ZRC is illustrated by looking across the four municipalities to analyse the number of farms and total land area in compliance with the UAF system and that which exceeds. The data presented above indicates that there has been an inconsistent influence in zoning and land use ordering across the ZRC-VRC. Although more farms are complying with the UAF system numerically in each municipality, the area exceeding UAF limits remains high and telling of continued land concentration. Colombia's Comptroller General, Andres Bernal, corroborates this. He highlighted the findings of a report on ZsRC undertaken by the Comptroller's office (2015), which confirms the continuation of land concentration. Part of the problem is that the model did not propose remedies to deal with pre-existing large landholdings. From its very inception the ZRC model enabled a two-tiered landholding system and

so fell short of agrarian reform, even within designated ZRC territories. The lack of robust legal and institutional backing has left the UAF system with few enforcement measures and thus undermines the ability to limit land concentration and support campesino rights to land. Fundamentally, this undermines the ZRC model and highlights its institutional isolation.

6.7.2 The Forest Reserve Zone

As well as poor institutional commitment and alignment, land accumulation limits are impeded by the existence of overlapping zoning models- the Forest Reserve Zone. Although Yondó has broad land titling, some 300,000 ha in the other three municipalities- all but formally part of the ZRC- are instead designated as a Forest Reserve Zone, which prevents the distribution of land titles. Agarwal et al (2014) directly attribute increased deforestation to a weak land tenure system. This argument applies to the ZRC-VRC, which has high rates of deforestation in part due to poor land titling (FAO, 2018). The ACVC argues that land in the Forest Reserve Zone has been colonised and occupied for decades, thus, the ZRC boundaries should reflect this. The zonal overlap has left numerous campesinos without land titles, preventing the measurement of land parcels, which facilitates violent land dispossession and accumulation.

> 'Since people don't have land titles, the amount of land they can have is not regulated, which has also been permitted because of the clashing land use models in Law 2 and Law 160. We need land titles. Some land titling has happened, but it is from the old days with INCORA' (Interviewee 29).

This hints at the existence of both more settled campesinos with land titles and those in more precarious conditions without any formal ownership deeds. This also contradicts the idea that no one in the zone has any land titles, as stated by another ACVC affiliate, 'without titles we do not have the certainty to say that this [land] belongs to us. Nobody here has land titles' (Interview 30). The differentiation among campesinos in terms of land titling is relevant because this facilitates the acquisition of credit and state support, which provide more stability and long-term options for farmers. This could explain why a very small percentage of the population still practice agriculture as a primary economic activity, they are the ones that have clear legal rights to their land. Numerous interview participants in San Pablo lacked full land deeds but had letters of sale that also enabled access to credit, but these producers

are in the minority across the ZRC. This paperwork does not strengthen smallholder dominion over land but does provide more economic security. Differing levels of land titling create conflicting needs and interests in the campesino population.

The ACVC is looking to address disparities in land titling with the National Parks institution through the re-drawing of both zones. ACVC et al. (2012, p.117) propose a study to determine areas that should be conserved but currently have human settlements, as well as the creation of a relocation plan for these families. Land titling of 1000 farms was planned for 2018, as part of crop substitution programmes linked to the 2016 peace agreement, but this has not yet materialised (FAO, 2018, p.210). Redefining the zones to conserve forests but also secure land titles for farmers is a fundamental strategy for formalised ownership and stabilisation of the agricultural frontier. This would enhance the legal faculties of the ZRC by protecting campesino access to land. In turn, this would also reduce levels of deforestation/ the expansion of the agricultural frontier by those in search of more land (cf. Agarwal et al, 2014).

6.7.3 Violent or Coercive Land Dispossession

A weak land tenure system is exploited through the use of violence to concentrate land in the ZRC-VRC. As Harvey (2004) and Magdoff (2013) argue, violence is a key tool for 'accumulation by dispossession' or land dispossession, and this is the case in the ZRC-VRC. Increase in armed conflict in the late 1980s and 1990s reversed territorial ordering organised by *colonos* (see Section 6.4). By the 1990s, large cattle ranchers, the Colombian military and agro-industrial groups 'advanced significantly' in land tenancy through the use of violent methods (Lote, 2016, p.121). Resource extraction and conflict over territorial control motivated this violence. With the FARC-EP effectively governing many of these areas, military and paramilitary personnel often targeted campesinos as guerrilla sympathisers and collaborators or they were caught in crossfire. The elected president of the ACVC, who is also one of the earliest *colono* leaders, Gilberto Guerra, argued armed groups forced families to leave the area and their land:

> ‘The Puerto Berrío Battalion[71] gave all its resources to enable these [paramilitary] groups. So, they penetrated our region to displace us from all work through massacres, burning our houses, covering up paths, stealing our livestock, through economic blockades…[we had] an enormous crop of maize and rice that was ready to harvest at the end of the year [1983], we could not stay to collect our harvest, all we could think of was how to escape, how we could evade these massacres, and towards the end of 1983 none of us could stay in the territory, we had to leave with our families, with everything’ (cited in Lote, 2016 pp.133-4).

In this quote, Guerra defines violence as murder, the destruction of homes, spatial isolation through the erasure of paths that connect communities together and rural locations to urban spaces, as well as the theft of livelihoods. Violence dismantled every aspect of campesino life from the body, to the home and wider community. Violent land dispossession continued to ravage the zone throughout the 2000s. Forced displacement and land dispossession in the ZRC-VRC is higher than the other ZsRC municipalities (a detailed breakdown of displacement by municipality is provided in Chapter 4 - see Figure 4.3). Violence has directly impacted the amount of land smallholders have to farm. Community members believe they lost some 25,000 ha of land that had been redistributed by the early *colono* movements (Méndez, 2015, p.111). This process of dispossession has been facilitated by an uneven coverage of land titles, as only Yondó has any significant land titling. A poor land tenure system, coupled with violence, in turn increases the amount of deforestation that takes place in the ZRC-VRC, as campesinos search for more land (cf. Agarwal et al, 2014).

Rates of land dispossession declined somewhat in 2016 (see Figure 4.3), coinciding with the signing of the peace accords. Although displacement rates remained well above the national average in all four municipalities of the ZRC-VRC from 2010-2016 (see Figure 4.3), various interviewees reiterated that the peace negotiations at least allowed them to return to dispossessed lands or had given them the ‘luxury’ of remaining on their land (Interviewee 40). The fact that the participant viewed remaining

[71] This is a military battalion belonging to the Colombian Government, which is stationed in the area of Puerto Berrío, Remedios, Antioquia.

on their farm as a luxury is telling of the levels of precarity campesinos experience in the ZRC-VRC, due to coercion, violence and dispossession. This period of peace in the region was an anomaly, however, as threats directly aimed at the ACVC and its affiliates have recently returned, coinciding with the reappearance of paramilitary groups across the ZRC-VRC (FAO, 2018). The conflict in the ZRC-VRC has removed smallholders from land, leaving it vacant for licit and illicit accumulation.

6.7.4 Oil Palm Plantations

Colombia's Comptroller General, Andres Bernal, also noted that land concentration in ZsRC is undertaken by those 'who have economic resources, those who control certain sectors of the market and production chains' (Interview, 2017)- in other words the corporate agribusiness sector. The ZRC-VRC is illustrative of this claim, as one of the factors driving land concentration is oil palm (*Elaeis guineensis)* (see Plate 6.2). This crop entered the MM in the 1960s but expanded in San Pablo particularly from the late 1980s onwards. By 2014, the Ministry of Agriculture stated that there were 7200 ha of palm oil in the municipality of San Pablo (p.3). This represents an upsurge in concentrated landholdings from the data represented in Table 6.5 from 2012. The following palm oil companies own plantations in San Pablo: Palmas del Sur S.A., Agrocolombia S.A., Palmares del Cucu, Extractora Loma Fresca, Extractora Viscaray S.A. (UNDP, 2015, p.18). The expansion of palm oil in the ZRC-VRC is mirrored by a similar process across the MM region, whereby the area dedicated to palm oil expanded from 40,000 to 155,000 ha from 2000-2013 (Sankey, 2017, p.155).

Plate 6.2: Oil Palm Plantation in the ZRC-VRC (San Pablo, Bolivar)



Source: Author.

The establishment of corporate palm oil plantations in the region was allegedly underwritten by paramilitary groups, through the forced displacement of smallholders (ibid). One campesino leader mentioned that the 'ZRC was created due to the rise in the purchase of land for agro-industrial exploitation, it was needed so that…campesinos could continue to sow cassava or secure artisanal campesino production…but this has not happened' (Interviewee 28), as corporations have continued to establish plantations in the ZRC-VRC- particularly in the additional land claimed by the ACVC in San Pablo. This suggests that the measures afforded by the ZRC have been ineffectual in constraining corporate land accumulation in the VRC, leaving questions about how the ZRC institutional framework impacts the land market.

In the early 2000s, the Middle Magdalena Development and Peace Corporation (CPDPMM) piloted a project of campesino palm oil to demonstrate that the crop could be used to strengthen smallholder economies (Molano, 2009). Importantly, this pilot project did not fall into the ZRC-VRC territory but given it did take place in the MM it remains informative about the impact of oil palm on smallholder producers. The CPDPMM's programme took place in eight different municipalities, 50 families were chosen in each site as beneficiaries to grow 8-10 ha of oil palm alongside subsistence crops (Sankey, 2017). The total coverage of this programme, therefore, was in the region of 3200-4000 ha.

By 2013, numerous participants had fallen behind on loans because they were not able to earn enough money during the six-eight-year delay between planting and harvesting the crop (ibid). Other residents in San Pablo mentioned that campesinos working with oil palm companies became indebted, as they assumed all economic and productive risks. 'Many organisations were fooled by big businesses because they were eager for the funding…there are 17 families that were unable to pay back their credit' (anonymous interview with oil palm producers, cited in FAO, 2018, p.262). The land belonging to these families was then repossessed by credit agencies. Thus, the production costs associated with oil palm pushed producers away from diverse agriculture, towards monocropping and then to economic ruin. Sankey also notes that through the CPDPMM's programme and other productive alliances between oil palm agribusiness and campesinos, smallholders have been incorporated into 'global palm oil commodity chains' (2017, p.158). Therefore, the oil palm crop has been integral to

both campesino incorporation with the CFR and their long-term economic dispossession, which also facilitates further CFR integration.

6.7.5 Campesino Land Accumulation

Field research revealed that smallholders are also concentrating land above UAF limits and are contributing to inequitable land tenure structures. This is partly explained by the absence of land titles or a cadastral survey, which means farmers often do not know how much land they possess. Accumulation is also driven by campesino cattle ranching, mainly in the municipality of Yondó. A campesino leader stated: 'in Yondó practically 70% of livestock is in open countryside, in big land extensions…[in] large-scale cattle ranching because there has not been modernisation in the area' (Interviewee 28). Interviewee 28 links the prevalence of unproductive livestock, e.g. many hectares of land per head, to the lack of infrastructure and consequently poor market access. Fundamentally, this is related to the unprofitable nature of crop cultivation, made worse by FTA's that have facilitated the importation of large volumes of cheap staple crops, which have pushed many farmers towards cattle-rearing, as milk is a protected commodity. Therefore, macro-economic policies and structural inequalities have driven livestock land concentration by campesinos, underlining how state policies have a knock-on effect that enables some campesinos to undermine equitable access to land for other smallholders.

There are also cases of more affluent campesinos contributing to extensive land accumulation. Interview participants identified an individual in the ACVC's steering committee who has amassed between 500-1000 ha of land for different agricultural use including livestock, cultivation of cassava and maize. This individual allegedly owns land well in excess of the maximum permitted number of UAF, illustrating how certain campesinos can also be quasi-landed elite by taking advantage of weak zoning enforcement. Together these cases further illustrate differentiation among the peasantry in the ZRC-VRC, which emphasises the absence of institutional mechanisms in the ZRC model to control land concentration. Municipal authorities are not equipped with powers to identify land ownership, let alone expropriate land or oversee the enforcement of the UAF system. Moreover, it also leaves the pertinent question of how the model envisages making land distribution more equitable in the future. Although early *colono* campesinos redistributed land from those with ample holdings to landless peasants, decades on campesino communities are much more

settled and it is questionable how far similar grassroots redistributive mechanisms would work now.

Campesino access to land in the ZRC-VRC is undermined by violence, poor land tenure coverage and competing zoning models. Violent land dispossession has removed people from their farms, a process that is invariably enabled by the absence of a strong land property regime. This process is undertaken by non-state armed groups, but is also facilitated by the absence of state investment in land titles, enforcing the ZRC's UAF zoning system, better institutional articulation with the ZRC model and redefining the boundaries of the Forest Reserve Zone. Poor land tenure security also impedes long-term planning on farms, which is further debilitated by inadequate infrastructure. Together this, erodes the campesino sector through both violent and economic displacement (cf. Magdoff, 2013), which enables CFR integration. This is particularly evident in some parts of the ZRC, where corporate entities in the oil palm sector have moved onto lands formally owned by campesinos. Many campesinos have had to abandon farming altogether as they have been unable to repay loans related to the crop.

Violent dispossession of land and a poor land tenure system are directly responsible for impoverishing landscape biodiversity through deforestation in the ZRC-VRC (cf. Agarwal, 2014). This impacts food webs and importantly generates a rift in the carbon cycle, due to CO2 generated by forest fires. The removal of people from land through land dispossession also converts producers into consumers, which results in the metabolic rift (Foster, 1999). The process of becoming consumers instead of producers also generates a knowledge rift (Schneider & McMichael, 2010), as local farming knowledge is not reproduced. Finally, these consumers of food open themselves up to a nutritional metabolic rift by buying more food, instead of growing their own subsistence crops (cf. Butler & Dixon, 2012; Scales, 2014; Sharp, 2016). In short, a weak land tenure system and violent dispossession result in CFR integration but also numerous dimensions of the metabolic rift.

6.8 Technology and Practice

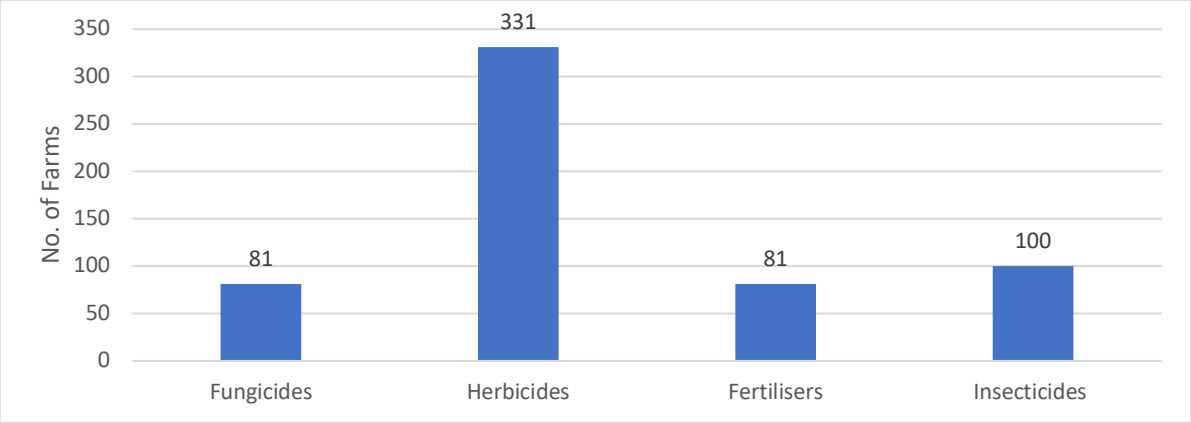
Across the MM region, 173,184 people declared themselves victims of forced displacement (Unidad de Victimas, 2016, p.2), as a result of violence and coercion. This number does not include the many others who have not openly declared the

impacts of violence on their lives, nor the other forms of violence that many have experienced (theft of livestock, clearing of paths, burning down homes and sexual violence), which have also contributed to campesinos leaving the ZRC-VRC. The problems of violence have been compounded by the absence of adequate infrastructure: electrification, reliable transport connections and clean water, all of which complicates agricultural production. This section discusses this in greater detail and how infrastructural conditions have shaped the technologies and practices used by campesinos. Arguably, violence and poor infrastructure have influenced campesinos to participate more in natural resource extraction than agriculture as a primary economic activity (see Figure 6.3). Despite the fact that the majority of campesinos now rely more on waged labour, many families continue to practice subsistence farming, complimenting this with off-farm work. GR and NGR technologies are present even among subsistence agriculture. This reflects the fluidity between peasant class categories. In the ZRC-VRC, violence and displacement have induced the use of industrial methods to speed up crop production and animal slaughter, in part to mitigate against the risk of displacement. This section analyses the key aspects that have encouraged the use of GR and agroecological technologies and practices in the ZRC-VRC.

6.8.1 Green Revolution Technologies

Despite the shrinking agricultural sector, industrial farming practices are evident in the ZRC-VRC. Studies undertaken by the ACVC reveal only 4% of those sowing rice use uncertified varieties; whilst in watermelon**,** beans, and cacao only 2% use landrace seeds (Cordóba, 2017, p.11). Maize is the crop with the highest use of native seeds, as 33% of farmers use local varieties (ibid). High-yielding seed varieties are often less resistant to pest pathogens, consequently they require higher doses of pesticides (Perfecto et al, 2019). The widespread use of pesticides is supported by the fact that some 100 out of 593 farmers interviewed in the ZRC-VRC used these chemical inputs (see Figure 6.7).

Figure 6.7: Number of farms in the ZRC-VRC using chemical inputs from a survey of 593 farms



Source: Adapted from ACVC, 2012, p.268.

The same survey also indicated that 81 out of 593 farmers used synthetic fertilisers- approximately 13% of those interviewed (see Figure 6.7). This could be because certified seeds often need synthetic soil amendments to grow, as they take time to adapt to different environments outside of the laboratories in which they are developed. High use of chemical fertilisers can result in excess nitrates and phosphorus in soils, which can pollute water bodies due to run-off from soils (Mancus, 2007; McMichael, 2008, 2013; Schneider & McMichael, 2010; Clausen et al, 2015). The use of certified seeds pushes the adoption of various other GR technologies, all of which contribute to expanding the corporate regime of accumulation. Interestingly, however, a higher percentage of farmers used organic soil amendments or on-farm agroecological inputs- 20% of participants (ACVC et al, 2012, p.268). This reveals the existence of hybrid farms that employ both GR and NGR technologies and underlines the fact that GR technology has not displaced organic farming completely; campesinos have agency in combining different technologies.

Figure 6.7 reveals that the majority of participants used herbicides. Fieldwork interviews support these findings, with the following proprietary herbicides the most frequently mentioned: Roundup®, Estelar 480®, Panzer 450®, Gramafin®, Gramoxone® and Grazon®.[72] Loss of weeds due to herbicides can also cause soil

[72] Roundup, Estelar 480 and Panzer 450 contain glyphosate, Gramafin and Gramoxone are paraquat and Grazon is trichlopyr based. Glyphosate is a contentious herbicide and has been banned for certain

erosion from wind and rain, as there is a decrease in soil cover and weeds help to bind the soil (Walker, 2016). Walker also notes that weeds with deep roots, in fact draw nutrients up and make them available for plants growing closer to the soil surface (ibid). Finally, once weeds die, the plant residue is available for composting, which can return valuable nutrients to the soil in the form of humus, thus, removal of weeds also impacts the soil nutrient cycle, as it reduces the amount of organic matter available for incorporation into the soil. Perfecto et al. also note that application of Roundup on crops has resulted in 'mortality rates of over 90 per cent…on the larvae of three species of amphibians' (2019, p.235). They explain this is because it sticks to the leaves of plants, with which amphibians have direct contact. With this in mind, they state that the use of Roundup condemns 'many amphibian species to extinction' (ibid). It is also important to note, however, that herbicides have been crucial to increasing yields the world over, which is why many campesinos choose to use them. They have enabled *colonos* in the ZRC-VRC to improve pasture quality through removal of weeds, as they have large tracts of land and little additional money to hire waged labour that is already very scarce. For precarious petty-commodity campesinos who have limited access to state services, herbicides have been the only viable means to manage pasture quality.

Arguably, petty-commodity producers have used herbicides in spatially limited ways, especially keeping in mind the small percentage of people practising agriculture. On the other hand, the Colombian state (particularly the military) has introduced herbicides more indiscriminately through aerial fumigation of coca crops. The first glyphosate fumigation in the 2000s affected 1439 ha, of which only 516 ha were coca crops (Narvaez Peña, 2018, p.66). The municipalities of Cantagallo and San Pablo experienced fumigations from 2001-2010: according to the ACVC's president 11 took place between 2009-2010 (Guerra Interview, 2017). ACVC et al. (2012, p.65) suggest that some 50% of all farms in Cantagallo and San Pablo were affected by aerial fumigation. Gilberto Guerra (Interview, 2017) estimates that this led to a 50-60%

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uses in a variety of countries. Its use for aerial fumigation of coca crops was banned by the Santos regime in 2015, due to fears over its carcinogenic properties but in March 2019 President Duque asked for the judicial ban to be removed. Paraquat is banned in the European Union because it is lethal when consumed and has been linked to Parkinson's disease following accidental exposure during application.

decline in the local economy. Aerial fumigation impacted the local economy because its application was often inaccurate, affecting subsistence plots and pastures as well as its intended target –coca crops (ACVC et al, 2012, p.65). Fumigation was imprecise because it was carried out from higher altitudes in Colombia to avoid spray planes being targeted by the guerrilla. Many campesinos, therefore, were left with few options other than to use more chemical inputs to immediately rebalance soils, or, to abandon farming altogether. This has disrupted peasant farming and incurred financial ruin, which has resulted in many campesinos looking for supplementary income through wage labour in mining or other resource extraction activities. As Guerra notes, 'after the fumigations, gold mining surged and became the principal source of economy' (Interview, 2017), due to the direct impact upon crop yields. Thus, the use of glyphosate in aerial fumigation has undermined the petty-commodity economy, pushing campesinos further towards semi-proletarianisation. Marginalising campesinos from farming diminishes CFR resistance through agroecology because fewer rural dwellers have the time or labour for agriculture.

Aerial fumigation of collective home garden projects is another example of how conflict disadvantages subsistence farming. In Alto Cañobraval, San Pablo, fumigation wiped out a communal home garden belonging to 70 women. A female leader of the project remembered how 24 different crops, including tomato, onion, coriander, peas, sorghum, watermelon, pumpkin, honeydew melon, cucumber, radish, beetroot, runner beans, cacao and coffee were fumigated (Interviewee 32). Similar incidents took place in the wards of Villa Nueva and Agua Sucia, San Pablo (Interviewee 33). These projects sought to reconnect women to agriculture and strengthen food sovereignty, i.e. encouraging more campesinos to grow food instead of purchase it (cf. Butler & Dixon, 2012; Scales, 2014; Sharp, 2016). The communal projects focused on the municipality of San Pablo because of the concentration of coca crops there, to encourage crop substitution and revitalise subsistence farming through use of landrace seeds. Aerial fumigation of these coca substitution projects not only threatened the reconstruction of subsistence agriculture and the possibility of strengthening the position of campesinos as petty-commodity producers, but also undermined the resistance of women campesinos in particular. The fumigation of women's communal gardens demonstrated that the Colombian state/ military also blocks them from becoming producers and gaining economic self-sufficiency, as well

as their husbands and immediate society. The fumigation of this communal garden extinguished the spatial resistance of these women and the possibility of making this garden an example of agroecological resistance for other women's groups in the ZRC-VRC.

Aerial fumigation has had significant implications for the environment alongside its socio-economic impact. It destroyed entire harvests and terminated some native seeds in the region' (Interviewee 34). Consequently, campesinos were forced to buy certified seeds, instead of using those from previous harvests- explaining the high use of certified seeds in the area. Interviewees commented on the destruction of 4 ha of sugar cane (Interviewee 31), avocado trees and coffee plants (Interviewee 35). The indiscriminate use of aerial fumigation ruined home gardens and caused the loss of local seed varieties. The ACVC's agronomists reiterated this, as they argued that the lack of landrace seeds resulted in the use of certified seeds in productive projects administered by various institutions, such as the FAO in the 2015 rice project (Interviewee 41).[73] Certified seeds induce the use of chemical inputs, since they are bred to respond to synthetic fertilisers. Aerial fumigation, therefore, has negatively impacted the long-term development of agroecology through the erasure of certain landrace seeds.

The Colombian state has also attempted to push smallholders towards the use of certified seeds. In 2002, the government passed a number of laws allowing the entry of genetically modified corn and cotton from Monsanto and DuPont, which directly benefited two of the world's largest agribusinesses. Resolution 970 of 2010 standardised seed use in agriculture by outlawing the use of any uncertified seeds and those saved from previous harvests, unless they were registered with the state owned Colombian Agricultural Institute (ICA) (Wattnem, 2016). In an effort to enforce these laws, ICA confiscated the seeds of numerous smallholders. From 2010-2011, it repossessed 1,167,225 kg of seeds from crops that smallholders specialised in (rice, potato, maize, wheat and beans) (ibid, p.13). Whilst in 2012, it rejected 2,739,392 kg of rice seeds for failing to meet established standards (ibid). In so doing, the

[73] The rice project was begun in 2015 in the middle part of the zone, in the wards of Puerto Matilde, Santo Domingo and No Te Pases.

Colombian state imposed a model of regulation in the country that forced the adoption of New/GR technologies and influenced CFR integration. Resolution 970 was suspended in 2013, in the wake of mass national strikes led by the campesino sector against this law.

As Wattnem astutely asserts, seed laws are 'novel mechanisms of accumulation by dispossession' (2016, p.1). She notes that in the Global South 'transnational pressure from agribusiness companies, bilateral trade agreements and World Trade Organisation (WTO) treaties such as the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS)…forced nations to strengthen their IPR regimes' (ibid, p.10) and related seed laws (also see Pechlaner & Otero, 2008, 2010; Otero, 2012). This is underlined by the fact that Colombia's FTAs with the US and Europe stipulate the country must 'provide legal monopoly rights over seeds sold' (GRAIN, 2013). Seed laws, hence, amount to 'certification as dispossession' (Wattnem, 2016, p.10). This represents the use of regulation to reinforce technological changes, which eventually price smallholders out of production, as farmers are left with no alternative but to use chemical inputs according to the requirement of certified seeds. In the ZRC-VRC, aerial fumigation of glyphosate has reinforced this national attempt to re-shape the regulatory framework towards the use of certified seeds, as it has reduced the availability of landrace varieties.

ACVC et al. (2012, p.65) point out that aerial fumigation also encouraged the growth of new, resistant forms of weeds. Research into the development of glyphosate-resistant weeds confirms this has taken place in other contexts (Van Bruggen et al, 2017). Aerial fumigation of glyphosate could also be polluting water bodies. Previous scientific assumptions argued that the likelihood of leaching is low, as glyphosate achieves high levels of absorption. On the other hand, the Soil Association suggests that 'the half-life of glyphosate, which gives an indication of its persistence in the soil and water, is believed to be longer than previously thought… the herbicide persists longer with the return of crop residues containing glyphosate to the soil' (2016, p.1). The Soil Association warns that glyphosate could be leached into deeper soil layers, and eventually 'end up in ground and surface waters' (ibid, p.2). Thus, aerial fumigation with glyphosate could very well be contaminating water sources and fields beyond those that grow coca. In addition to this, Olivero-Verbal underscores the negative consequences of aerial fumigation on the populations of 'wormlike

animals…tadpoles and neotropical fish' (2011, p.749). Whilst Lynch and Arroyo (2009) note that aerial fumigation of coca crops may have placed several species of frog at risk, altering local food webs.[74]

6.8.2 The Coca Crop

The coca crop itself has deeply re-shaped campesino agriculture. For instance, in San Pablo there is a direct correlation between the increase in coca crops and a decrease in the sale of surplus subsistence production. In 1975, the region grew rice, maize, sesame, beans and had an abundance of fish in its rivers but after the arrival of coca in 1980 'the culture began to change…instead of being producers, we became consumers' (Interviewee 36). Farmers began to grow less food for family consumption, instead choosing to grow coca and buy food (Interviewee 31; Interviewee 28). This led to a cultural loss in 'what it means to be a campesino' (Interviewee 36), i.e. producers of food, halting the reproduction of agricultural knowledge due to the move away from subsistence farming. It is interesting to note that these interviewees associate campesino identity with a petty-commodity lifestyle (production for sale and subsistence) but reject wage labour and more capitalist forms of production that channel all agricultural space towards cash crops (coca in this case). Nevertheless,

[74] Solomon et al. (2005; 2007; 2009) argue that the impact of aerial glyphosate fumigation on forests, terrestrial mammals and birds is insignificant. This is reiterated by the Colombian Ministries of Environment and Health (2014), who claim the minimal levels of glyphosate applied through aerial fumigation have no corrosive ecological costs. They suggest this is because aerial aspersion technology is precise and has only had a 1% impact on legal crops (2007, p.108). However, this is only the case when aircrafts are flown at low altitudes, which did not take place in Colombia, as planes flew higher for fear of being targeted by the guerrilla. Furthermore, the 1% figure is questionable given the extent of campesino outcry over this issue. The impact of aerial aspersion on subsistence crops was repeated by numerous interview participants during fieldwork in the ZRC-VRC. Additionally, the ministerial report (2014) does not go into detail about the quantities of glyphosate applied, nor does it produce governmental impact assessments, rather it focusses on an incomplete set of literature. It also fails to consider the purported impact on human health, as Camacho & Mejía found an increase in the number of 'medical consultations related to dermatological and respiratory illnesses, as well as the number of miscarriages' in areas exposed to aerial aspersion (2017, p.147; Guyton et al, 2015). It is possible that the World Health Organisation's 2015 declaration that glyphosate is carcinogenic to humans also impacted Santos' ban of aerial fumigation in 2015 (WOLA, 2019).

they do note how the coca crop changed the class configuration of campesinos from largely petty-commodity producers towards semi-proletarianisation and more capitalist modes of farming, which fundamentally altered relationships with petty-commodity and subsistence agriculture, arguably generating metabolic rifts, as more food producers became consumers.

Interviewees argued that the shift away from subsistence farming has resulted in the prioritisation of a highly valuable, non-perishable illicit crop over diversified subsistence production. The economic benefits generated by the coca crop mean that this crop has displaced diverse petty-commodity and subsistence agriculture, as participants noted people became seduced by 'easy and fast money' (ACVC et al, 2012, p.264). Coca production is less demanding work than subsistence farming, as the crop is non-perishable, has a very high value to weight ratio, and is easy to transport. For these reasons, coca has a significantly higher return than subsistence crops, which are perishable, bulky and difficult to get to market due to a lack of infrastructure. Physically easier work and better pay have altered local attitudes to subsistence agriculture (cf. Richani, 2014, p.70), a process that has also been facilitated by the structural impediments to smallholder agriculture. A member of the ACVC's technical team commented:

> 'It hurts me to say it has become culturally characteristic that people have lost their spirit of struggle … [because of] easy money. Loads of money used to arrive in the zone, people got used to seeing so much money that now [a day labourer] paid COP 40,000[75] tells you that it is very little. That is well above the average labourer's daily wage. People get used to this kind of money. Today sowing cassava, maize, plantain, rice, having chickens and pigs is an overly tedious activity, too tiring and exhausting, of little interest and nobody wants to do it because there is not enough money in it. People are more interested in picking coca leaves' (Interviewee 26, 2017).

[75] Circa US $ 13/day, which compares to US $9.44 for an eight-hour day at the 2017 Colombian official minimum wage.

Intensive coca farming has not only undermined petty-commodity production, but the chemically intensive processes required for its cultivation have also introduced numerous chemical inputs to local environments. This is to ensure consistent yields but is also a result of reduced planned and associated biodiversity on farms. Coca farming is not monocropped in the San Pablo region, as is evident from Plate 6.3 because subsistence crops, such as plantain, have been used to cover coca plants from the visibility of planes. Although this maintains a certain level of diversity in farms, it does not compare to the broader planned biodiversity of subsistence farming.

Plate 6.3: Coca bushes intercropped with plantain trees (La Unión, San Pablo, Bolivar)



Source: Author, 2017.

Congruent with this, interviews with campesinos from San Pablo, where the majority of coca is grown in the ZRC-VRC, noted that the largest production expense was chemical inputs. The coca crop itself is sprayed every two months with a range of pesticides including Tamaron®, Cypermethrin®, and Lorsban® (Interviewee 50). The ACVC's sectional co-ordinator for San Pablo blamed coca production for the entry of many agrochemicals into the area (Interviewee 27). 'Where coca was grown the ground yields nothing one sows, and it does not give us food to eat anymore. It is dead, dead, even for pasture because of so many chemicals' (ACVC et al, 2012, p.65).

This argument could be driven by an anti-coca discourse, however, as field observation revealed that plantain and cassava were indeed growing among coca crops (see Plate 6.3). Moreover, some farmers were substituting illicit crops for others, such as cacao and rice, on land once used to cultivate coca. Some campesinos also used rain washed coca leaves as fertiliser to reintroduce organic matter to overexploited coca fields. Cacao grown in soil that was once used for coca and also subject to aerial fumigations was treated with cleaned coca leaves and it grew well, underlining that it is indeed possible to re-use land where coca grows. This quotation does, however, reveal the high quantities of chemical inputs used to cultivate coca.

Other ecological impacts of coca cultivation include soil contamination, deforestation, erosion caused by intensive tillage and weeding, as well as frequent harvests (Dourojeanni, 1992). The preparation of cocaine paste generates additional environmental contamination, as gallons of petrol, cement, potassium and sulphuric acid are mixed for the conversion process (ACVC et al, 2012, p.65). The residual fluid is then often thrown into rivers, leading to the pollution of waterways. All these substances are extremely dangerous for 'water flora and fauna' (Dourojeanni, 1992). Despite its illicit status, as with any industrial crop, the intensive cultivation of coca has enabled the penetration of GR technologies and practices in the ZCR-VRC.

The coca crop has proliferated partly because of the ZRC-VRC's marginality. As a leader of the ACVC said, 'we don't have a system of production, processing and marketing in place…we don't have roads to access urban centres' (Interviewee 37). Countless farmers remarked that coca is only grown as a last resort: 'people don't grow this because they want to but because it's a necessity. Sometimes when the river floods, the maize crop is lost. It is very difficult to transport produce to the towns because…we do not have roads (Interviewee 38). Interviewee 38 also mentioned that when the river dries up, campesinos encounter further transport problems, as fluvial routes are important arteries of communication. Adequate infrastructural conditions are clearly required for petty-commodity farming to flourish. The abandonment of agriculture and expansion of the coca crop in these marginal areas is inevitable whilst infrastructure remains deficient.

6.8.3 Coca Crop Substitution Programmes

Despite coca providing better income, the majority of communities in the ZRC-VRC have collectively chosen to stop its cultivation. San Pablo is the last municipality with significant areas still devoted to the crop but shifts away from coca production are increasingly evident across the rest of the ZRC-VRC. The move away from coca production is reflected by the fact that only 700 of 20,000 farms in the entire ZRC still cultivate coca (Gilberto Guerra Interview, 2017). The densest coverage exists in the following wards in San Pablo: La Unión, Alto Cañabraval, Golondrinas, La Fria Alta and La Fria Baja (Interviewee 27). Yet, all these wards, together with Villanueva, are now the most productive areas for subsistence crop programmes. The lower part of San Pablo is cultivating rice, maize and sugar cane and the higher part plantain and cassava (ibid). This represents a slow reconstruction of petty-commodity production.

Coca substitution programmes have encouraged farmers to move back towards subsistence farming because some are proving to be economically viable options. For instance, a group of campesinos from the rural ward La Unión hold a campesino market in San Pablo- the biggest urban centre in the municipality- where they take a variety of produce including oranges, mandarins, honey, eggs, cassava, plantain and rice. This group is now expanding and making links in the larger provincial city of Bucaramanga, in the neighbouring department of Santander. This project is encouraging campesinos to farm again, providing them with retail market links to earn a living without cultivating coca, as well as constructing face-to-face AFNs that bring producers and urban consumers together.

Plate 6.4: Subsistence rice production in La Unión, San Pablo, Bolivar



Source: Author.

Another coca substitution programme is led by cacao producers' associations in the area, including *La Asociación de Productores de Cacao del Sur de Bolívar* (APROCASUR). This provides campesinos with seeds, technical assistance and a produce collection service. This replicates the palm oil agribusiness model, but the difference is the fruit in question, as shade-grown cacao has 'high levels of biodiversity' (Perfecto et al, 2019, p.200). Additionally, cacao entails less long-term investment and provides more immediate returns. APROCASUR was established independently by campesinos rather than NGOs or state institutions and their bottom-up approach better facilitates knowledge exchange between smallholders, as these individuals live and work in the area.

To a certain extent, the reversion of production towards campesino agriculture has also been motivated by military interventions, namely blockades and the forced eradication of coca crops. The Colombian military led economic blockades from 2000-2004, which highlighted the precarity of food security in the area- many depended on purchased food for sustenance. As Guerra suggests 'in a blockaded region, money is not everything' (Interview, 2017) because the military controlled the items and quantity of goods that campesinos could bring into the territory. These limits reinforced the need for subsistence farming, therefore, disrupting the CFR logic that encouraged farmers to buy food instead of growing it. The forced eradication of coca crops has also led to significant economic losses for farmers, which has encouraged the search for alternatives. The long-term impact of these forceful and coercive techniques is questionable, however, as many smallholders have returned to coca cultivation and food purchases. Thus, it appears that the development of economic alternatives to coca through substitution programmes that give access to sufficient credit and state services is essential. Afterall, this is what the very first *colono* coca growing protestors sought when they mobilised for the creation of the ZRC model.

6.8.4 Agroecological Scaling

The ACVC aims to bolster the campesino economy through agroecology. It has a well-developed agroecology discourse, illustrative of its position at the forefront of the national agroecology social movement. In 2014, the ACVC renamed itself *ACVC-Red de Agroecología Nacional* or ACVC-National Agroecology Network (ACVC-RAN), reflecting its commitment to promoting agroecology nationally. ZRC-VRC inhabitants have appropriated this discourse, as countless participants proclaimed the importance

of agroecology and ‘cleaner’ agriculture in interviews. The FAO confirms widespread discursive familiarity with agroecology in the area (2018, p.378). In this sense, the ACVC has excelled in the consolidation of a strong ‘mobilising discourse’ (Mier y Terán Giménez Cacho et al, 2018, p.1) by positioning agroecology as a solution and corrective to industrial agriculture.

The ACVC have undertaken a number of agroecological projects to establish practical and working examples. It has five communally owned demonstration farms that are strategically placed in the lower, middle and upper sections of the ZRC-VRC. These farms are in Puerto Matilde (Yondó), Puerto Nuevo Ité (Remedios), La Cristalina (Remedios), Carrizal (Remedios) and Alto San Juan (San Pablo). These demonstration farms are what Altieri and Nicholls (2002) call ‘Faros Agroecológicos’ or ‘Agroecological Beacons’, which act as reference points for their communities. Demonstration farms are leading examples of practical agroecology extension efforts in the ZRC-VRC.

The demonstration farm near the rural ward of Puerto Matilde, known as the *Bufalera* because of its buffalo herd, exemplifies a plethora of agroecology methods, including polyculture, intercropping and a living seedbank.[76] This farm has also piloted the production of agroecological fertilisers and the use of an anaerobic digester to promote on-farm recycling of nutrients and closed system nutrient cycling. The anaerobic digester captures methane from organic waste such as livestock excrement and food waste, which can be used for cooking, heating and other applications (see Plate 6.5). Therefore, the anaerobic digester may reduce greenhouse emissions from this particular livestock system and provide a situated example of how simple techniques can be replicated on a wider scale to reduce greenhouse gas emissions from livestock farming. This technology not only helps to reduce the greenhouse gas emissions produced by agriculture but also generates clean energy for human consumption. In isolated areas, such as the ZRC-VRC and the *Bufalera* farm, this also saves potential greenhouse gas emissions from the transportation of gas cylinders from urban centres. In addition to gas, the anaerobic digester produces liquid digestate- an

[76] The farm has plantain (1 ha), cassava (0.5 ha), rice (2-3 ha), sugar cane (6 ha) and 3 ha of fruit trees (lemon, mandarin, oranges, zapote, mango, guava and avocados).

excellent organic fertiliser and soil conditioner that reduces the application of synthetic soil amendments. The anaerobic digester, thus, encourages the use of on-farm resources, lessening dependence on agribusiness products, whilst also reintegrating animal and crop farming.

Plate 6.5: Anaerobic digester constructed by an Italian undergraduate from the University of Brescia as part of his final year project in the communal farm near Puerto Matilde (Yondó, Antioquia)



Source: Author.

The communally owned demonstration farm near Puerto Matilde stands out for the variety of agroecological methods used and is an important learning resource that builds local socio-ecological capital. It is currently run by the ACVC's technical team with some input from local campesinos, but this is a temporary measure until members of the community are trained to take over management. Before the technical team took over the farm's management, it was run by local community members. However, the technical team noted that those managing the farm lacked the human capital to scale agroecology. Therefore, it was decided that the technical team would manage the farm and implement agroecological methods, whilst also training interested campesinos in agroecological farm management. In so doing, the ACVC's technical team is raising local human capital through practical and horizontal teaching.

The demonstration farm near Puerto Matilde is more advanced along the agroecology transition (cf. Gliessman, 2016) than other communally owned ACVC demonstration

farms. For instance, the communal demonstration farm in the rural ward of Puerto Nuevo Ité, Remedios, focuses solely on buffalo and livestock production- it does not integrate this with crop farming. Community members have planted some subsistence crops on the farm, but these are not part of a coherent farm plan. The communally owned farm in Alto San Juan (San Pablo) specialises in livestock but also maintains a diversified vegetable garden with seeds from Puerto Matilde's live seed bank (Interviewee 33). However, this farm does not have its own anaerobic digester, nor living seed bank. Nevertheless, the demonstration farms evidence the ACVC's attempts to move beyond agroecological discourse towards agroecological practice.

Alongside training campesinos in agroecology on the communally owned demonstration farm in Puerto Matilde, the ACVC is also assisting agroecological transitioning on privately owned campesino farms to establish successful food producing farms, so that they serve as exemplars of agroecological methods. Projects completed on these private farms include tree nurseries, the implementation of agroforestry techniques and livestock improvement. Beneficiaries of these agroecological projects are identified by the ACVC on the basis of need but also commitment to practical agroecological transitioning. This is a necessary ingredient because these campesinos receive less technical assistance compared to those who are trained on the communal demonstration farms. Either way, both forms of intervention exemplify how the ACVC assists agroecological transitioning in the ZRC-VRC.

The ACVC's training and interventions on privately owned farms is bearing fruit, as they displayed a plethora of agroecological methods. Interviewee 30's farm located in Tamar, Remedios, had a diverse range of crops including eight hectares of fruit trees such as orange, soursop (*Annona muricate)*, pitaya (*Hylocereus spp.*) and guava, as well as pineapple plants; two hectares of plantain, cassava, maize and yams; a range of livestock (buffalos, pigs, chickens and turkeys) and 60-70 ha devoted to pasture. This farm exemplified integrated animal and crop farming, which had high levels of planned and associated biodiversity. Another privately owned farm in La Concha, Cantagallo, employed a similarly diverse system. It had subsistence crops (cassava, plantain, maize and rice), as well as various animals (chickens, ducks, goats, pigs, buffalos, sheep and turkey). Both farms used intercropping (see Plates 6.6 a & b),

which enabled them to reduce the amount of chemical inputs used on crops. They were also actively reducing the volume of herbicides applied to pasture.

Plate 6.6a: Maize and 6.6b cassava in close association with plantain and natural vegetation in a privately owned campesino farm in La Concha, Cantagallo, Bolivar.





Source: Author.

Interviewee 30 from Tamar demonstrated a nuanced understanding of agroecology, which was reflected in his farm. He exclaimed: ‘everything I have sown is how nature has it- 100% natural…why should we change our original way of farming if the land gives us everything [we need]? Here we can farm everything 100% naturally’. He consciously reduced the amount of chemicals used on his pastures, which he weeded manually for three years- synonymous with Level One on Gliessman’s agroecology transition (2016). Various interviewees talked about the high fertility of soils across the region. ‘We practise artisanal agriculture…we use very few chemicals because this zone still has very fertile land’ (Interviewee 39). This could be due to a variety of reasons, such as low intensity farming that has not exhausted soil nutrients, the practice of leaving land to fallow and also crop rotation.

Slash-and-burn agriculture was also mentioned frequently by interviewees as an often used agroecological method that has maintained soil fertility. According to the ACVC et al. (2012, p.268), 74.33% of farms use slash-and-burn before planting. The organisation, however, believes this technique is contributing to 'destroying soil micro-fauna, reducing humidity due to the removal of vegetation and worsening soil erosion' (ibid) possibly because it is improperly applied. This view could arise from a normative discourse that dismisses swidden agriculture as a primitive expression of farming that worsens deforestation and also contributes to CO_2 emissions from the burning process (Fox et al, 2000). A more nuanced analysis of slash-and-burn agriculture would undertake a comparative study of fallow length, field size, crops cultivated, and methods used in a given region. Research in fact reveals that swidden agriculture and secondary forest vegetation can boost biodiversity and soil nutrients (ibid; Coomes et al, 2000; Schroth et al, 2004; Fragoso et al, 2015; Schiffman, 2018). After working with forest dwelling communities in the Brazilian Amazon, Botanist Charles Peters explained that 'properly done [slash-and-burn] is a really amazing solution to enriching sterile tropical soils…these sites are farmed for several years until excessive competition by weeds and declining yields make additional cultivation untenable' (cited in Schiffman, 2018). Peters alludes to the need for long fallow periods between cropping to allow the land sufficient time to regenerate soil fertility**.**

Forsyth's critical realist understanding of environmental change questions the 'partial insights into complex biophysical processes' provided by some globally accepted scientific explanations (2001, p.1), such as the negative perceptions around slash-and-burn agriculture. Instead, he urges the construction of 'new scientific explanations based on the values and experiences of local groups' that work with institutional or scientific policy formation (ibid, p.8), more along the lines of the work that Peters undertook in Brazil. This evidences the need to question 'existing notions about factity', the epistemological premise that frames scientific explanations (Forsyth, 2015, p.106). Re-evaluating the way slash-and-burn agriculture is used, and improving its application, favours bringing traditional farming into dialogue with policy formation and more scientifically oriented explanations.

The ACVC works towards scaling agroecology through campesino to campesino exchange (cf. Martínez-Torres & Rosset, 2014). They have undertaken two

agroecology schools, the second of which ran over three days in July 2017. It was held on the ACVC's communal demonstration farm near Puerto Matilde (the *Bufalera*). This focused on four key themes: seed saving and exchange, animal nutrition, livestock best practice and financial administration. The school was opened with interventions from campesinos, recalling the history of colonisation and social organisation in the VRC. Workshops were led by the ACVC's technical team- agronomists, agroecologists and a vet- with the aim of boosting local socio-ecological capital. Campesino to campesino exchange was facilitated by the convergence of people from across the zone in the communal farm. Moreover, they were also taught about integrated farming through a show and tell session centred on the anaerobic digestor.

The ACVC also sends individual community leaders outside of the zone to become accredited agroecologists, who then return to their respective municipalities to catalyse agroecological transitions. One of the sectional organisers from San Pablo was sent to the Instituto Agroecológico LatinoAmericano (IALA) María Cano, which is based in Viotá, Cundinamarca.[77] At the point of this research the ACVC member had only recently begun her education in the IALA. This is another example of how the ACVC uses external allies to scale agroecology by raising the skills of its community leaders.

National and international 'external allies' (cf. Mier y Terán Giménez Cacho et al, 2018), such as NGOs, charities, inter/national agencies and universities, have been crucial to the implementation of agroecological projects in the ZRC-VRC. The ACVC

[77] This school is part of a network of IALAs around Latin America that are connected to La Via Campesina (Chohan, 2019). The school is based on a farm and is comprised of rural youth from around the country. Different to the ACVC's shorter agroecology school, students in the IALA María Cano participate in more top-down formal education by taking a variety of classes including agronomy, sociology, history, politics and mathematics. This is combined with practical agroecological learning on the farm, led by professional agroecologists, and is complemented by farm visits within the wider campesino community in Viotá. During these visits, the students exchange their newly acquired knowledge with campesinos and vice-versa so that the school has a wide impact in its locale. The school's curriculum is firmly framed around the political objective of food sovereignty and the goal of constructing an alternative food system that privileges smallholder farmers in production and sale.

has sought both external funding and expertise to establish: rice and sugar cane mills in all municipalities of the ZRC-VRC (see Plates 6.7 a&b) to encourage crop processing for family consumption and sale[78]; cacao production in San Pablo; planting and processing herbs for essential oils; and the planting of rice paddies. These are not characterised as top-down agroecology projects because the ACVC co-constructs these interventions and articulates these projects with its political agroecology objectives, which aim to strengthen subsistence farming and sell surplus.

Plate 6.7a: Sugar cane processing and Plate 6.7b: Rice mill in San Pablo, Bolivar



[78] Rice mills are located in: La Esperanza, El Diamante, La Victoria y Santo Domingo (Cantagallo); en Bodega los Once, San Francisco y El Bagre (Yondó); Patio Bonito, Villa Nueva y Diamante (San Pablo); y en Dos Quebradas, Altos de Manila, Lejanías, Paso de Mula, Carrizal y Arenosa (Remedios). Sugar cane mills are located in: La Peña, Santo Domingo, La Floresta, Patio Bonito, Paraguas y Muribá (Cantagallo); Puerto Matilde (Yondó); Monte Carmelo, La Fría Alta, La Unión, Agua Sucia, El Retorno, La Virgencita, Cerro Azul y Tres Bocas (San Pablo); y en Ojos Claros, Anacoreto y Carrizal (Remedios).



Source: Author.

Despite all these varied interventions, agroecological scaling is incipient in the ZRC-VRC. This is reflected statistically in studies undertaken by the ACVC, which argue that agroecological practice is only evident in 27% of plantain and cassava crops, 21% of maize crops, and 5% of sugar cane, cacao, fruit trees and oil palm plots (Córdoba, 2017, p.10). The most prevalent methods used by campesinos include leaving organic matter for soil coverage, cover crops, crop rotation, terrace agriculture, minimal tillage, organic fertilisers, and organic herbicides (ibid, p.11). Fieldwork confirmed that the majority of producers used a number of these techniques in combination such as crop rotation, leaving land to fallow, applying organic fertilisers (mainly cattle excrement and rain-washed coca leaves in San Pablo), seed saving/exchange and some agroforestry methods (trees planted in pastures).

The scaling out of these methods is fundamentally undermined by the limited practice of agriculture and their disparate use. It is possible that campesinos find industrial methods and technologies more time and labour efficient but the fact that these are prioritised over ecological principles is suggestive of the externalisation of ecological

costs. A sectional leader from the ACVC reiterated that the zone has a developed agroecological discourse but this is not evenly matched by practical application:

> ‘many people are interested in practising agroecology. The majority of people know what agroecology is and apply certain principles but knowing them and not giving them importance is the same as not knowing them. Many people have their own farms, have the knowledge, but are not interested in applying this, not even our [ACVC] associates seem interested’ (Interviewee 26).

Agroecological scaling in the ZRC-VRC is undermined by the persistence of conflict, infrastructural under development and the coca crop. One of the earliest *colono* campesinos who helped set up the ACVC mentioned, agroecology ‘has to be realised not only in theory but also in practice… but this is a process, processes do not happen from one day to the next without continuity. We need a lot of continuity so that over the next three, four or five years we can end all chemical use here’ (Interviewee 40). Violence has deprived the ZRC-VRC of continuity, however, as intergenerational renewal has been disrupted by land displacement. Moreover, the infrastructural under development of the area impedes the economic sustainability of agriculture, which drives farmers towards coca cultivation and other extractive enterprises.

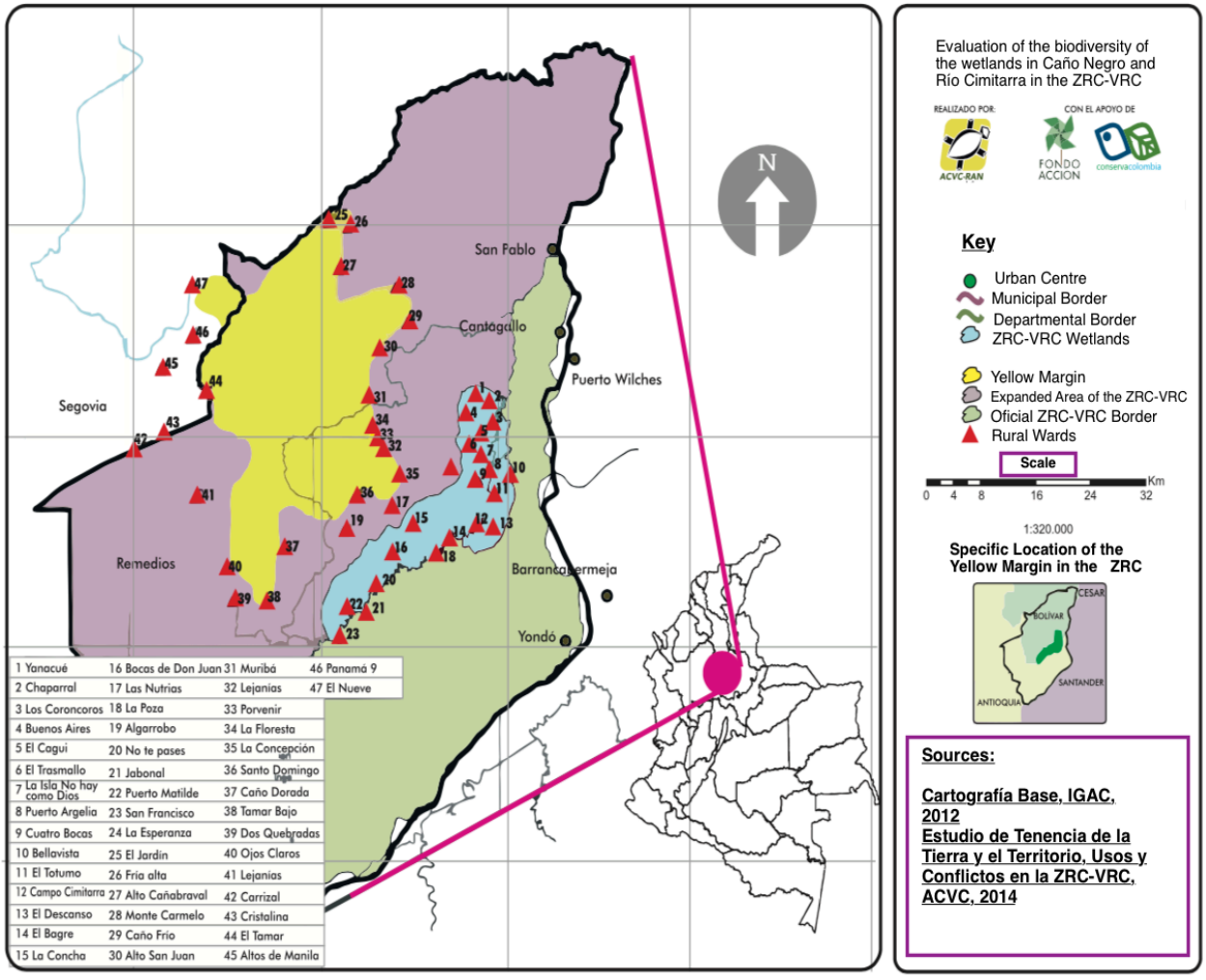
Re-constructing smallholder agriculture and encouraging agroecological production is a complex process in the ZRC-VRC. The ACVC has been crucial to this process, as they have provided technical assistance, sourced external funding and pushed for public policies conducive to agroecological transitioning (cf. Mier y Terán Giménez Cacho et al, 2018). However, violence is a major obstacle that blocks this resistance to the CFR. On the other hand, the use of agroecological techniques and the sustained intervention of the ACVC both in demonstration farms and privately-owned ones is suggestive of the possibility of scaling-out agroecology to re-build the petty-commodity sector.

6.8.5 Bottom-up Conservation

The ACVC’s agroecological approach is rooted in the need for biodiversity, particularly the conservation of virgin forests. As mentioned, the ZRC-VRC has a number of structural factors that facilitate deforestation and the expansion of the agricultural frontier, such as a poor land tenure system, poor enforcement from the state and few

social amenities to support sustainable practices (cf. Agarwal, 2014). Nevertheless, campesinos in the ZRC-VRC mobilised to mitigate deforestation and the expansion of the agricultural frontier in 1993 through the *Franja Amarilla* or yellow margin (see Figure 6.8). This conserved 70,000 ha of ZRC virgin territory to protect water sources in the Serranía de San Lucas mountain range, exemplifying campesino resistance in favour of forest-preservation.

Figure 6.8: The Franja Amarilla conserves 70,000 ha of virgin territory to protect the ZRC-VRC water resources.



Source: FAO (2018, p.344).

JACs neighbouring the conservation zone agreed to safeguard the forest against deforestation undertaken by both campesinos or corporations. These agreements were solidified in community accords, which were supported by the two active guerrilla groups in the area (FARC-EP and the National Liberation Army- ELN). The yellow

zone margin was then marked in paint on boundary trees to provide a visual barrier against deforestation. In 2014, the ACVC joined forces with the National Parks agency to begin the process of declaring the area a national reserve and re-determine the general parameters of the Forest Reserve Zone (established in Law 2) in Remedios, Cantagallo and San Pablo (Prensa Rural, 2017). These measures reveal how the ZRC model can be used to conserve local forests. Given armed groups effectively controlled the felling of trees in this area, one could argue that the yellow margin was only preserved under the threat of violence. Although the ELN are still operating in the area, the FARC-EP have now disbanded. It will be interesting to see whether the ELN still commits to enforcing the yellow margin and how the removal of coercive forces impacts forest conservation.

Community groups recount that prior to the peace agreement, FARC-EP were crucial in enforcing conservation, underlining the importance of a state-like presence (Narvaez Peña, 2018, p.33; cf. Agarwal, 2014). Coercion alone did not motivate ecological guardianship, however, as settlers also gained respect for nature and the environment because violence forced them to take cover in dense, high forest (Narvaez Peña, 2018). Therefore, protecting nature was fundamental to the very survival of communities (ibid, p.40), who took refuge in forests when they fled from attacks. This practical connection is also illustrated in data that reveal a correlation between increased deforestation and displacement of communities bordering the *Franja Amarilla* between 1998-2010. Effectively, the removal of people from the yellow line borderlands left the local environment more vulnerable because community conservation accords were not enforced in the absence of these settled groups.

Conservation was a recurrent theme in interviews with campesinos, reflecting its discursive importance. ‘We want to protect the resources that we have left…we should be careful not to ruin what is left... [we cannot continue to] destroy the rivers... we need to grow trees around them’ (Interviewee 29). Although some landless campesinos and those who have been displaced are deforesting, others who have more stable settlements are conserving forests. The latter group tends to include campesinos who were among the earliest *colono* settlers, who are looking to pass on the ZRC-VRC’s conservationist history, as early colonisers in the 1970s considered themselves environmental guardians. This is reflected in the fishing committees, which set collective ‘norms to ensure the subsistence of fish’, and other regulations that oversaw

similar conservation policies related to the wetlands (Narvaez Peña, 2018, p.31). Since 2004, animal hunting for consumption has also been restricted by JACs to avoid species extinction. These community agreements prohibited the killing of wild animals in the ZRC's virgin forests (ibid). Ward-level environmental committees were also established to reinforce conservation principles (FAO, 2018, p.343).

Campesinos have also undertaken more informal conservation measures individually on their farms. For instance, 50% of farms have protected virgin forests on at least 10% of their total farm area, conveying a significant level of individual conservation awareness and action among farmers (ACVC et al, 2012, p.61). This exemplifies what Perfecto et al. (2019) refer to as a 'high quality matrix through which [fragment to fragment species] migrations may occur' (2019, p.238). Additional individual conservation measures include desisting from sowing crops or deforesting 5-10 metres from riverbanks to stop eroded soil ending up in water courses (ACVC et al, 2012). These measures have been undertaken as a result of campesinos experiencing crop destruction from swollen rivers. Rather than a benign campesino tendency towards conservation, these practices are rooted in a practical rationale.

Environmental awareness has also been discursively reinforced by the ACVC through four ecological camps that have been held in the zone since 2007. These events bring together community groups to discuss different ways to conserve the local environment. They were complemented by a big research project in 2017 that brought biologists into the zone to study and document the range of animals in the ZRC-VRC, in which the ACVC's technical team and campesinos actively participated. This project intended to raise awareness about conserving wetlands (animals and plants). They used photographic equipment to record the presence of bears and jaguars, presenting their findings to campesino communities in various fora to diffuse this information among local communities and raise awareness about the need to conserve ecosystems. The ACVC, thus, has deepened the bottom-up conservationist practices by sourcing external funds and technical assistance from scientists to spread education and knowledge about local fauna. The emergence of a strong conservation discourse among more settled *colonos*, contradicts the idea that no cohesive territorial identity exists in ZsRC (Reyes-Posada, 2016). In fact, popular identification with conservation principles suggests that a collective identity and bottom-up ecological policy thrust does exist.

Although agriculture is a dwindling practice in the ZRC-VRC, GR and NGR technology has deeply penetrated the area, which has directly enabled CFR integration by expanding the corporate regime of accumulation. Many campesinos use a variety of chemical inputs such as synthetic fertilisers, which can generate rifts in the nitrogen and phosphorus cycles (Mancus, 2007; McMichael, 2008, 2013; Clausen, Clark and Longo, 2015); pesticides can contribute to killing beneficial pests that can in turn exacerbate pest outbreaks (Perfecto et al, 2019); as well as herbicides that can compact soils and soil nutrient cycling (Walker, 2016). This said, it is important not to contribute towards an unquestioned truth narrative, by remembering these are not always the outcomes of chemical input use. These results also depend on the quantities, frequencies and combinations of chemical inputs used, as sparing use and precise measures can facilitate weed management, without causing permanent ecological damage. Moreover, these outcomes can be tempered using agroecological techniques in hybridisation, such as low tillage and permanent soil cover, as in conservation agriculture. The conflict and the Colombian state, nevertheless, have actively introduced higher levels of herbicides through aerial fumigation of coca crops, which have also severely undermined subsistence farming in the area. This has pushed farmers to use more GR technologies to increase organic matter in soils or also to replace the loss of landrace seeds with certified ones. The latter NGR technology also increases the need for higher levels of chemical inputs, once again contributing to the above dimensions of the metabolic rift.

The use of prescriptive agriculture also engenders a knowledge rift, as these one-size fit all practices replace situated knowledge (Schneider & McMichael, 2010). This process is accelerated in the ZRC-VRC through the coca crop, cultivation of which has reduced planned and associated biodiversity on farms. Coca substitution programmes are attempting to re-build campesino agriculture. Although they are limited in number and coverage, they have the potential to prevent the knowledge rift and heal various dimensions of the metabolic rift by reintroducing farm-level diversity. However, these projects will only help to encourage agroecological transitioning if linked to wider arguments for food sovereignty, i.e. if they develop towards more radical food movements and address the structure of food production itself (cf. Holt-Giménez & Shattuck, 2011). The ACVC's projects are doing precisely this through living seed

banks and demonstration farms, which evidence integrated farming. They are also reinforcing bottom-up conservation and biodiversity through the *Franja Amarilla* project. If given more state backing through enforcement and investment, such projects could help heal numerous dimensions of the agricultural metabolic rift, as well as support the re-construction of petty-commodity production, which would help resist CFR integration.

6.9 Agricultural Markets

Smallholder agriculture is significantly impeded by the MM's poor infrastructure. Urban centres are difficult to reach in the ZRC-VRC, which influences the variety of crops grown, the prices farmers can sell at and the appeal of agriculture as an economic activity. Furthermore, prices in the area are open to fluctuation, due to market deregulation. Intermediaries are often the only connection between rural and urban zones, as they facilitate transportation of goods in and out of the region. In many respects, intermediaries keep the campesino economy alive, as they provide market access in difficult infrastructural conditions. The ACVC has piloted a number of initiatives to improve economic remuneration for campesinos by supporting the construction of alternative food networks, livestock associations and campesino markets. These measures work to combat price volatility by strengthening collective bargaining. This section discusses market neoliberalisation in the ZRC-VRC, which have facilitated CFR integration, as well as how well various solidarity economy projects have constructed alternative avenues for income generation and campesino resistance.

6.9.1 Difficult Market Access

Poor infrastructure has created structural impediments to market access, which debilitate the campesino economy. ACVC et al. (2012, p.171) suggest that only 28% of people use paved roads due to poor quality, instead many opt for water ways or dirt trails. This illustrates the difficulties with which farmers leave the region with their produce. A livestock consultant working with the ACVC remarked that 'many do not even have access to rivers. Some journey alongside rivers, [using] animals and sometimes on foot. There are some that live very far from primary access routes. Therefore, commercialisation is very difficult for them' (Interviewee 42). Campesino participants argued that production would increase if the means to transport crops were more accessible.

> ‘We do not commercialise because it is difficult, we are so removed from the urban centre…as things are, one cannot sow or grow more. If one had a good road to transport [goods], one would live well because maize, cassava and plantain sell quite a lot. One would not bother with gold mining, nor with logging’ (Interviewee 43).

The suggestion here is that poor transport links encourage petty-commodity producers to look for alternative economic activities because of the high costs associated with moving perishable goods. Another participant echoed this saying:

> ‘we travel along tributaries and this costs a lot, nothing is left after we take the produce out [to the cities] …people would definitely sow more if there were better roads. I would sow guavas, soursop, cassava and plantain. If [the produce] rots, I lose out on my work’ (Interviewee 44).

Infrastructural conditions, therefore, have shaped campesino culture by making agriculture economically unviable. Importantly, intermediaries bear the same potential costs and risks when they venture into the remoter reaches of the ZRC-VRC.

These circumstances push campesinos away from agriculture towards other activities such as coca, which transports more easily. As a veteran campesino mentioned, ‘while there are no roads, people will not cultivate anything else other than coca [in San Pablo] or will abandon agriculture for other more economically viable livelihoods’ (Interviewee 31), such as gold mining or logging. Given infrastructure is the remit of the Colombian government, it should be evident that the ‘state plays a crucial role in shaping market integration by rural producers’ (Castellanos-Navarrete & Jansen, 2018, p.151) or in this case in isolating them further.

6.9.2 Market Deregulation

Difficult transportation links have resulted in an increased role for intermediaries. The ACVC’s livestock consultant concurred ‘there are many intermediaries who arrive in the zone and offer prices that are much lower than commercial rates. A kilo of cassava could be US$1.19 but here they offer US$0.89-0.92, there is always a big difference’ (Interviewee 42). A campesino farmer offered another example: intermediaries were buying cassava at US$17.80 for 125 kilos in the ZRC-VRC, while a kilo was selling for US$0.59 in the city of Barrancabermeja, Santander (Interviewee 28). In this instance, intermediaries were selling the produce for US$73.75, making US$55.95, the

equivalent of a 76% profit margin before the deduction of the costs of sale. This said, intermediaries are not earning a significant profit, as they have to factor in transporting the crops, the cost of spoilage and selling to shopkeepers at wholesale prices. Although the movement of goods out of the zone has been a crucial means of keeping the campesino economy afloat, this also incurs significant ecological costs, such as increasing carbon emissions through transportation. This being said, intermediaries have been essential for the campesino economy in the ZRC-VRC and vice-versa, as they also rely on this sector for their business.

Nevertheless, interviewees blamed intermediaries almost exclusively for their marginalisation and 'killing them' with low prices (Interviewee 37), a statement that is telling of the economic violence and the disempowerment felt by producers. This was reiterated by a campesino who mentioned that he sells 'whatever the intermediary needs' (Interviewee 39), highlighting the lack of agency felt. It is highly likely, however, that campesinos are blaming the most visible face in the commodity chain for market price volatility and low earnings from the sale of produce. In fact, FTAs, market deregulation and poor infrastructure are forgotten root causes. From all interview participants, a minority mentioned the impact of global trade on price volatility; those who did were often campesino leaders and members of the ACVC's technical team:

> 'In Colombia, the smallholder is forced into producing only for subsistence because of the economic opening [the *Apertura*] and free trade, which has resulted in cheaper produce being brought from outside… No campesino thinks that they can make a living from agriculture…[we] produce to give away and sometimes just to lose… [For this reason] so many say [they] do not cultivate and dedicate [themselves] to other activities' (Interviewee 26).

One producer recounted planting three hectares of cassava, which he ended up distributing among neighbours because of the radical drop in prices between sowing and harvesting (Interviewee 45). This pushed him to off-farm work and livestock specialisation, resulting in the separation of animal and crop farming. In many cases, market neoliberalisation and resultant deregulation has diverted producers from diverse farming towards commercially led specialisation, e.g. oil palm and livestock farming, or away from agriculture altogether. Market deregulation, thus, impoverishes campesino producers and leads to economic dispossession (Magdoff, 2013).

6.9.3 Campesino Co-operatives and Associations

In response to unfavourable market conditions for smallholders, the ACVC has emboldened CFR resistance by promoting associations and co-operatives to strengthen collective bargaining. This is inspired by a history of organisation against economic blockades. These blockades intended to strangle the petty-commodity economy and remove the campesino population, which the military believed was supporting the FARC-EP through the provisioning of food. In the 1970s, the local response to blockades was the establishment of co-operatives in Puerto Nuevo Ité, Remedios and two other locations, all of which were under the remit of COOPEMANTIOQUIA. The co-operative removed 'intermediaries from the purchase and sale of basic goods' (ACVC et al, 2012, p.99) to shorten the food circuit and so increase earnings for smallholders. The existence of a campesino-led entity ready to purchase subsistence crops encouraged higher levels of crop cultivation.

The military persecuted COOPEMANTIOQUIA, however, which they also accused of supplying goods to FARC-EP. They burnt down its buildings twice and forced members to flee (Plate 6.8 shows a memorial to those killed in this attack). The conflict impeded the development of the co-operative's wholesale markets and of an alternative food network that undertook regional retail sales. A campesino emphasised the importance of local markets: 'since there is no possibility to commercialise here, we sow and harvest very little' (Interviewee 39). The lack of local retail markets and low prices paid by intermediaries for wholesale both disincentivise farming, especially in areas with difficult access to big urban markets.

Plate 6.8: Memorial to victims of the conflict in Puerto Nuevo Ité, Remedios, Antioquia. “Your blood is converted into the seed of struggle”.



Source: Author.

Despite difficult market conditions, campesinos have resisted economic marginalisation by setting up co-operatives and associations in the ZRC-VRC. These have made a difference in parts of the ZRC by providing rural communities with alternatives to coca cultivation. APROCASUR is a particularly strong example of one such association. It has 607 affiliated associates, with a total of 1214 ha of cacao that falls both inside and outside of the ZRC-VRC limits. Former coca producers established this association in 2004 to substitute illicit crops for cocoa cultivation. Steadily it has expanded its production for export. Although this AFN resists CFR integration by consolidating petty-commodity production and providing viable alternatives to coca farming, it also generates a metabolic rift by participating in long-distance trade, thus, preventing soil nutrient cycling by exporting nutrients out of the territory. This livelihood and environmental conflict emphasises the fact that AFNs can also have negative ecological consequences, especially if goods are travelling long-distances.

APROCASUR was able to build and expand with significant help from 'external allies' (cf. Mier y Terán Giménez Cacho et al, 2018). Its cacao project was only made possible through financial support from USAID, a national organisation called Social Action, the United Nations, the Panamerican Development Foundation (FUPAD), Santa Rosa del Sur's mayor's office and the Colombian co-operative bank COAGROSUR (El Tiempo, 2010). Evidently, financial and technical support is an important driver or condition for campesino resistance, agroecological transitions and the construction of economically sustainable campesino projects, especially in contexts of insecurity and infrastructural underdevelopment.

In a climate where crop substitution programmes are facing political and bureaucratic blockages, APROCASUR underlines how campesino associations can overcome asymmetric market conditions in seemingly impossible locations. It offers micro-credit, direct individual credit to members and provides a transport service to move goods from rural to urban areas. It also guarantees economically just prices for the produce and encourages ecological farming practices. This has led to 61 of APROCASUR's farms, a combined total of 218 ha, receiving certification by the Rainforest Alliance, which is an internationally recognised certificate of sustainability and fair trade.[79]

It is important to ask questions about the values reflected in eco-labels, however, and how far these actually require changes in behaviour or in this case result in more sustainable farming practices (Horne, 2009; Grolleau et al, 2015). There has been little systematic analysis of whether APROCASUR's farming practices have indeed become sustainable through the Rainforest Alliance eco-label. For instance, industrial scale monocultures belonging to companies such as Chiquita Banana, have received this eco-label, which leaves questions around the kinds of farming systems deemed sustainable by the Rainforest Alliance. Moreover, this eco-label does not necessarily contribute to agroecological transitioning. This is because farmers work towards an

[79] To receive certification from the Rainforest alliance, farms must comply with their Sustainable Agriculture Standard. This aims to encourage sustainable farming practice that conserve ecosystems, biodiversity and waterways by conserving forests and reducing agrochemical inputs, as well as safeguarding workers. All of these elements are basic principles of agroecological transitions.

externally formed sustainability standard, which does not necessarily encourage diversified farming nor the development of smallholder farming that works towards autonomy from global commodity chains and agribusiness dependence. In fact, APROCASUR's affiliation with the Rainforest Alliance reveals how this AFN is linking campesino farming to global certification processes and commodity chains. This pushes producers towards more capitalist modes of production, which is driven by consumer demand and achieving access to global markets where this eco-label is recognised- reminiscent of corporate-environmental greening (cf. Friedmann, 2005).

6.9.4 Local and Regional Niche Markets

Drawing on the example of COOPEMANTIOQUIA, the ACVC is strengthening campesino resistance by building local campesino markets. It is doing this through an organisation called *Comunal Paz* (CP), which focusses on local production and sale. CP aims to 'end speculation, guarantee purchase of campesino produce and to take this to a specialised market' (Interviewee 37). There are three community convenience stores affiliated to CP in the ZRC-VRC in Puerto Matilde, Puerto Nuevo Ité and Yondó. The idea behind the project is to link isolated regional producers to bigger urban centres by dynamizing local and regional markets. The long-term plan is to buy wholesale from producers by having fixed points of sale in the ZRC-VRC, which are also intended as retail spaces. This will close the rift between sites of production and consumption within rural spaces (cf. Foster, 1999).

A similar initiative has also been led by CPDPMM in San Pablo. They have helped set up a campesino market in the main square of the urban centre. Produce from across the municipality is collected and sold there on a bi-weekly basis. CPDPMM's retail AFN differs from the CP, as farmers themselves are selling their produce to consumers in face to face transactions, constituting a more direct alternative food network (cf. Renting et al, 2003). An interview participant mentioned that this was giving campesinos much hope and renewed faith in agriculture (Interviewee 46). CPDPMM are also facilitating further links with buyers in Bucaramanga, the provincial capital of the department of Santander, to broaden regional market links for campesinos in San Pablo. These projects are providing stable market access for smallholders, whilst also closing gaps between producers and consumers. Reconnecting producers and consumers across both rural and urban settings represents an advanced redesigning of market interaction, which corresponds to Stage Four in Gliessman's agroecological

transition continuum (2016). Although agroecology and food sovereignty movements prioritise local and regional sales, both CP and CPDPMM's campesino market have faced difficulties. Campesinos participating in the market in San Pablo complained that the market manager encouraged other sellers to reduce their prices on the days the campesino market stall is held (Interviewee 46). This free market competition exemplifies why market regulation is necessary for solidarity economy projects to work, at least initially until campesinos have established clients and overcome their market disadvantages.

The reconstruction of local markets also requires education around local produce, as the ACVC have struggled selling locally produced and milled rice in Puerto Matilde. The ACVC-FAO project aimed to sell locally farmed rice at lower prices in ward level and regional retail markets to improve local food security, however, locals would not buy this rice. 'People will not buy the rice that is grown locally because the grain splits…even though it was made with their own hands…people are used to buying…what is packaged in shiny packets' (Interviewee 37). This is suggestive of the fetishization of food, whereby consumers disassociate who and how produce is made, as they seek branded items. This also underlines the imperfections of local markets (Robbins, 2015) that lack stronger socialisation around local produce, as they do not a priori de-fetishize commodities. This illustrates the fact that people have become more dependent on processed and highly processed goods (Butler & Dixon, 2012; Scales, 2014; Sharp, 2016), even in rural areas close to sites of production. More education around how food is produced and processed is needed to strengthen these AFNs and de-fetishize commodities (Scale, 2014, p.483).

The ACVC is in the process of strengthening local AFNs with education around food production. It is connecting local produce more directly with the ZRC model and campesino producers (see Plate 6.9) to increase local demand for this produce. This marketing campaign is accompanied by renewed investment in rice mills, technical assistance to construct rice mill committees that oversee the upkeep of machinery, technical assistance to improve the quality of the produce and the sowing of more crops, as well as assistance in marketing the grain with a new label- 'Rice from the Reserve'. This phase of the project has received resources from the Swiss NGO *Heks-Eper.* The project still states that the primary objective is to produce rice for

subsistence and then sell surplus, with the aim of strengthening the position of petty commodity producers.

Plate 6.9: ‘Rice from the Reserve’ Publicity. “Buy rice from the reserve; 100% campesino made; from the hands of campesino to your kitchen”.



Source: ACVC, 2019.

6.9.5 EcoBúfalo Campesino

Despite the stated market difficulties, one of the ACVC’s most significant associative projects aims to increase commercial opportunities for semi-proletarianised and low income petty-commodity producers in regional markets. The project objectives include bringing campesinos back into farming and bettering the socio-economic standing of some of the most marginalised individuals in the zone. EcoBúfalo is the flagship associative scheme in the ZRC-VRC. The project works with buffalo and cattle, as the latter are more culturally appropriate in some areas of the ZRC-VRC where there is

little experience with buffalo. EcoBúfalo was established in 2001. It provides families with ten female buffalo or cows and one bull, which are returned to the principal breeding farm (the *Bufalera*) once their calves are weened, usually within a year. Within six years associates are expected to contribute one cow and bull calf back to the EcoBúfalo herd (Lote, 2016). This repayment could be interpreted as interest, but it is better understood using the logic of the solidarity economy because the transaction does not have a profit motive, instead, it is a means to extend the programme among other low-income families. The association does have a US$296 join up fee for the upkeep of the main herd but if associates cannot afford this, the amount can be repaid overtime through labour on the *Bufalera*. In addition, each associate is required to contribute one day of labour every three months on the farm but in practice this is not enforced.

The EcoBúfalo AFN has developed through trial and error. In the first trial, eight buffalos were taken to Bogotá for slaughter, as they planned to build the primary market in the capital. Transportation, slaughter and butchery of the animals incurred significant costs and also generated CO2 emissions from transportation. Finally, the meat went to waste for lack of buyers. These issues led to a second pilot involving the slaughter of a single buffalo in Barrancabermeja, the closest provincial city, which reduced CO2 output as this is significantly closer to Puerto Matilde, but only after they found potential buyers for samples. The meat was sold in small quantities in regional markets, as the ACVC increased the visibility of the ecologically and socially ethical brand closer to home. The staggered sale and marketing approach indicate progress in the organisation's market access planning, which also had positive consequences for the association's carbon footprint. EcoBúfalo is an important project that shows agriculture can be economically viable using AFNs, which are constructed and led by campesinos, in a food regime that prioritises imports over local production.

The stability and effectiveness of the EcoBúfalo project is in part explained by the transformative potential of the high value animal products it produces. The association is currently selling buffalo sausages, burgers, black pudding, meat and mozzarella (see Plate 6.10 a&b) to urban markets in nearby provincial cities (Yondó and Barrancabermeja). A permanent point of sale has been established in Barrancabermeja (see Plate 6.11), consolidating the regional AFN. Products are marketed as ecologically sustainable campesino produce to target niche-markets and

also make campesinos visible in the final product. A dairy plant has also been constructed in Puerto Matilde with €40,000 donated by the Catalan Caixa bank (see Plate 6.12a&b). This has all been possible through the ACVC's work in sourcing international funds and technical expertise. The EcoBúfalo project confirms that external allies (Mier y Terán et al Giménez Cacho et al, 2018) can be essential to the construction of economically viable agroecological alternatives or AFNs, especially when finished products require more technical and financial assistance, such as the dairy plant or the conversion of carcasses into a range of popular products.

Plate 6.10a: EcoBúfalo meat & mozzarella



Plate 6.10b. EcoBúfalo sausages and burgers



Source: a: EcoBúfalo & b: Author

Plate 6.11: EcoBúfalo Shop in Barrancabermeja



Source: EcoBúfalo, 2019.

Plate 6.12a: EcoBúfalo Dairy and Plate 6.12b: Mozzarella production in the EcoBúfalo Factory



Source: EcoBúfalo, 2018.



Source: EcoBúfalo, 2018.

The EcoBúfalo project has come about because the ACVC recognises campesinos must be able to add value and access retail markets for processed agricultural goods, if they are to increase their incomes. Interviewees saw crop and livestock processing as a means to add value and overcome structurally low levels of profit from wholesale.

Access to the appropriate technology for processing at scale allows associates to offer a reliable supply of cheese and meat products. EcoBúfalo also links campesino production directly to agroindustry, as the programme is 'embrac[ing] new technologies and markets' to challenge the dominant market model that ostracises ecologically friendly campesino production (Castellanos-Navarrete & Jansen, 2018, p.152). Importantly, campesinos are leading this project and decisions are subject to democratic votes in EcoBúfalo assemblies.

The key challenge for the ACVC is to expand campesino access to niche-markets and build up local face to face AFNs to regional and also national ones that provide fair remuneration and social empowerment to campesino producers (cf. Renting et al, 2003). The beginnings of a national trade network are in construction through the Café de la Reserva in Bogota, which is a point of sale in the capital for goods from all the country's ZsRC (see Plate 6.13) but this alone is unlikely to be economically sustainable. The strengthening of local associations and AFNs will further enhance economic alternatives to coca farming and resource extraction, which are currently the most profitable activities in the ZRC-VRC. Importantly, however, regional and national markets widen the distance between sites of production and consumption (cf. Foster, 1999), as well as increasing the association's carbon footprint. Although AFN's resist CFR integration by bolstering the smallholder economy, long-distance AFNs generate rifts in the soil nutrient cycle and carbon cycle, due to increased consumption of fossil fuels for transportation and the exporting of nutrients out of a given area. In part, it is for this reason that agroecology privileges local sales or at least those that require the least amount of transportation.

Plate 6.13: Dairy products sold from other ZsRC alongside publicity for EcoBúfalo in the Café de la Reserva, Bogota.



Source: ACVC, 2019.

The EcoBúfalo project potentially has other important ecological consequences. Gerber et al. (2015) argue 'water use, land use, biomass appropriation and greenhouse gas emissions are for example typically higher per unit of edible product in beef systems than in any other livestock system'. They also suggest that 'the greenhouse gas emissions per unit of product (emission intensity) peak where beef is produced on newly deforested land' (ibid), which is often the case in the ZRC-VRC. Deforestation in the ZRC-VRC has been motivated by conversion of forest to pasture, as the infrastructural conditions and context of conflict do not favour diversified smallholder farming. The ACVC's livestock consultant argued against this, however, as he suggested that buffalos 'produce fewer greenhouse gasses. It is an animal that eats natural products, [thus], there is less production of methane. Cattle eat many more chemically enhanced foods and produce more methane' (Interviewee 42).

This narrative sustains that the expansion of the buffalo scheme will do less harm to the climate because the buffalo is innately more sustainable than cows, due to lower production of methane. This narrative has been principally constructed by the livestock specialist and is propagated by the ACVC's technical experts, who share this knowledge and information with EcoBúfalo beneficiaries through their assemblies and during on farm livestock assessment. This narrative is using expert opinion to justify the expansion of the buffalo scheme. However, this comparison overlooks the fact that cows are grass-fed in the zone, therefore, they also eat 'natural products' and that farmers control the levels of chemical inputs applied to pastures, thus, equally can ensure cows have access to organically grown grass. Therefore, cows a priori do not eat more chemically enhanced foods. Moreover, the scientific assumptions behind this statement are flawed, as research does not support this claim, revealing the construction of a counterfactual narrative that defends the expansion of the buffalo scheme across the ZRC-VRC without mitigating against its environmental impact.

On the other hand, the ACVC's livestock consultant agreed that both buffalo and cattle require careful management to limit wider environmental impact. '[Without best practice] the buffalo can do much damage because it is an animal that can easily enter any space, wetlands and marshes. Looking to rid itself of heat it can cause more land erosion because it produces more wallows, but this is purely down to livestock handling and educating their owners' (Interviewee 42). Another interviewee commented that locals have 'some very bitter experiences with this buffalo project… buffalos were let out into the open countryside and they damaged the countryside equally as much as cattle do. Once a buffalo enters marshes, it takes 30 years before they recover again. In Descanso ward, a man had 1000 buffalo, and these walked more than 8 km a night…we have a very negative experience of [buffalo farming] unless it is controlled' (Interviewee 28). Disturbance is a natural part of ecosystem dynamics, so some buffalo wallows may be good for the environment as they create habitat diversity, however, the ACVC's consultant verified that 'buffalos have been released into low zones that are neither apt for agriculture nor livestock. These are zones that should be preserved as they are water sources, where we should conserve the ecosystem…the person to blame is man himself for not having adequate training…not the buffalo' (Interviewee 42). This points to a lack of training in dealing with buffalo, underscoring the need for better campesino to campesino dialogue but

also technical assistance in handling livestock. The ACVC is working on improving best practice through periodic EcoBúfalo assemblies. Additionally, the consultant makes roving visits to the ACVC's collectively owned farms and private farms to encourage best practice. In the meantime, however, buffalos are causing certain levels of ecological degradation in the zone.

Another member of the technical team also said that despite the ecological costs of livestock, he still preferred campesinos kept animals rather than engaging in coca, mining and logging (Interviewee 48). This is because livestock at least provides manure for fields, thus, contributing to soil nutrient cycling, whereas logging and mining cause high levels of deforestation that release more CO2 in the atmosphere and prevent carbon capture, as well as inflicting biodiversity loss. The Colombian Ministry of Environment highlighted mining and logging as the 'most chronic factors behind deforestation' in the country (Ministerio del Ambiente, 2014). The ACVC's agronomists in conjunction with the livestock consultant are constructing plans to improve the environmental feedback of its animal farming projects through more agroforestry systems, which include tree planting in pastures to provide shade for cattle and buffalo, as well as planting 'trees that generate high levels of protein' for animals (*Leucaena, Gliricidia sepium and Melampodium divaricatum*) (Interviewee 48). In this way, the ACVC is attempting to reverse the 'deforestation of pastures' (Interviewee 49). Nevertheless, it continues to be important that the ACVC works to minimise the ecological costs of its projects and create viable alternatives to natural resource extraction. One possible way of doing this could be by expanding community conservation accords to include landscape wide agroecosystem planning that considers farming practices as integral to boosting local biodiversity. In so doing, the ZRC-VRC could work towards constructing a biodiverse land matrix (Perfecto et al, 2019).

Poor infrastructure and market access have impeded the development of the campesino economy. This facilitates CFR integration as it legitimises the importation of staple goods to ensure food security, as well as enabling the entry of agribusinesses in the ZRC-VRC, who have the financial resources to transport goods out of disconnected regions. This means that many rural dwellers in the ZRC-VRC are subject to a nutritional metabolic rift, as they have become accustomed to eating

processed and highly processed food (cf. Butler & Dixon, 2012; Scales, 2014; Sharp, 2016). This invariably results in CFR integration, as purchase of industrially produced foods benefits the corporate regime of accumulation. The ACVC is resisting the fetishization of food in local retail markets by encouraging local production of food to re-link producers and consumers and increase local knowledge of how food is made/ nutritional health, thus, resisting CFR integration and healing these aspects of the metabolic rift.

Despite numerous structural obstacles, some campesinos have resisted CFR integration by selling to intermediaries through informal AFNs. They have assumed high costs in transporting items such as artisanal cheese, fruit and other subsistence crops. These informal AFNs have been complimented by more formal ones established by the ACVC and other campesino associations. EcoBúfalo transforms primary products into various dairy products to sell to regional markets and APROCASUR sells cacao for export. Although these AFNs resist the CFR, they participate in the metabolic rift (cf. Foster, 1999) by widening distance between sites of production and consumption, which in turn prevents soil nutrient cycling. Additionally, export trade also results in rifts in the carbon cycle due to higher outputs of fossil fuels from the transportation of goods (Longo & York, 2008). The kinds of products made by these AFNs also have varying ecological consequences, such as the production of higher levels of methane from livestock in the EcoBúfalo project, which also contributes to the phenomenon of global warming. Nevertheless, this must be viewed using a conjunctural lens, which reveals that this AFN is much less ecologically destructive than the other main economic activities in the region (e.g. mining and logging) that cause significant rifts in the carbon cycle and pollute waterways with mercury. Nevertheless, it is important to consider the ecological consequences of building campesino market alternatives to corporate agriculture- the kinds of produce and distances involved between production and consumption.

6.10 Nutrition

CFR integration due to a shrinking campesino sector and reduced agricultural production has impacted the diets of local producers and rural dwellers. The ZRC-VRC's main nutritional problem is neither starvation nor a lack of food but malnutrition arising from imbalanced diets. 96% of people in the area have access to three meals

a day, although the remainder still face shortages (ACVC et al, 2012, p.267). The key nutritional problem is the variety and diversity of food available. Firstly, the conflict itself has conditioned food access and diets. Economic blockades embargoed the entry of primary products at two different points in recent history, whilst displacement has forced producers off their land, leaving crops and animals to go to waste. This has pushed campesinos to produce short cycle crops or consume processed food to ensure food security. Secondly, the proliferation of coca has directly impacted the nutritional balance of diets, as smallholders opted to abandon subsistence farming for purchased food. These changing dietary patterns are reflected in the presence of processed items in rural convenience stores across the ZRC-VRC. Additionally, the move away from agriculture in favour of resource extraction is having adverse effects on rivers and local fish supplies, as mercury from gold mining has polluted water sources, also resulting in reduced dietary diversity. Poor infrastructure also imposes severe restrictions on perishable foods, especially the absence of electricity. In the ZRC-VRC's humid climate, long-life/ processed and highly processed products are more durable.

6.10.1 Migration and Diet

Dietary patterns in the MM have been heavily influenced by the different waves of migration in and out of the area, due to displacement generated by the conflict (CPDPMM, 2011). CPDPMM's study of nutrition and diet in South Bolivar provides a picture of dietary changes that is applicable across the zone, as the entire ZRC-VRC has been subject to similar migratory waves. The report details change from the 1970s through to the 2000s. In the 1970s, those from Antioquia mainly consumed beans, plantain, ham, eggs, maize and rice; those from Santander primarily ate coriander, tomato, onion, potato, maize, carrots, pumpkin, green beans and eggs; those from the Caribbean Coast preferred cheese, fish, yams, plantain, rice and fruit; whilst families from Boyacá ate maize, carrots, radish, cabbage, peas, beans and potatoes (ibid, pp.11-12). Migrants with the most balanced diets were from Santander and Boyacá, as they consumed a range of vegetables, as well as grains, carbohydrates and proteins. From the 1990s onwards, however, the report notes a greater propensity to buy food, culminating in the widespread consumption of empty calories (ibid, p.13). The conflict has underwritten the trend towards empty calorie consumption, as less food is produced in the area and more purchased.

6.10.2 Conflict and Short Cycle Crops

The conflict is a shaping cause of malnutrition in the ZRC-VRC because of the limitations it has placed on farmers- primarily displacement and land dispossession. Impermanence on land due to forced displacement or threats has left farmers without the time and space for long-term projects, such as perennial fruit and vegetable crops, which often take two or more years before they bear fruit. Consequently, the average diet among interview participants heavily depended on short-cycle carbohydrates, such as maize and cassava, and processed foods (including tinned meats and fish). Campesinos who lived through the worst periods of paramilitary persecution recounted the need to plant food that grew quickly and could be preserved while farmers were hiding from armed groups. These foods were also essential during the economic blockades, when the zone had to become food self-sufficient. It is for this reason that COOPEMANTIOQUIA affiliates cultivated and preserved maize, rice, beans, cassava and plantain during economic blockades (Interviewee 29).

The influence of the conflict on diets was most evident in the case of Interviewee 30. His family grew a plethora of fruit trees and so consumed a diversity of fruit, but he remarked that his family had the good fortune of not suffering from displacement, which allowed them to reforest the area and grow fruit trees. On the other hand, where farmers had faced threats of violence and therefore food insecurity, there was a lack of long-cycle crops such as fruit. Those farmers noted that all labour needed to be dedicated to food that would grow quickly and would not be damaged in long-journeys, such as cassava, maize and unripe plantain. Instead of homegrown foods, many of these farmers also purchased processed goods. Thus, the conflict has opened up inhabitants from the ZRC-VRC to the global nutrition transition (Drewnowski & Popkin, 1997)- the move towards food that is higher in fats, salts and sugars.

6.10.3 Consumption of Empty Calories

The ZRC-VRC's nutritional transition is evident through the presence of empty calorie foods such as fizzy drinks and confectionary in convenience stores in rural and remote villages. The *Comunal Paz* (CP) community shop in Puerto Matilde sold 30 processed items (such as sausages and canned fish), 64 empty calorie goods (principally sweets, chocolate and lollipops) and four fresh items when visited during fieldwork in May 2017 (See Appendix 5 for a full list of items). Similarly, in the ward of Puerto Argelia the CP shop sold 38 processed items, 57 empty calorie goods and four items of fresh food

(See Appendix 5). Finally, another CP store in Puerto Nuevo Ité (the original location of COOPEMANTIOQUIA) sold 38 processed goods, 50 empty calorie goods and six fresh items (See Appendix 5). Items in these shops are representative of the products other ward shops stock and evidence the transition towards consumption of empty calorie goods.

Low levels of fresh fruit and vegetables in CP convenience stores are telling of a reduced tendency to eat fresh food. Although interviews suggest that limited incomes inhibit excessive or frequent consumption of empty calories, the influence of national and global dietary trends is illustrated by the fact that local stores have more confectionary items than vegetables. Importantly, the absence of electricity also contributes, as many empty calorie and processed foods contain preservatives to extend their shelf life. Thus, instead of reorienting local dietary culture, CP stores are contributing to higher consumption of empty calories. CP could play a vital educational role in rural wards by stocking nutritionally rich foods and providing dietary information, but this does not occur. In this aspect, the ACVC through the CP is not resisting CFR integration in consumption habits, as the CP is instead following local demand for high calorie foods.

The FAO and ACVC have tried to encourage vegetable cultivation and consumption through home gardens. These projects have been aimed at women campesinos, as they are usually the family cook. Female-led home gardens have not been successful, however, due to the lack of organisation among the chosen participants and other factors like aerial fumigation. Anna Carrizosa, the FAO's project manager, observed that 'people in the territories eat a lot of carbohydrates, which are cheaper (sugarcane, rice, pasta and sometimes protein or vegetable protein, like beans or chickpeas)' (Interview, 2017). CPDPMM also notes that balanced eating has been altered by 'media influence' in other words fast food marketing (2011, p.13), which is a key driver of the global nutrition transition (Drewnowski & Popkin, 1997). The newer culture of buying food has exposed people to greater market influence over what is consumed, which is reflected in the numerous empty calorie options available in CP shops. This was also evident in the poor sales of locally grown and milled rice, which semi-proletarianised campesinos (who do not grow their own food and are food consumers instead of producers) rejected for pre-packaged rice/familiar brands.

6.10.4 Consumption of Fruit and Vegetables

Despite the lack of fruit and vegetables in convenience stores around the ZRC-VRC, the ACVC believes vegetables and legumes are sold or exchanged informally between campesinos. ACVC et al. (2012, p.171) estimate that some 80% of farms cultivate one of three crops: vegetables, legumes or maize in areas amounting to five hectares or less. Although the ACVC states that a significant percentage of farms grow vegetables, legumes or maize, it is more likely to be the latter, as interview participants repeatedly commented on the low to absent consumption of vegetables. They also suggest that half of the farms in the ZRC-VRC grow approximately 50 fruit trees per farm (ibid, p.172), which is a significant amount. This is consistent with interview data that reveals a higher consumption of seasonal fruit and fruit juices than vegetables.

Various interview participants were aware of the nutritional importance of fruit at least. Interviewee 30 whose farm is filled with fruit trees stated, 'growing fruit is very important for our health- it is the best food'. A number of other participants mentioned that they grow fruit trees and that they distribute their crop among neighbours who do not grow their own fruit (Interviewees 43 and 50). This particularly demonstrates the way in which campesinos can be active agents change in neighbourhood eating habits and is the most basic expression of the solidarity economy.

This horizontal approach contrasts greatly to the more top-down nutritional education project initiated by the FAO in the ZRC-VRC.[80] The majority of the women-led home gardens failed across the ZRC-VRC because beneficiaries were unable to sustain organised working patterns and arguably were not committed to changing their familial diets.[81] A number of these home gardens were also ruined by the conflict and aerial fumigation, underlining how violence has pushed the ZRC-VRC's nutritional habits away from fruit and vegetables. Another component of the programme was teaching

[80] The FAO funded and supported home gardens across the zone, which were organised and led by women in their local communities to help them participate more actively in agriculture and food security.

[81] This project also provided interesting insight into women's organisation in the ZRC-VRC, as it revealed the low organisational capacities that exist in various rural wards. It also highlighted the obstacles before the successful implementation of socio-economic projects that depend on group labour instead of particular families or individual farms, where there are higher levels of accountability.

the preparation of different vegetable-based dishes. Chefs were brought to the region to teach innovative new recipes (Anna Carrizosa Interview, 2017). Carrizosa argues this project failed and fizzled out due to a lack of culture in vegetable consumption (ibid). However, it is more likely that the introduction of new recipes with little connection to the gastronomic cultures of inhabitants led the project to fail.

The importance of horizontal farmer to farmer exchanges was further confirmed through the experience of Interviewee 57. She lived in the city prior to moving to the countryside, where she was trained by SENA in the preparation of various dishes. Using the fruit from her farm, including soursop (*Annona muricata*), strawberries and papaya, she prepared deserts such as pastries, fruit salads, yoghurts and ice cream. She sells these items to her neighbours; each pastry is sold for the equivalent of US$1 and she earns a minimum of US$27 a month from this work. She adapted her cooking techniques learnt in the city to a woodfire oven, using all the crops she and her husband grow. The face to face AFN she constructed was a direct channel of communication to consumers and allowed her to educate her neighbours about different forms of fruit preparation and consumption. In so doing, she was also helping to construct a local alternative to the consumption of processed foods, therefore, forging resistance against CFR integration.

6.10.5 Consumption of Animal Protein

Interviewees suggested that the conflict has also impacted the amount of protein consumed. ‘We campesinos are carnivorous until we die but when there is no money, we have to eat vegetables…this is an economic issue’ (Interviewee 29). A combination of overhunting and overfishing, as well as the impact of deforestation and mining, has depleted wild animal and fish stocks in the ZRC-VRC, leaving little recourse but to purchase protein. The move away from farming means families keep fewer yard animals (such as chickens, pigs and turkeys) and supplement this with purchased protein. Mercury contamination of rivers from gold mining has worsened this problem, as a number of interviewees mentioned they can no longer eat fish from rivers, instead, they buy fish when then they can.

Purchased meat is often processed because preservatives make it easier to store. Even fresh meat slaughtered locally is salted and dried for preservation, as electricity for fridges is scarce. This leaves the meat high in salt content and contributes to

development of health issues such as hypertension. This free-range meat is usually beef and it is not necessarily organic nor agroecological. In fact, animals in the ZRC-VRC are now beginning to be fed industrially produced feed. A campesino leader of the ACVC recounted, 'before the chickens were 'criollo' breeds or landrace, the pig was criollo, the goat was criollo, fish was criollo.[82] [Commercial] feed fed chicken is more profitable…[but] animal feed is not healthy for the body, it's because of this that we are more often ill' (Interviewee 34). Commercial animal feed is replacing grass or organic kitchen residues, pushing livestock farming towards more conventional methods and away from agroecology. Nevertheless, preserved goods have been essential for continued access to protein, which has combatted more extreme forms of malnutrition.

The excessive use of antibiotics and veterinary medicine in animals should be a bigger cause for concern than commercial feeds. Scholarly research has warned of the development of antimicrobial resistance, due to overuse of antibiotics, antifungal and antiparasitic drugs in animals, which are later consumed by humans (O'Neill, 2015). The WHO echoes this, stating that antibiotics are often used on healthy animals 'to promote growth and prevent disease' (WHO, 2017). They go on to note that in some countries 'approximately 80% of total consumption of medically important antibiotics is in the animal sector', warning this 'excessive use' needs to be stopped (ibid). Colombia is no exception to the over application of antibiotics in animals. Lara argues it lacks diagnostic systems or sufficient regulatory bodies to oversee and control agricultural best practice (2008, p.133; Arenas & Melo, 2017). Arenas and Melo detail a plethora of sanitary regulations, many of which were motivated by various FTAs (*op.cit*, p.112), however, enforcement has not been realised. Tellingly, none of the campesino participants mentioned the use of antibiotics in animals as a source of nutritional or general health concern, although use of these medicines is prevalent. More education around this is vital to avoid the indiscriminate use of antibiotics in animals. EcoBúfalo is raising best-practice consciousness among its associates, who

[82] These animals are not native to the Americas but arrived as part of the Columbian exchange during the Spanish empire. Here the campesino refers to animals being grass-fed or fed organic kitchen waste and reared without use of medication- i.e. agroecological livestock.

produce grass-fed buffalo. It is actively informing consumers about the nutritional benefits of buffalo meat compared to beef (see Plate 6.14). This has been communicated to campesinos living in the region, participants of the programme and urban consumers alike, as it connects nutritional value to campesino-led ecological production.

Plate 6.14: EcoBúfalo Publicity. “Do you want to support the campesinos that are building peace in the countryside? Then eat campesino products!! [Buffalo meat contains] 40% less cholesterol, 12% less fat, 55% fewer calories, 11% more protein, 10% more minerals than beef”.



Source: EcoBúfalo, 2018.

Diets in the ZRC-VRC have become nutritionally poorer due to the conflict and poor infrastructural development. CPDPMM’s (2011) study on migration in San Pablo underlined the fact that campesino diets were varied and balanced before many settled in the MM. Migration into the zone has exposed campesinos to violence and displacement, which has left them with little option other than to grow short-cycle crops. The reduction in dietary diversity is also driven by poor infrastructure- no electricity- that prevents storage of perishable items in the zone’s humid climate. In response to both conditions, to ensure food security many campesinos have reverted

to purchasing processed and highly processed items, which facilitates CFR integration through dependence on industrially produced goods. Importantly, processed goods have enabled continued access to protein in the area, which has prevented the exacerbation of malnutrition but at the same time it has also opened up campesinos to a nutritional metabolic rift (cf. Butler & Dixon, 2012; Scales, 2014; Sharp, 2016). This consists of producers becoming consumers, which in turn opens them up to greater media and market influence over nutritional choices. This has resulted in a move towards foods that are higher in salt, sugar and fat (cf. Drewnowski & Popkin, 1997), evidenced through the available stock in various ward-level community stores.

Campesino farming, however, resists this dietary transition, as many farms in the zone still cultivate high numbers of fruit trees, which they distribute to neighbours. The sharing of fruit among neighbours exemplifies an everyday act of resistance (cf. Johansson & Vinthagen, 2016) because this is not seen by producers nor recipients of the fruit as an act resistance but this diversifies local diets and means less processed foods are consumed. In fact, a campesino is converting fruit from her farm into pastries and ice creams. Although these items contain empty calories, such as sugars, they are homemade and contain fewer preservatives/ chemicals than confectionary that is available in local convenience stores. Moreover, in producing these items, she also gives ideas to locals of new ways to consume fruit. The ACVC is also promoting formal projects to better local diets. The ‘Rice from the Reserve’ project and EcoBúfalo are closing the breach between local producers and consumers. In so doing, they are healing a knowledge rift in consumers about how their food is produced (cf. Scales, 2014), whilst also linking this to nutritional health. For instance, they are promoting local consumption of buffalo meat over beef, as it is leaner and produces less cholesterol, thus, CFR resistance through agroecology could provide the key towards more balanced and varied diets in the ZRC-VRC.

6.11 Conclusion

Although the research hypothesised that the ZRC-VRC’s isolation would result in less CFR integration, in fact, fieldwork revealed extensive integration across all dimensions (land tenure, technology and practice, agricultural markets and nutrition). This has been motivated by corporate entities but also by the conflict, armed actors and

campesinos themselves. At the same time, in the most difficult circumstances of ongoing conflict and violence, campesinos have also resisted in all dimensions.

CFR integration has taken place through land accumulation in the ZRC-VRC, resulting in a weak **land tenure** system. Land is concentrated in large holdings by individuals but also corporations, primarily in the palm oil sector in the municipality of San Pablo. The conflict has been central to the process of campesino land dispossession, which is higher than the national average in the ZRC-VRC. In light of this, corporations have not been the central actors in accumulation by dispossession, instead non-state armed actors have exercised violent dispossession. Nevertheless, this has served to further local integration in the CFR, as it has directly weakened petty-commodity production, pushing campesinos towards semi-proletarianisation/waged labour and also enabled the entry of the oil palm sector. The ZRC-VRC, therefore, illustrates how the conflict has enabled the neoliberalisation of the Colombian countryside. Furthermore, land dispossession legitimises a macro-economic model that prioritises imports of basic food stuff in place of national production.

Assumption of ZRC status constitutes as resistance against the CFR, as precarious campesinos (cf. Zamosc, 1986) or *colonos* protested and occupied city halls in urban centres to gain the ZRC's minimal legal guarantees over land access. The UAF zoning system has had an inconsistent impact in controlling land concentration, however, because the ZRC model does not have adequate political support from state institutions to enforce zoning and land titling. In fact, the majority of campesinos in the ZRC-VRC, apart from those living in Yondó, do not have full land titles, which facilitates land dispossession, erodes petty-commodity production and drives semi-proletariansiation, as well as deforestation because landless campesinos search to settle on new land. This case reveals that the ZRC does present resistance against land concentration, but it requires stronger investment and institutional support from national, departmental and municipal state institutions for its zoning system to be enforced.

Unabating land dispossession and displacement has removed campesinos from their land and food production. This results in a metabolic rift (cf. Foster, 1999)- separation between sites of production and consumption- induced by the conflict instead of industrialisation. This has also resulted in a knowledge rift (cf. Schneider & McMichael,

2010), as land dispossession has prevented the reproduction of site-specific knowledge. The proliferation of the coca crop has equally contributed to a knowledge rift, as it is has altered local farming culture. This knowledge rift is further compounded by the introduction of GR technology that intensive coca cultivation requires. In this sense, the cultivation methods associated with the coca crop have also facilitated CFR integration.

The ZRC-VRC confirms Agarwal et al's argument that 'tenure security, accompanied by supporting social and legal institutions' help to decrease deforestation (2014, p.278), as this case lacks both of these elements and has high levels of deforestation. Although the ZRC model provides measures to prohibit the felling of trees, thus far it has been unsuccessful. Effective constraint of the agricultural frontier requires more departmental and national political will to enforce zoning and provide campesinos with land rights. This should be complimented with an increase in legally binding responsibilities for local campesino groups to control levels of deforestation and ensure a more stable agricultural frontier (cf. Ribot, 2003; Poteete, 2004; Agarwal et al, 2014). Moreover, agroecological campesino farming needs to be financially and technically supported as a viable alternative to resource extraction and specialised farming. Diverse smallholder farms could have a positive effect on reducing deforestation, by promoting both on-farm and wider landscape matrix biodiversity, as well as through the encouragement of more long-term settlement patterns. The latter is an important component in helping campesinos feel invested in looking after their environment.

Campesino farmers have not been the only agents facilitating CFR integration through the adoption of GR **technology and practice**, however, as the Colombian state has used glyphosate to eradicate coca crops in the zone. The weaponization of glyphosate in aerial aspersion has resulted in a number of different dimensions of the metabolic rift. For instance, it has reduced biodiversity by indiscriminately killing flora and fauna, polluted waterways and altered soil structures through the removal of weeds that help water filtration. The ZRC-VRC case, thus, reveals that CFR integration in technology and practice takes place even in the most remote and removed areas through context specific ways. The state is not only instrumental in providing a wider regulatory framework that endorses use of GR technologies, but it can also directly administer these. Aerial fumigation can have a wider chain reaction that results in use of more

GR technologies through the erasure of entire harvests, which in turn encourage the use of certified seeds that are more dependent on chemical inputs.

Campesinos are resisting CFR integration through agroecology. Where farming still takes place a number of agroecological techniques are used, such as polycropping, crop rotation and slash-and-burn agriculture. The spread of agroecology is clearly limited by the dwindling nature of agricultural practice itself. However, the ACVC seeks to reconstruct campesino agriculture through its collectively owned demonstration farms and through its agroecology schools. The *Bufalera* farm near Puerto Matilde in particular displays a plethora of agroecological resistance activities including Levels Three and Four on the agroecological transition continuum (cf. Gliessman, 2016), respectively the redesign of agroecosystem processes and the construction of more direct links between producers and consumers. Fieldwork reveals that many farms have aspects of Levels One and Two agroecology also, i.e. a reduction in conventional practices or the substitution of these methods for agroecological ones (ibid). The advancement of agroecology on demonstration farms has been undertaken with funding and expertise from external allies (cf. Mier y Terán et al Giménez Cacho et al, 2018). The importance of funding and technical assistance to the viability of smallholder agriculture is best displayed by the fact that these factors have been key to agroecological transitions in demonstration and private farms, the transition of semi-proletarianised campesinos towards petty-commodity production, and the move away from coca cultivation or natural resource extraction.

The conflict and disadvantageous communication links have worked against the petty-commodity economy, frustrating the construction of rural markets. The fact that they have still found mechanisms and ways to operate among these asymmetries, however, reflects the resilience and resistance of the sector. Withstanding numerous obstacles, campesinos have sold artisanal produce to intermediaries, who have often been the only links to urban markets. The deregulation and price volatility of global markets has impacted the ZRC-VRC, as many blame intermediaries for undercutting them, even though these individuals often assume great cost to continue collecting produce from extremely isolated contexts.

Campesino resistance against the neoliberalisation of **agricultural markets** is further evident through the AFNs in the zone. The ACVC and community groups have

established a number of cooperatives and associations to revive agriculture, to heal the metabolic rift between consumers and producers (cf. Foster, 1999), as well as encourage the consumption of locally produced goods (cf. Butler & Dixon, 2012; Scales, 2014; Sharp, 2016). The EcoBúfalo programme is an advanced example of processing primary produce into dairy items, burgers and sausages. Once again, this solidarity economy project has only been possible with investment from external allies. Nevertheless, it is important to state that even without this funding, campesinos found ways to creatively trade among themselves by constructing regional markets through intermediaries, thus, resisting the erasure of the campesino sector.

Reduced agricultural production, due to the conflict, and the proliferation of the coca crop has altered local diets and **nutrition**. Displacement has led to higher rates of malnutrition, as farmers have shifted cultivation patterns towards short-cycle crops that yield quickly and can be stored easily when taking refuge from violence. In other cases, where farming has been reduced, food shortages have been plugged by food purchases. The absence of infrastructure- particularly electricity- has meant that preserved goods are preferred over fresh fruit and vegetables. The confluence of these factors have led to CFR integration, opening up the local population to a nutrition transition and nutritional metabolic rift (cf. Butler & Dixon, 2012; Scales, 2014; Sharp, 2016), which consists of higher consumption of emptier calories and processed foods. Campesinos are resisting this trajectory through everyday acts of resistance such as sharing the fruit they grow among neighbours, but the gastronomic culture is changing, as food is becoming more fetishized. More education through bottom-up farmer to farmer exchanges, instead of top-down projects led by international institutions, are needed to combat this nutritional trajectory and resist CFR integration.

The ZRC-VRC observes both CFR integration and resistance, both of which have been shaped by the conflict. CFR integration in the ZRC-VRC is motivated by armed actors, agribusiness corporations, the state and also the campesino sector across all four CFR dimensions. The most emblematic form of campesino resistance is the permanence of this sector in the territory, which has been facilitated by the ZRC model itself. In this context of extreme asymmetry and ongoing conflict, external allies have been crucial to agroecological resistance and preventing the erasure of the campesino sector.

7 Comparing CFR Integration in the ZRC Cabrera and ZRC Valle del Río Cimitarra

7.1 Introduction

Chapter 7 compares the process of Corporate Food Regime (CFR) integration and resistance in both case studies, revealing the hybridisation of agriculture in these zones: the mixing of conventional farming and agroecology. Comparison of the case studies is enabled using the four dimensions of CFR integration and resistance applied in Chapters 5 and 6. This chapter assesses integration and resistance in each dimension. Studying the four dimensions together emphasises the multifaceted process of CFR integration and resistance. It also highlights the interlinked way this takes place, as CFR integration in one dimension can trigger integration in another, and vice versa in the cases of resistance.

The first dimension explores how differing land tenure patterns in both ZsRC have impacted campesino and agribusiness access to land in the context of severe landowning inequality in Colombia. The contrasting conditions of the two cases allow clear insight into how the ZRC model has impacted land access (see Section 7.2). Section 7.3 analyses the variety of agricultural technologies and practices applied by campesinos in both zones, to gauge the penetration of industrial Green Revolution (GR) agriculture. Technology is shaped by national research and development (R&D) agendas but also by markets; hence, Section 7.4 looks at how inter/national market orientation and deregulation have interacted with smallholder production. Section 7.5 explores the nutritional impact of changing agricultural trajectories in both zone, and how this interacts with CFR integration and resistance. Environmental feedback in both ZsRC is considered comparatively across the four dimensions. Section 7.6 considers how different expressions of agroecology have developed in both zones and how respective social organisations have influenced agroecological scaling. It concludes (Section 7.7) by considering the obstacles that restrict local efforts to scale agroecology.

7.2 Land Tenure

Both case studies exist in an unfavourable national panorama for smallholder land ownership, since Colombia is the most unequal country in Latin America in terms of landownership. *Colono* campesinos mainly in the south of Colombia, many of whom

were coca growers, campaigned for the establishment of the ZRC model in response to poor land tenure rights, increasing paramilitary aggression that was violently dispossessing communities of land, and against the structural obstacles imposed by the *Apertura*. Even though the current campesinos in Cabrera are not coca growers, they are descendants of *colonos* who constructed a community amidst marginality. Thus, they also viewed the ZRC model as an opportunity to solidify their access to land and state services.

The different historical trajectories and socio-economic structures of the two cases, however, have resulted in dissimilar demands from the ZRC model. The *colonos* in Cabrera achieved partial land reform in the 1930s, which was not undone through counter agrarian reform driven by violence and conflict. On the other hand, the *colonos* in the VRC have experienced higher levels of land dispossession, partly fuelled by the coca economy in the zone and the proliferation of numerous armed groups. This resulted in the reversal of land redistribution from the 1960s and the bottom-up land reform administered by *colono* settlers in the 1980s. These processes of land concentration in the ZRC-VRC also gave rise to landless campesinos, who settled along and expanded the agricultural frontier and others who moved to wage labour/semi-proletariansation in extractive enterprises. The ZRC model was constructed in the context of a land tenure system where *latifundismo* continued in the VRC, whereas in the ZRC Cabrera a smallholder land tenure system remained intact.

In both these cases, however, the ZRC model has been unable significantly to solidify campesino access to land, which has enabled CFR integration in the ZRC-VRC through corporate land concentration. Corporate land accumulation has been facilitated in the ZRC-VRC by a number of factors, arguably one of the most important is the absence of land titling. In the ZRC-VRC, only the municipality of Yondó has land titles. A more comprehensive titling programme has been complicated by the existence of two competing zoning models (the forest reserve and agricultural land), which has left many campesinos without tenure security.

The low levels of tenure security have also galvanised armed groups and fuelled higher levels of dispossession. The ZRC-VRC provides a new theoretical dimension to the metabolic rift literature, as it emphasises the impact violence and conflict have in generating this rift. Land dispossession separates people and place and also inflicts

a knowledge rift (cf. Schneider & McMichael, 2010), as site-specific farming practices are not reproduced. This also adds nuance to CFR theorisation, as it is evident that integration is not only furthered by the agribusiness sector or states but also by non-state armed actors. In so doing, the conflict has been an integral factor in the neoliberalisation of the ZRC-VRC and its process of CFR integration through the land tenure system. The absence of land titles does not result in higher levels of violence, which is evident by the fact that Cabrera has faced comparatively lower incidences of coercive dispossession, despite having poor land titling coverage (only 34% of residents have a complete set of formal title deeds). Thus, wider factors such as the varieties of natural resources available, levels of infrastructural development and articulation with state institutions also impact the incidence of conflict. The poor levels of infrastructural development, prevalence of the coca crop and high levels of conflict in the ZRC-VRC have prevented consistent settlement in the area and the development of a stable petty-commodity economy.

Comparatively, Cabrera has a more developed road network, electricity coverage, mobile phone network, internet and social infrastructure (schools and a local hospital) than the ZRC-VRC. The absence of natural resources such as gold and coal, as well as a colder climate that is not conducive to coca, have limited the number of land conflicts and armed groups that have been active in the region. This is not to say that Cabrera did not experience conflict, it has also experienced land dispossession and displacement, but this has been more limited than in the case of ZRC-VRC. Resultantly, campesinos have had greater possibilities to remain on their land to produce commercially and for subsistence. More stable settlement patterns have also reduced opportunities for corporate land accumulation in the area. Arguably, there has been less need for direct land purchases in Cabrera by the corporate sector, as petty commodity producers have oriented their production towards national and international market demands, whereas this is not the case in the ZRC-VRC.

The ZRC model has not necessarily fortified the petty-commodity economy in Cabrera, however, because it is ill equipped to deal with land subdivision. This consists of the subdivision of existing holdings into two or more resulting from inheritance practices and also due to state land redistribution programmes. In contrast to the ZRC-VRC, land subdivision in Cabrera is one of the primary issues that undermines the profitability of campesino production. The ZRC model was created in the context of

high levels of land concentration, however, its territorial design means it should also be confronting issues surrounding insufficient landholding. It is important to remember that the ZRC model itself was not designed to settle land subdivision, nor is there clear national policy that brings the land use planning agency (Unidad de Planificación Rural Agropecuaria- UPRA) and ZsRC into closer communication. The absence of plans to re-think land tenancy in the ZsRC (both concentrated and subdivided holdings) is part of the reason why land concentration continues in the ZRC-VRC and farms are becoming increasingly subdivided in Cabrera. Nevertheless, the institutional framework constructed to implement bottom-up development for ZsRC has helped to foster closer discussion between the ACVC and National Parks over how to redraw zone boundaries- to decide which area is to be used for conservation and agriculture. Using this experience, the participatory mechanisms used to establish the ZRC model could be utilised to hold discussions around how to resolve land subdivision through more co-operative production and sale- an expansion of the existing *Parambero* network perhaps that already exists in Cabrera.

The land tenure systems in both ZsRC not only impoverish campesinos but also have damaging ecological consequences. Agarwal et al. (2014) note that a weak land tenure system results in higher levels of deforestation, as land is more easily dispossessed. The ZRC-VRC attests to this (FAO, 2018), as land has been dispossessed from those without land titles bordering forests, enabling the expansion of the agricultural frontier. Communities settled close to the borders of forests preserved the frontier partly because they used these spaces as sanctuaries from violence, as well as due to pressures exerted from armed groups and community accords. Their presence presented a social and physical buffer against deforestation. Likewise, their removal from these spaces because of insecure tenure and violence has galvanised deforestation. Another key driver of deforestation in the area are landless campesinos who are deforesting primary forest to create new pastures for livestock. This can be more problematic than other forms of deforestation in swidden agriculture, which often involves the deforestation of seconday, rather than primary forest. Despite a similarly weak land tenure system, the ZRC Cabrera has one of the most stable agricultural frontiers among the seven existing ZsRC (FAO, 2018). In this municipality landless peasants are not deforesting, which underlines the fact that

landlessness alone does not motivate deforestation, as those without land enter associations with other campesinos who do possess land.

In Cabrera's *Parambero* system, landless campesinos reside on the land and work it every day, thus, avoiding the precarity that can come from semi-proletarianisation and waged labour. This informal and bottom-up system of labour and resource sharing provides an alternative mode of regulation to overcome constraints from poor zoning in the area. These mechanisms of campesino resistance have also helped maintain a more stable agricultural frontier/ reduce deforestation of primary forest, as smallholders work together to overcome land shortages. *Paramberismo* does not necessarily help agroecological transitions, since many of these partnerships farm using GR technologies and practices, but it does ensure the continuation of campesino production by uniting petty-commodity producers with semi-proletarianised peasants, which itself represents resistance against CFR integration. Resistance against spatial exclusion and marginalisation is also present in the ZRC-VRC where smallholders return to their land and occupy the territory in spite of violence; the ZRC model is a fruit of this resistance.

A more stable agricultural frontier in Cabrera is also due to less volatile land settlement patterns, as a consequence of reduced violence and conflict, but also because of better enforcement of deforestation control measures by the environment regulation agency- CAR. Tellingly, state enforcement is absent in the ZRC-VRC, where there are comparatively higher rates of deforestation. However, this Zone has had alternative extra-institutional enforcement from some campesinos (those active in the ACVC and others living close to forest borders) and also armed groups. Campesinos living close to forest boundaries could have been motivated to preserve the forest due to social pressure and the threat of reprisals from armed groups. In the VRC, there was also the added incentive of preserving forests so that people could flee and escape to them when faced with threats of violence. Despite different motivations behind conservation measures, both ZsRC reveal a correlation between stable settlement of communities near forest borderlands and conservation, but this has been undermined in the ZRC-VRC by land dispossession and displacement of campesinos from forest borderlands. The removal of these families from the margins of the forest, due to violence and poor land tenure security, therefore, enabled deforestation. Evidently, land titling is not only a protective measure against corporate land accumulation but is also essential to

minimise deforestation. Providing local groups with more responsibilities and powers could also enhance compliance with conservation principles (Ribot, 2003; Poteete, 2004).

The Colombian state has played an ambivalent role in assuring campesino land access, as it authorised the ZRC model but later did not follow through with adequate land titling, underlining the role the state plays in CFR integration and pushing farmers towards deforestation. This is emphasised through the Zones of Economic and Social Rural Development or *Zonas de Interés de Desarrollo Rural, Económico y Social* (ZIDRES), which are designed to issue unlimited amounts of unoccupied *baldíos* or state lands to national or foreign corporations for the purposes of agricultural production. ZIDRES are not subject to land ownership limits such as those established in the ZRC model, which directly enables corporate accumulation of land by offering secure property rights, something that has not been undertaken in ZsRC for campesinos.

Analysing land tenure in the two ZsRC reveals that land concentration is enabled by a mode of regulation that is disadvantageous to smallholders and accelerated by violent displacement to armed actors, which results in both a metabolic and knowledge rift. In the ZRC-VRC, the armed conflict has underwritten land dispossession and accumulation, whereas, in Cabrera ineffective land zoning and inheritance practices have splintered the campesino economy into small and economically unviable landholdings. Campesinos continue to reside and produce in these zones due to the legal guarantees provided by the ZRC model but also case specific resource and labour sharing agreements. These case studies suggest new dimensions to metabolic rift and CFR theorisation, as they underline alternative factors (armed conflict) and actors (non-state armed groups) that drive both phenomena.

7.3 Technology and Practice

CFR integration in both ZsRC is furthered through the use of GR and NGR technology and practice, as profits from purchases of industrially produced chemical inputs and seeds contribute to the corporate regime of accumulation. Use of pesticides, herbicides and synthetic fertilisers is notable in both ZsRC but more widespread in Cabrera, since agriculture is the main economic activity of the area. Agriculture is significantly more specialised and intensified in Cabrera than the ZRC-VRC. This is

because lower levels of conflict and better infrastructural links have facilitated market integration, which has opened the municipality to national and global technological trends. Thus, Cabrera has transitioned towards more industrial farming methods since the 1960s but particularly from the 1990s onwards, coinciding with Colombia's national integration with the CFR through macro-economic policies and free trade agreements. These technologies have been directly promoted here by agronomists working for agribusiness, such as Bayer-Monsanto and the agricultural input stores in the municipality bearing their names (Bayer and Yara), which conveys Cabrera's link to global agribusinesses. On the other hand, the ZRC-VRC's campesinos are wage labourers in their majority, many who still practice subsistence agriculture for food security purposes. To keep costs down these individuals do not apply chemical inputs nor other GR practices to their home gardens. In fact, home gardens in Cabrera also tend to be free of chemical inputs. In light of this, it is highly probable that the central objective of the farming unit impacts technological choices, as those campesinos moving towards more capitalist forms of production seek out technologies that increase yield. Evidently, diverse campesinos are key agents in the CFR, who act according to their own socio-economic rationale, which can also be beneficial to corporate accumulation.

Although petty-commodity production in the ZRC-VRC is dwindling there is ample evidence of GR technologies applied by coca growing campesinos, campesinos involved in global commodity chains such as oil palm, and petty-commodity producers specialising in livestock, as well as oil palm corporations. Much like the capitalist production of any given cash crop, campesinos intensively cultivate coca using numerous chemical inputs in the growing phase and especially in the processing phase. There is significant runoff from these chemicals to water bodies. Different to plantation economies, however, the coca plants are combined with subsistence crops (plantain or cassava) in a bid to hide them from aerial fumigation. This agroecological practice of polycropping reflects a continuation of a campesino practice to maximise arable space with a variety of crops, but it is also practical in the context of illicit crop fumigation and ongoing food insecurity due to the conflict. Campesinos involved in growing other cash crops, such as oil palm, similarly participate in the use of GR technologies. These monocultural plantations are on a smaller scale than those of corporate entities, but they still require high levels of chemical inputs. This observation

is equally applicable to petty-commodity producers in Cabrera, whose farms are shaped by crop specialisation and intensive cultivation of various fruit and beans for national and external markets. In this sense, the kinds of crops and markets influence technological choices and practices.

These campesinos are not completely integrated in the CFR however, as many mix GR technology and practice with agroecological methods. For instance, coca farmers in San Pablo are also cultivating rice using very little to no chemical inputs, others are washing coca leaves with rainwater and applying this organic fertiliser to cacao crops as an organic fertiliser. Meanwhile, in Cabrera intensive cultivators of beans rotate this crop with maize, leaving maize stalks to decompose in soils as a natural soil amendment. There were also cases of individuals participating in companion planting to reduce the use of pesticides in their cash crops. Moreover, the majority of campesinos continue to produce some food for subsistence through home gardens. This underlines the fact that campesinos in both zones are critically engaging with GR technologies and looking for means to reduce their dependence on external inputs. These shifts could have economic motivations but nonetheless they reveal epistemological resistance to the CFR's productive model, as campesinos search for agroecological alternatives, resulting in farming system hybridisation.

Higher dependence on chemical inputs and the associated costs of this productive model have been integral to economic dispossession (cf. Magdoff, 2013), which shrinks the campesino sector and so facilitates CFR integration. This is because only those with capital can afford to continue practising agriculture once production costs rise, whilst those who cannot abandon it. This was exemplified in the campesino palm oil project in South Bolivar, ZRC-VRC. Many farmers who participated in this project left agriculture altogether, due to the heavy debts incurred by the industrial farming methods required by the crop. Economic dispossession also results in a metabolic and knowledge rift, as sites of production and consumption are distanced, consequently preventing soil nutrient cycling (cf. Foster, 1999) and the reproduction of local knowledge (cf. Schneider & McMichael, 2010).

Use of GR technologies was not only promoted by the national government through tax breaks provided to the palm oil sector and funding made available in Plan Colombia but also NGOs such as CPDMM who encouraged campesino palm projects.

This has been compounded by the forceful introduction of glyphosate by the Colombian military in aerial fumigation of coca crops in the ZRC-VRC. This has pushed the use of further chemical inputs, such as certified seeds, since the eradication of whole harvests wiped out landrace seed varieties. Aerial fumigation has also been a source of economic ruin for campesinos, whose subsistence crops have been affected by glyphosate. This has moved many away from diverse subsistence farming or prompted those that remain on their land to turn towards livestock production and the employment of herbicides to improve the quality of their pastures.

In this context, livestock specialisation is evidence of campesino resistance, as well as CFR integration, since changes in livelihood strategies have enabled farmers to remain on their land as petty-commodity producers (often in combination with waged labour). Moreover, the ACVC is using this shift to encourage more integrated forms of farming, such as the use of manure from livestock to feed an anaerobic digestor on the *Bufalera* farm. They are also encouraging agroforestry[83] in pastures through the planting of trees. This project underlines the fact that livestock farming does not a priori result in higher levels of deforestation, as it can be used to help reforest areas. Therefore, the ACVC are working with campesinos who have decided to transfer their assets to livestock by looking to help cattle farmers transition along the agroecology scale. This evidences the hybridisation of CFR integration and resistance in the ZRC-VRC, where integration of technological elements of the CFR could be the only means of short-term survival even if this occurs in conjunction with the adoption or maintenance of agroecological methods.

The suggestion that campesinos use GR technologies to resist their expulsion from agriculture, which is progressively trending towards industrial scale production, is

[83] As of yet, agroforestry remains an incipient practice in the country and in both ZsRC, as there is a lack of education around these systems and a scarcity of funding (Oscar Cubillos of FEDEGAN, Interview, 2017). Agarwal et al. underline the importance of 'investment and support' (2014, p. 277) for farmers to incentivise changes in farming that favour agroforestry and sustainable practice. This supports the idea that with adequate funding and technical support more sustainable livestock practices could be encouraged. They also note that where possible this should be coupled with decentralised governance that engages local populations and economic necessities (ibid). This ensures that local communities are engaged in the co-construction of measures to prevent deforestation.

equally applicable to the petty-commodity producers in the ZRC Cabrera. In this case study, use of GR technologies has increased since the signing of FTAs, as many campesinos are coping with more volatile market prices and so trying to increase their yields to ensure a profit margin. Moreover, the influx of staple crop imports- a direct result of FTAs- has pushed campesinos to cultivate specialised crops (such as tropical fruit and beans), using industrial methods for national and external markets. In addition to this, Cabrerans are faced with land subdivision and higher pressures to produce more on smaller plots of land, which has seen the phasing out of land fallowing. The fact that the ZRC model has not responded to the land-based conflicts faced by this community, arguably, has exacerbated the trend towards GR technologies. This is more so the case because the corporate sector (export companies) have presented viable livelihood options to petty-commodity producers through technological packages and offers to buy produce directly. When viewed together, it is evident how economic and political factors underwrite technological transitions.

The potential to heal the knowledge rift is stronger in Cabrera because agriculture remains the primary economic activity and the majority of farms still practice some agroecological techniques in home gardens. These practices are not necessarily conscious acts of resistance against CFR integration and dependence on industrial inputs, but they do relate to an alternative economic and ecological logic, as petty-commodity producers resist dedicating all farmland to commercial cash crops. These expressions of agroecological resistance occur both among petty-commodity producers with land and those who are landless but working associatively through the *parambero* system. This differs from some of the semi-proletarianised campesinos in the ZRC-VRC who dedicate the majority of their labour to off-farm work and then opt to buy food. These campesinos are less likely to participate in on-farm forms of agroecological resistance because their time and labour is invested away from working the land. Moreover, those who work as coca pickers earn a high enough wage to purchase food and are often seasonal labourers who move around according to need. This comparison conveys that the kinds of waged labour could be crucial to whether campesinos participate in agroecological resistance, particularly if this labour means campesinos are moving around instead of settling in any given area.

Whilst more men are participating in off-farm work in the ZRC-VRC, women campesinos have been resisting the move away from agriculture through home

gardens. NGOs in conjunction with the ACVC have encouraged collective home gardens in the ZRC-VRC, a process that has been mirrored in the ZRC Cabrera. Women are being given seeds and training to farm organically for subsistence purposes in the ZRC-VRC but also commercially in Cabrera (ORGANCIAMPO, EL PROGRESO and SENA's organic fertiliser workshops). Arguably, the latter is only possible because these women have been more connected to petty-commodity production than in the VRC, where family farming has been disrupted by numerous factors including the conflict. Thus, repairing the knowledge rift for women in petty-commodity producing family units is potentially a smoother process in Cabrera, as these women have maintained contact with farming through other roles such as fruit picking and farm administration. In investigating the differentiation of campesino experiences, this thesis provides a gendered lens to the metabolic rift that previous theorisation does not. The analysis of the two case studies indicates that women play crucial roles in hybridising farms and mixing conventional practices with agroecology; supported by the state and external allies (such as NGOs), who are influential drivers in this process.

Although NGOs have been key to transitioning technology and practice among women in Cabrera and the VRC, corporations also have played a 'greening' role among certain sections of Cabrera's petty-commodity/capitalist campesinos who are producing for export markets. These campesinos are in the process of integrating elements of their production for export and therefore need to comply with best practice rules, such as the reduction of chemical inputs. A similar influence is not evident among campesinos in the ZRC-VRC because petty-commodity production has not been significantly integrated into export markets, except for palm oil. Technically this does represent an element of agroecological transition- the reduction in use of agrichemical inputs (Level 1)- but this differs from agroecology because these export companies continue to provide certified seeds and chemical inputs, thus, this transition is not undertaken with the aim of reducing dependency on the corporate sector.

These case studies once again provide an important theoretical contribution, as GR/NGR technology is not only promoted through state R&D but is also forcefully applied to soils as weapons in wars. The sum result of both these processes is CFR integration motivated by the corporate sector and also by national governments using the pretext of war. Both the removal of people from agriculture due to aerial aspersion

of herbicides and the use of GR technologies on farms result in knowledge rifts (cf. Schneider & McMichael, 2010). Women could be crucial to relinking families to subsistence farming and thus to healing certain aspects of the metabolic rift. The analysis of these cases adds important theoretical dimensions to explanation of knowledge rifts, as land displacement in Colombia is a primary factor for local knowledge not being reproduced; a phenomenon that is magnified by the voluntary uptake of GR/NGR technologies and aerial eradication of coca. It also remains important that both ZsRC construct bottom- up farming norms to increase collective awareness and action; devising a framework for this would be an important addition to the ZRC model itself. How effectively such measures promote agroecology and CFR resistance, however, still depends on whether agriculture becomes a socio-economically viable option for campesinos through improved infrastructure and a reduction in conflict.

7.4 Agricultural Markets

Market deregulation and neoliberal macro-economic policies have shaped CFR integration in both ZsRC (see Chapter 4 for more on national macro-economic policies and the *Apertura*). Cheaper imports of staple goods and price volatility undermined petty-commodity production in the ZRC-VRC, pushing many towards precarious wage employment and coca production. Coca soaked up much of this precarious labour and high income derived from production and coca leaf picking underwrote a move away from subsistence agriculture. The combination of this socio-economic restructuring away from petty commodity production and the instability arising from conflict were among many factors that enabled the entry of agribusinesses specialising in the export of oil palm on dispossessed or abandoned lands.

One possible interpretation is that where campesinos were not integrating into global markets through commodity chains, export business physically moved in to fill this gap. Global free trade, coca production and the conflict, therefore, together undermined the petty-commodity economy in the ZRC-VRC. On the other hand, conducive structural conditions allowed campesinos in the ZRC Cabrera to intensify their production and produce for export markets, pushing them to mix elements of petty-commodity production with more capitalist modes of farming. Involvement in the export trade incorporates campesinos into global commodity chains, which opens them up to volatile market prices, endangering the economic sustainability of

campesino farming. Incorporation into export markets in the ZRC-VRC is a growing phenomenon, due to the expansion of palm oil that links these communities to global commodity chains, as campesinos sell oil palm fruit to agribusinesses. This process is supported by the state through a favourable policy environment and regulatory framework, as well as armed groups that, in some cases, violently enable corporate land accumulation. Although export trade provides higher profits, it also generates a metabolic rift by widening the distance between sites of production and consumption (cf. Foster, 1999), as well as introducing rifts in the carbon cycle, due to emissions from transportation (Longo & York, 2008).

The metabolic rifts produced by export trade (Longo & York, 2008) are not only motivated by industrial agribusiness but also by campesinos themselves through Alternative Food Networks (AFN). Projects such as those mounted by APROCASUR resist CFR integration by supporting campesino production, but they do so at the cost of emitting higher levels of CO_2 through the transportation of goods. Shorter-distance trade with regional markets also produce metabolic rifts, as nutrients are still exported out, but as with export-oriented AFNs this has been crucial to supporting the campesino economy. This points to the emergence of livelihood-environment tensions, where socio-economic survival is prioritised by campesinos over potential ecological costs. At the same time, it is important to understand potential negative ecological outcomes contingently, as these AFNs prevent campesinos practising coca crop cultivation or mining, which arguably have more significant, negative ecological ramifications. Better infrastructural connectivity and consequently easier access to retail markets means that AFNs in Cabrera sell more locally, thus, bridging the distance between sites of production and consumption and realising Level Four agroecology transition (Gliessman, 2016). They are also resisting the CFR by expanding the campesino economy more sustainably, as producers are not exposed to volatile global demand. Evidently, improved infrastructure could result in less metabolic rift inducing AFNs that focus on closer markets (local and regional).

Local markets per se do not facilitate resistance to the CFR, however, as they also suffer from deregulation. For instance, food produced in Cabrera is mainly sold to wholesale markets for external consumption. Some retailers in Cabrera buy food from Corabastos in Bogota, which often consists of items that are produced in the municipality. This looping movement of food is underwritten by the closure of the

national marketing board (IDEMA) and the removal of guaranteed purchase to provision state institutions, e.g. schools, which ensured more food produced in the area was sold and eaten in the area. The case in Cabrera adds to nutritional metabolic rift theorisation, as producers are not only separated from consumers through long-distance trade or the processing of food but also due to looping food circuits arising from market deregulation. Here primary products leave an area, only to return in small quantities through intermediaries or the retail market, however, the origin, the producer and how the food is produced are lost along the way. The longer the food circuit, the less profit is gained by campesinos because of transport costs, the earnings taken by intermediaries and then wholesalers. Therefore, this elongated trade route also disadvantages campesinos in the long-term, as it undermines the economic sustainability of the sector. The erasure of the campesino sector benefits CFR integration, as commercial imports are sought for food security and smallholder production is replaced by largescale agribusiness.

Both ZsRC have flagship dairy farms and associations that are building local markets, whilst also bridging the distance between producers and consumers. This is responding to the growth in livestock holding in both ZsRC, which has expanded as a consequence of the economic pressures related to agricultural neoliberalisation in the country. Petty-commodity producers that did not want to leave agriculture completely, instead, transferred their assets to livestock, the income from which they can supplement with off-farm work. The development of dairy farms in both zones has facilitated the transformation of primary produce into cheese and other dairy products. EcoBúfalo and ASOGNAC, respectively in the ZRC-VRC and Cabrera, are sourcing local produce and transforming this locally, thereby providing jobs to campesinos. They both predominantly sell to local and regional markets, although on occasion they also sell in the Café de la Reserva in Bogota. Both projects have fixed points of sale: EcoBúfalo is in the provincial city of Barrancabermeja selling to urban dwellers, whilst ASOGNAC sells its cheese in a convenience store in the local town of Cabrera. Given Cabrera's retail market is much smaller than Barrancabermeja, ASOGNAC also trades with convenience stores in neighbouring peri-urban spaces. This ensures higher earnings for producers, as intermediaries and wholesalers are cut out of the food circuit. Both projects demonstrate that individual production with collective processing and sale offers a long-term solution to fragmented and de-regulated markets. These

AFNs illustrate campesino resistance against the CFR and innovation in almost impossible contexts of conflict and infrastructural underdevelopment.[88]

Although AFNs do present resistance to corporate market arrangements, they are not particularly accessible for semi-proletarianised or landless campesinos. Landless campesinos in Cabrera could participate in AFNs through the *Parambero* land and labour sharing system but nothing of this sort exists in the ZRC-VRC. This situation is representative of the general isolation that landless campesinos and wage labourers experience within the ZRC model, as it is ill equipped to manage these social groups. If these class differences are not confronted, it is possible that socio-economic and political divergence could worsen, which could undermine the ZRC model's objective of safeguarding campesino access to land. Labour and resource sharing partnerships, as those in Cabrera, provide an interesting example of how to reconnect landless campesinos to farming and interest them in AFNs. In turn, this would also help to strengthen or reconstruct petty-commodity production in the ZRC-VRC, where there has been an agricultural downturn, and reduce precarity for waged labourers.

AFNs do not overhaul the corporate economic model of agriculture, but they can provide local alternatives to food imports and dynamize local economies. Depending on the distances involved, AFNs can bridge the gap between sites of production and consumption, as ORGANICAMPO are doing in Cabrera and the 'Rice from the Reserve' project in the VRC. This heals the metabolic rift (cf. Foster, 1999) and reduces the CO_2 emissions involved in long-distance trade (Longo et al, 2015). Importantly, AFNs can also be a vehicle to avoid the knowledge rift (cf. Schneider & McMichael, 2010), as ORGANICAMPO has reconnected women to farming and other

[88] Each experience has something to learn from the other. For instance, EcoBúfalo has obtained international funding, whereas national funds alone supported the construction of the dairy in Cabrera. The former has also diversified towards the sale of buffalo meat, maximising use of the animals. On the other hand, ASOGNAC has built a strong local profile around its cheese. It secured potential markets whilst building the dairy; EcoBúfalo did the reverse, which is a much riskier approach. Both projects would benefit from closer exchange, especially since the ZRC steering committee in Cabrera is planning to establish an abattoir.

such associations in the ZRC-VRC provide re-newed economic incentives to pursue agriculture.

7.5 Nutrition

The conflict, infrastructural differences and the types of agriculture practised in each of the ZsRC have deeply shaped nutritional habits. The conflict in particular has generated food insecurity in the ZRC-VRC, not least as it has resulted in land dispossession, preventing campesinos from participating in subsistence agriculture, but also because military blockades have controlled the amounts of purchased food brought into the area. The constant threat of dispossession pushed many petty-commodity producers towards cultivating short-cycle crops that grow quickly, are easily transportable and can be preserved for longer in humid climates. This led to significant concentration of local diets in carbohydrate heavy foods. Lower incidences of violence and land dispossession in Cabrera meant that petty-commodity producers there could cultivate a wider variety of foods. For instance, Cabrerans have the opportunity to construct long-term farm plans, thus, there is a greater propensity towards cultivating long-cycle crops, as a result of which many farms have fruit trees. This produces a wider diversity among subsistence foods, which is reflected in dietary patterns. The comparison between the two cases underlines the fact that conflict deeply impacts the nutritional metabolic rift, pushing communities towards higher rates of malnutrition through dietary imbalances. The ZRC-VRC is illustrative of the link between the country's nutritional transition and the crisis of internal displacement (cf. Himmelgreen et al, 2014). Himmelgreen et al. argue that 50% of internally displaced people (IDP) suffer from food insecurity, due to being forced into rapid urbanisation and informality (ibid, p.77; also see FAO, 2017). IDPs seek the cheapest food they can find in urban centres, which often is the least nutritious, but the phenomenon has equally impacted the diets of IDPs in rural settings.

Similarly, the conflict has driven many campesinos in the ZRC-VRC towards purchasing processed and preserved foods to make up for short falls in subsistence crops. This has been motivated by deficient infrastructure, since the absence of electricity means perishable goods are impractical and costly, as they ruin quickly. The consumption of processed foods, in fact, has ensured that local communities consume

protein, which is very expensive to obtain fresh. Moreover, fresh meat can only be preserved through salting, due to the lack of electricity, and the high levels of salt have questionable health benefits, whilst fresh fish from rivers has purportedly been contaminated by mercury from gold mining. At the same time, dependence on processed food has accelerated the fetishization of food and its commodification, which is evident by the fact that locals in the ZRC-VRC prefer pre-packed and recognisable rice brands to locally milled and produced varieties, despite these being cheaper. This evidences a nutritional metabolic rift among consumers, who are becoming more disconnected from the origin of the food they consume and how it is processed (cf. Butler & Dixon, 2012).

Petty-commodity producers in Cabrera are also purchasing more food than ever, even though they continue to be commercial and subsistence producers. This has not been driven by food insecurity but rather a more capitalist logic, where smaller areas on farms are dedicated to subsistence production compared to cash crops. The purchase of processed foods represents CFR integration because purchase of industrially produced items expands the corporate regime of accumulation. This transition is not imposed by corporations, campesinos choose to alter their dietary habits and become consumers, which exposes rural populations to a nutritional metabolic rift (cf. Butler & Dixon, 2012; Scales, 2014; Sharp, 2016). Purchased fresh foods in Colombia are also more likely to have higher residues of chemicals, as produce destined for national markets is largely unregulated, which adds another element to the theorisation of the nutritional metabolic rift.

In this context, the continued cultivation of subsistence crops in home gardens in both ZsRC represents resistance. Petty-commodity producers in the ZRC Cabrera are still maintaining land for organic vegetables and fruit, reflecting a critical attitude towards the fresh food that is available through purchase. Many campesinos noted that they grew their food because of unregulated application of chemical inputs by Colombian farmers, which they recognised as harmful for their health. Fewer campesinos in the ZRC-VRC grow their own subsistence crops because a smaller proportion of inhabitants in this ZRC still practice agriculture. Those who do generally grow maize, plantain and cassava for food security and to save money because the cost of purchased food includes high transportation costs. These are expressions of

resistance against the semi-proletarianisation of campesinos in the area, which is moving them towards dedicating all labour to off-farm work and away from subsistence agriculture. Subsistence agriculture helps to bridge the metabolic rift by closing the distance between sites of production and consumption. Additionally, the Global Nutrition Report explicitly calls for agriculturalists to practice diversified smallholder farming, as there is a strong link between small diversified farms and the production of nutritious food: '53-81% of key micronutrients are produced by small and medium farms' (Global Nutrition Report, 2017, p.51). Carolan confirms that the GR has 'negatively impacted dietary diversity', due to the displacement of 'traditional crops…higher in iron and other micronutrients' (2016, p.67). For example, polycropping systems in Cabrera have been displaced by specialised crops and monocultures.

Women campesinos have been particularly integral to growing subsistence crops in both ZsRC, as NGOs and state institutions have invested in projects that invest in women working in home gardens (both individual and communal). The ORGANICAMPO project in Cabrera diversified the diets of the families involved in the association, which was a prime motivating factor for the associates. They have also been catalysts of change in their community, using an AFN to educate their neighbours about the importance of eating locally produced food. ORGANICAMPO presents an example of campesino resistance in the ZRC Cabrera, as it sells organically grown fruit and vegetables locally, which provide healthy alternatives to processed items or purchased fresh foods that could be higher in chemical residue. In the sale process, they also educate fellow campesinos about the preparation of different dishes and the importance of healthy eating, therefore, resisting the nutritional metabolic rift (cf. Butler & Dixon, 2012). Similar nutritional projects were undertaken by the FAO in the ZRC-VRC, but these were unsuccessful as many recipes included the use of food that was not culturally accepted. ORGANICAMPO received funding and training from external allies but it is organised and designed by women who live in the municipality. Other such communal gardens in the ZRC-VRC have been disrupted by the conflict and aerial fumigation, which once again underlines how conflict has undermined CFR resistance. It also emphasises the additional nutritional precarity that campesinos experience in the ZRC-VRC.

The dynamics of food insecurity have also led to stronger solidarity initiatives among neighbours in the ZRC-VRC, as many campesinos noted that they gave away surplus fruit to neighbours who do not have any. This everyday act of resistance (cf. Johannson & Vinthagen, 2015) is not recognised by campesinos as anything more than a neighbourly gesture but the scarcity of fresh fruit around the ZRC-VRC makes this an important exchange. These social norms, arguably, are stronger in this ZRC because of the continued precarity of life the Zone lives in contexts of conflict, the infrastructural underdevelopment and comparative isolation from urban centres. In Cabrera, diverse fruit and vegetables are readily available in Cabrera, in addition to which the area has developed along more individualistic lines, reflected in less evidence of petty-commodity producers sharing surplus with neighbours. These individualised forms of production and sale sit more comfortably with the neoliberal restructuring of the Colombian economy. Moreover, petty-commodity producers now have less subsistence produce to share, as the area used for cash crops predominates over home gardens. Interestingly, however, those who still participate in more associative forms of production, namely *paramberismo*, do share surplus among associates.

7.6 Agroecology: Scaling-up and -out

Agroecological resistance against CFR integration is evident in both case studies, however, the expressions of this resistance differ between the two cases. Comparing the two cases reveals the factors that enable or prevent the scaling out of agroecology (see Mier y Terán Giménez Cacho et al, 2018 for the eight drivers of agroecological scaling).

Agroecology is:

> 'based on cultivated and wild biodiversity, including the integration of crops, trees, and livestock, at the plot, farm and landscape levels...to reduce dependence upon external inputs, thereby contributing to the autonomy of food-producing families and communities…agroecology proposes the organisation and connection of consumers, producers, and others to form fair, environmentally responsible food systems, as well as broader movements for social, political and economic justice' (ibid, pp.2-3).

This broad and general definition of agroecology encompasses changes from farm to regional level, illustrating how agroecology integrates socio-economic and ecological adjustments. Agroecology, as a political vision of an alternative productive system, is central to the discourse used by social organisations in both ZsRC. Practical application of agroecology, however, does not always match the discourse used by social movements.

The ability of social movements to move from agroecological discourse to practice is influenced by the kinds of social and political organisation in each zone. These are stronger in the ZRC-VRC than the ZRC Cabrera due to the concentration of exiled social movement leaders that arrived there from around the country. Despite high levels of persecution and violence, the ACVC has developed strong links with regional, national and international organisations, which have been crucial to funding projects and assisting local development. They have developed mechanisms for continued and sustained dialogue with other state institutions through the Mesas Comunales por la Vida Digna (MCVD), which Cabrera does not have.[90] They have much more specific project based communication with other institutions. To avoid institutional isolation, all ZsRC should think about how to maintain constant dialogue with wider state planning to ensure the Sustainable Development Plands (PDS) are considered in the creation of municipal development plans. Furthermore, a mix of persecution and perceived corruption weakened the ZRC Cabrera's main rural union, SINPREAGRICUN, which was integral to the ZRC's Steering Committee in the early 2000s. The new ZRC Steering Committee in Cabrera is in the process of restructuring and overcoming the stigma of corruption attached to its predecessor. In a relatively short space of time, it has facilitated the implementation of projects such as the dairy plant, the construction of home gardens on individual farms and also lobbied the local mayor's office to align local development plans with the ZRC's PDS. In the long-term, comparatively lower levels of violence and persecution in the ZRC Cabrera than in the ZRC-VRC could support organisational capacity building and generational renewal. However, it is fair

[90] As of late 2019, a new Mayor has been elected in the Municipality of Cabrera who belongs to a more left leaning party and has been favourably disposed to the ZRC model. It will be interesting to see how the PDS is integrated into local development plans from here on in and how the Mayor's office can support the ZRC's institutional development.

to say that persecution related to the conflict has stunted organisational capacity building in both zones.

The ACVC has focussed on strengthening campesino to campesino dialogue through two agroecology schools, where members of the technical team have led workshops on agroecological transitioning- seed saving and the reduction of chemical inputs in pastures. In addition to this, they also have five communally owned demonstration farms and are directly working with select privately owned farms to demonstrate successful examples of agroecological practice for their respective rural wards. This is a long-term strategy, the success of which is dependent on numerous factors among which are the conflict, commitment of campesino labour to agroecological methods and the continued assistance of the ACVC in this transition process. The ZRC-VRC's approach to agroecology contrasts to that in Cabrera, where agroecology workshops have been led and designed by SENA, FAO and UNIMINUTO. All of these have differed to the agroecology school in the ZRC-VRC, as they focus on one particular practice, instead of re-framing intervention in terms of farm-level agroecological principles. Moreover, these workshops were disarticulated from the ZRC project, as the Steering Committee did not co-design these workshops nor link them to political agroecological objectives/ the aims of the ZRC model. This undermines the possibility of resisting the CFR, as agroecology is not linked to wider structural issues related to food production.

Although organisational capacity and the kinds of participative structures social movements build influence agroecological expressions, so does the class makeup of local peasant communities. For instance, more campesinos in the ZRC-VRC are waged labourers who do not necessarily participate in subsistence agriculture, whilst the majority of campesinos are employed in farming in Cabrera. There are also labour-land sharing associations that provide more fixed agricultural employment for the semi-proletariat in Cabrera. These conditions mean that waged labourers in the ZRC-VRC, who are engaged in natural resource extraction or coca leaf picking but not agriculture, are less likely to participate in Levels 1 or 2 along the agroecology transition (cf. Gliessman, 2016)- the reduction of chemical inputs or their replacement with on-farm amendments. Thus, there is more possibility of scaling out these forms of agroecological resistance in Cabrera, which underlines the fact that agriculture in

the ZRC-VRC must be made economically viable for the semi-proletarianised and landless before scaling takes place there. This is a complex process that would require infrastructural development (roads, electricity, potable water, schools and medical facilities), a secure land tenure structure and also conflict resolution. Evidently, the metabolic rift is much broader in the ZRC-VRC than in the ZRC Cabrera, where there is more potential for scaling out farm-level agroecology.

This is not to say that petty-commodity production a priori lends itself to agroecology transitions, as there are numerous conjunctural factors that shape the use of GR technologies in Cabrera. For instance, land subdivision increases pressures to maximise yields using chemical inputs, a process that is encouraged by the technical advice farmers have access to (Bayer agronomists and agricultural stores). Where agroecology is being practiced commercially, these farmers have had external assistance through workshops led by UMATA, SENA and UNIMINUTO. The technical and financial assistance provided by external allies (Mier y Terán Giménez Cacho et al, 2018) has been crucial not only in making women campesinos agents of agroecological resistance but also in hybridising farms.

Moving commercial farms towards fully organic production is challenging, especially if experimentation with agroecology means declining profit. This is evident in crop substitution programmes with coca growers, who are moving back to agriculture but not necessarily to practice agroecology. Some link themselves to export production (oil palm), some practice organic agriculture given the incentive of export (APROCASUR), whilst others focus on producing for national markets using GR or hybrid technologies (e.g. rice or livestock). These hybrid farms provide important steppingstones that can be built upon to scale-out agroecology. For instance, the anaerobic digestor on the *Bufalera* farm integrates crop and animal farming and produces organic soil amendments, whilst also saving money on fuel. Practical examples such as these are key to encouraging shifts in agriculture. Another possible strategy could be to build agroecological norms into the best practice recommendations of ZRC producer associations, providing small but achievable steps for farmers, as is being undertaken by SENA in the ZRC Cabrera and EcoBúfalo in the ZRC-VRC. Producer organisations and associations are not only important for building alternative markets but also as institutions for campesino to campesino

dialogue, as they are the most plausible vehicles to scale-out elements of agroecological practice.

The transition to agroecology can build upon existing conservationist practices that are evident in both ZsRC. This includes conservation efforts on individual farms, where areas of tree cover are protected in combination with crop farming to form biodiverse landscape matrices (cf. Perfecto et al, 2019). Conservation of pockets of primary forest is taking place on the majority of farms, despite the increasing problem of land subdivision in Cabrera and the intensification of agriculture. Conservation here reflects an alternative logic to the extractivist one that predominates in corporate/ capitalist agriculture. Additionally, both zones have examples of conservationist community norms against over hunting and fishing, as well as agreements around maintaining trees around water bodies. The ZRC-VRC also has the *Franja Amarilla*- a large area of forest reserve that was founded by campesinos. The conservationist identity and discourse in both zones could be broadened to include agriculture using the participative methodology at the heart of the ZRC model- JACs, public assemblies and state institutions in conversation with diverse campesino communities.

A strong agroecological discourse exists in both ZsRC but practice is inhibited by unfavourable market conditions, which are influenced by national and global policies that disadvantage smallholders. Some successful associative initiatives and AFNs have been put in place, such as the dairy plant in the ZRC Cabrera. The next step for ASOGNAC (the association that runs the dairy, collects the milk for this plant and produces cheese) is to continue promoting Level Three agroecology transitions across its milk producers' farms, by linking cattle farming to crop production in mixed farms. It should also aim to build its Cabreran clientele base and access niche organic markets in close provincial cities. This would support a shift to Level Four agroecology, which looks to 're-establish a more direct connection between those who grow our food and those who consume it' (Gliessman, 2016, p.188). Inherent to this is a process of informing consumers where food comes from and by whom it was grown and processed (cf. Butler & Dixon, 2012). This is evident in the AFNs in both ZsRC, as cheese and rice products clearly identify and foreground campesino producers and where these products have come from. The role of campesinos in food production nationally has been made more visible, due to the recent peace process. It is important

for campesinos in ZsRC to tap into the spaces opening up for victims of the conflict through projects that reconstruct the rural socio-economic fabric. In parallel, ANZORC's (the national union of ZsRC) lobbying for investment in infrastructure, strengthening of land tenure systems and more assistance for smallholders remain vital to the creation of a positive policy environment for the ZRC model across Colombia (cf. Mier y Terán Giménez Cacho et al, 2018). This is crucial if the disparate zones are to realise the agroecological goals set out in their respective sustainable development plans.

Although various elements and levels of agroecology exist in both ZsRC, this has not significantly abated CFR integration on the whole, but it has worked to create pockets of resistance. This is because contingent structural and external factors endanger the agroecological gains made. Conflict and violence have been primary tools in the neoliberalisation of the Colombian countryside, and this situation is worsening given the rise in attacks on environmental defenders and social movement leaders since the signing of the 2016 peace agreement (WOLA, 2018). The Colombian state is responsible for the safety of its citizens and has central influence in protecting the lives of smallholders and other rural dwellers. Forced displacement and violence have prevented campesinos from the right to settle on lands and so have curtailed economic development of the sector across the country. Nevertheless, the ZRC model has existed in a context of acute violence for 25 years and achieved significant progress by providing a rights framework for campesinos, as well as the organisational mechanisms to live in these areas and practice agriculture. This reflects the resilience of campesinos, their social movements and farming systems, which have survived and provided livelihoods in complex geo-political spaces through constant evolution and adaptation.

The final stage in Gliessman's agroecology transition envisages building 'a new global food system based on equity, participation, democracy, and justice, that is not only sustainable but helps restore and protect earth's life support systems' (2016, p.188). This is beyond the scope of two ZsRC in Colombia, but the model could be one of many foundation stones in the realisation of global resistance against CFR integration, as well as its human and ecological impacts, through the creation of linked alternative food systems. A comparison of the two ZsRC highlights the varied nature of the

challenges that confront agroecological transitions, but it also underlines the ways different campesino organisations have sought creative solutions that can be learnt from and trialled in other spaces. Agroecology is indeed incipient in both zones, but the possibilities and progress made are notable.

7.7 Conclusion

These case studies highlight the need for interdisciplinary food regime studies, which consider the various different elements of the food system. The two ZsRC case studies illustrate that CFR integration is helped by the shrinking campesino sector, which arises from a long political and socio-economic trajectory that disadvantages smallholders. For instance, the history of land inequality, linked to a weak land titling regime and incomplete cadastral survey, has facilitated violent land dispossession and in some cases like the ZRC-VRC this has been consolidated by economic dispossession (cf. Magdoff, 2013) and corporate land accumulation. Consequently, campesinos in this zone and around the country have fought for the ZRC model and the minimal rights to land it gives smallholders. The model does not radically push for agrarian reform in the nation, nor does it seek to overturn the global structures of the CFR, but in this context, it is a radical proposal that safeguards the presence of campesinos in rural Colombia and their right to produce food. The permanence of campesinos in this territory and the re-construction of socio-economic fabric in conflict-ridden communities is a form of CFR resistance. Viewing this through case studies provides a nuanced and situated rather than broad, schematic understanding of resistance.

Although the ZRC model has supported elements of campesino resistance, it is not fully equipped to resist landed inequality in Colombia, as land continues to be concentrated in the ZRC-VRC and sub-divided in Cabrera. This points to the lack of zoning enforcement mechanisms, as well as the absence of support from municipal, departmental and national state institutions. Without a national framework of agrarian reform, or at least a drive to title land and complete the cadastral survey, the ZRC model is unlikely to create havens of more equitable land ownership. The centrality of the nation state to CFR integration (Pechlaner & Otero, 2008, 2010; Otero, 2012; Pritchard et al, 2016) is once again evident in infrastructural underdevelopment. Poor infrastructure makes campesino agriculture economically impossible in areas such as

the ZRC-VRC, which instead has motivated a shift to coca cultivation and natural resource extraction. The wider legal, technological and financing structures endorsed by the state support agribusiness but actively discriminate against smallholder production. The shrinking of the campesino sector, due to economic dispossession from rising production costs associated with shifts to GR agriculture, provide the long-term justification for macro-economic CFR integration.

On the other hand, the neoliberal market turn and associated mode of regulation has also re-shaped the agricultural system in Cabrera and enabled CFR integration through the adoption of GR and NGR technologies. This generated a shift towards crops for regional and export markets, which has led to crop specialisation and less farm level diversity. Certified seeds and heavy chemical input use are crucial parts of this technological package, which has been disseminated by agribusinesses such as Yara and Bayer-Monsanto in Cabrera. Although corporations have not accumulated land in Cabrera, as in the ZRC-VRC, they have ensured CFR integration through technology and practice, a process which has been aided through state policies. The state has also been central to the GR technological shift taking place in the ZRC-VRC. This is because glyphosate has been weaponised and used in aerial fumigation of the coca crop. Furthermore, poor infrastructural development influences the use of glyphosate and other herbicides in large extensive pastures. The economically unsustainable nature of smallholder agriculture has resulted in extensive livestock holding, as livestock can be more easily transported – indeed they can move themselves. To save labour and compensate for the lack of casual labour available, many campesinos use herbicides in large pastures. Thus, in both ZsRC, campesinos are actively participating in CFR integration but for different contextually driven reasons.

Differentiated economic development in the zones has also led to distinct class formation among the peasantry, which has shaped agroecological expression. For instance, landless peasants and waged labourers have proliferated in the ZRC-VRC, as a result of the conflict, coca crop and poor infrastructure. This precludes most of the ZRC's campesinos from participating in on-farm agroecological resistance, as they do not have stable access to land or have moved away from crop production. This has been partly overcome in the ZRC Cabrera through labour-land sharing associations,

which re-integrate landless campesinos and waged-labourers into farming. However, the ZRC model does not propose solutions for this sector of the peasantry, which is problematic for scaling agroecology out. Agroecological expressions also differ among petty-commodity producers, depending on socio-economic circumstances, extensions of land, access to credit and agroecological technical support that is often provided by external allies.

The two cases provide new theoretical dimensions to both CFR and metabolic rift theorisation. They underline that CFR integration is not only furthered by corporate entities and nation states, but also by campesinos who participate in this system. Although their choices and actions are deeply shaped by factors such as macro-economic policy and state R&D, it is important to emphasise campesino agency, as they are also potential motors for change. Equally, non-state armed groups have used violence and conflict to further their goals of capital accumulation through the drugs trade, a process which has had beneficial outcomes for corporate licit agribusiness. In some cases, agribusinesses have worked directly with corporate groups. Moreover, war has also been an important means of expanding use of GR technologies, as glyphosate has been weaponised by the Colombian state. Nation states directly purchase chemical inputs, in addition to using R&D to encourage technological transitions. The case studies reveal that CFR integration and resistance can take place simultaneously, creating hybrid farming systems.

Hybridity should not be dismissed as CFR integration, as it represents resistance and a critical approach by campesinos who blend conventional agriculture with traditional or organic methods. Home gardens in particular display a plethora of agroecological methods from intercropping, crop rotation to reduced input and organic farming. Similarly, those who still farm in the ZRC-VRC tend to use no chemicals in their subsistence crops, instead opting for slash-and-burn agriculture and leaving land to fallow to rebuild fertility. In addition to these Level One and Two examples of agroecological transitions (cf. Gliessman, 2016), some farms have redesigned their agroecosystems in line with more holistic Level Three agroecological principles (ibid)- the ZRC-VRC's communal demonstration farm in Puerto Matilde is a prime example. The zones are also home to Level Four agroecology (ibid), as associations such as ORGANICAMPO in Cabrera and EcoBúfalo in the ZRC-VRC are bringing producers and consumers closer through alternative food networks, thus, working to heal the

metabolic rift that has distanced sites of production and consumption (cf. Foster, 1999).

In Colombia's context of violence and significant structural inequalities, including infrastructural underdevelopment and weak land tenure systems, the help of 'external allies' (Mier y Terán Giménez Cacho et al, 2018) who have provided expertise and funding has been crucial in the ZsRC to re-building petty-commodity production and transitioning along the agroecology scale. This has been fundamental to agroecological resistance amidst the absence of state technical and financial support. External allies have been key to establishing AFNs in Cabrera, as they have contributed financially or through technical assistance to both ASOGNAC's dairy plant and the shorter-circuit food network run by ORGANICAMPO, as well as EcoBúfalo's dairy plant and the numerous rice/sugar cane mills that have been constructed around the ZRC-VRC. However, both cases underscore that AFNs are only possible through local connections between campesinos, which are essential to establishing associations, learning and working together. These associations have scaled out through exchange and dialogue with their wider communities, as they educate through selling their produce. In this sense, agroecology is based on reconnecting elements of agriculture, including social connections between campesinos, rural dwellers and urban consumers, as well as deeply linking farming to its ecological consequences.

8 Conclusion

This place-based research underlines the way in which food regimes are built and challenged through the prisms of local histories and socio-economic conditions. The ZRC-VRC and ZRC Cabrera both display CFR integration and resistance, resulting in hybrid agricultural systems that are heavily shaped by their local contexts. The research hypothesised that ZsRC would not be integrated in the CFR, due to ongoing conflict in the countryside, but fieldwork revealed the opposite. This chapter proceeds by weighing up the general lessons from the thesis, its contribution to the key theoretical framings and what these results reveal about the ZRC model and its approach to rural development.

To the contrary of the hypothesis, the conflict in Colombia has underwritten CFR integration. It has been a primary means through which campesino access to land has been eroded, as a result of coercive and violent land dispossession, which has enforced a counter-agrarian reform in the ZRC-VRC and enabled corporate land accumulation in some cases. This highlights the fact that metabolic rifts do not only happen because of industrialisation but also as a result of conflict. Land dispossession shifts campesinos further away from petty-commodity production towards semi-proletarianisation and wage labour, which has been particularly evident in the ZRC-VRC. Moreover, the fewer staple crops produced domestically, the more cheaply imported food is required- legitimising export-oriented macro policies. This underlines the central role that conflict, and non-state armed groups can play in CFR integration. With this in mind, CFR theory and analysis must also look beyond formal and institutional settings to consider how illicit groups weaken petty-commodity production, thus, enabling corporations to fill in the widening food security gap.

The ZRC model is an important result of *colono* campesinos and coca protest/ resistance against their marginalisation from commercial and subsistence agriculture, due to the conflict and a myriad of structural factors. The ZRC model provided campesinos with the first rights-based framework and legal recognition of their right to land and other state services, i.e. infrastructure, credit, technological support and market access. Thus, the ZRC model itself is representative of the resistance of the precarious peasantry (cf. Zamosc, 1986) for more stable conditions in which to practice agriculture. Importantly, the model was not built for agrarian reform, therefore,

it does not have the instruments to redistribute land. This means the ZRC model does not address the needs of landless campesinos or those with limited access to land, as is the case with many campesinos in the ZRC Cabrera. In light of this, the ZRC model does not meet the differentiated needs of campesinos. The continuation of land-subdivision in Cabrera and the unabated search for virgin lands to colonise in the ZRC-VRC convey the need for mechanisms that enable agrarian reform- land redistribution and titling- or at least closer working relationships with state entities dedicated to these tasks. In addition, for the ZRC model to challenge top-down development and bolster grassroots or territorial development, local campesino groups must be given more responsibilities and decision-making powers over issues such as natural resource governance (Ribot, 2003; Poteete, 2004; Agarwal et al, 2014). Without this, communities will continue to look to state institutions for enforcement, instead of formulating these from below. These measures would help fortify the ZRC model's links with wider state apparatus.

The ZRC Cabrera has a creative solution to the issue of landlessness and insufficient access to land. *Paramberismo* unites those with land to labour, which creates a settled form of associative production that brings semi-proletarianised campesinos back towards commercial and subsistence petty-commodity production. This could be an interesting short-term solution to trial across ZsRC, especially in an ever complex national political context that is unfavourable to land reform and slow in implementing land titling or a cadastral survey. The diversity among campesinos in both ZSRC emphasises the need for agroecologists to take a differentiated understanding of campesinos to better investigate how to rebuild petty-commodity production, and not only focus on how to transition those already involved in agriculture towards more organic farming systems.

This lens of campesino differentiation has been particularly insightful for the CFR framework, as it provided insights into why certain agroecological expressions are more prevalent compared to others, which agroecology drivers have been important in catalysing these transitions, and equally why certain forms of CFR integration prevail. As established, landless campesinos in the ZRC-VRC are more likely to work as coca growers or in natural resource extraction, which both debilitate petty-commodity production. The corporate palm oil sector has flourished in these conditions because it provides (limited) employment, has the financial resources to

mitigate against infrastructural deficiencies and also works on abandoned lands (possibly belonging to displaced populations). The existence of a more stable commercial petty-commodity sector in Cabrera means that there is more work readily available for wage labourers. The vastly different infrastructural conditions, the presence of the coca economy and intensity of conflict in the two zones has enabled more consolidated smallholder production in Cabrera than in the ZRC-VRC. Meanwhile, those who practice livestock, as a strategy to manage assets and risks, and those who continue to practice petty-commodity agriculture evidence campesino resistance in the ZRC-VRC. Although livestock specialisation could be seen as a form of CFR technological integration, in this case it has been crucial to avoiding the erasure of petty-commodity production in the VRC. This case highlights the importance of understanding resistance in situated terms.

Women have also been crucial to CFR resistance in both ZsRC. The use of a gendered lens in analysing CFR integration and resistance has been another key contribution of this thesis, which has underlined the central role they play in bridging the metabolic rift. In both cases, women campesinos have reintroduced subsistence production to their families and wider communities, helping to transition towards organic production. These initiatives have largely been focussed on home gardens, which link directly to nutrition and diversifying subsistence based diets. Not all these projects have been successful, those in the ZRC-VRC have been particularly frustrated by aerial fumigation and the ongoing difficulties faced by agriculture, i.e. infrastructural deficiencies. On the other hand, ORGANICAMPO in Cabrera have been instrumental in re-asserting the role of women as producers and constructing an AFN that re-links sites of production and consumption. These cases convey that where men are occupied in petty-commodity production for markets or undertaking waged labour away from farms, women could be essential to reconnecting families to organic subsistence farming. External allies (cf. Mier y Terán Giménez Cacho et al, 2018) have been particularly important in encouraging women to work outside of their domestic roles through economic incentives but also through the provision of accompaniment and technical assistance, both of which are crucial in raising the confidence levels of women campesinos.

The limited practice of agriculture in the ZRC-VRC, the proliferation of semi-proletarianised campesinos, as well as the disadvantageous conditions for

commercialisation has meant that CFR integration through technology and practice has been curtailed. This contrasts significantly to Cabrera, where petty-commodity production has transitioned towards more capitalist modes of farming, which has been achieved through agricultural intensification, crop specialisation and production for export markets. Corporations have been instrumental to this process by sending agronomists to Cabrera and through franchised agricultural stores. However, campesinos have also had agency and opted for these technologies to increase yields. These choices have been shaped by fluctuating market prices, due to higher levels of imports. In a context where campesinos are being economically marginalised and dispossessed (cf. Magdoff, 2013), one could arguably interpret the use of GR technologies as a form of resistance because this has enabled campesinos to compete in neoliberal markets and prevented their erasure from agriculture in this Zone. Nevertheless, it is important to note that use of GR technologies does not necessarily ensure campesinos remain in farming over the long-term, as increasing input costs can often outweigh profit, resulting in financial ruin and eventual marginalisation from agriculture.

Campesino resistance and a critical approach to farming is perhaps more clearly visible through the hybrid application of GR technologies with companion planting, crop rotation or the use of organic soil amendments. The combination of industrial and agroecological methods constitutes resistance because campesinos are critically applying GR technologies. These expressions of resistance are not always undertaken with political aims of food sovereignty or resisting corporate influence in agriculture, but they are nonetheless conjunctural instances of campesinos agency that question the industrial model of agriculture. The role of campesinos should not be fetishized or romanticised, as they do contribute to sustaining the CFR through adoption of these technologies, but they also experiment and combine these with agroecological methods. More work needs to be done around their motivations for opting to use GR technologies to better understand how to scale agroecology in diverse places.

Metabolic rift theory provides insight into scaling agroecology, as it highlights the causes of campesinos moving away from the countryside or from on-farm organic methods towards industrial prescriptive ones. This theory is most helpful in underlining the need to re-build local connections to exchange knowledge, to bridge the distance

between rural producers and urban consumers and so increase communication around how food is produced. Metabolic rift theory helps to reveal that local connections between diverse campesinos (petty-commodity producers, semi-proletariat and women) enable change in local food systems, as they provide the solidarity networks to build AFNs, to exchange surplus subsistence crops, to hold discussions around eating more varied foods and the implementation of various agroecological methods. These local connections have also been fundamental to the construction of norms around conservation in both ZsRC, experiences which provide crucial lessons for agroecological scaling. Connecting conservation measures to agricultural practice is an important step for strengthening these connections, as well as providing more forums of dialogue and reflection for campesino knowledge exchange.

Local connections alone have not catalysed resistance in the ZsRC, external allies (ranging from state institutions, inter/national universities and NGOs) have provided key sources of technical and financial support. In both cases the ZRC model has connected diverse campesinos to institutions, which has enabled the identification of different actors tasked with rural development and helped to source funding. The history of the ZRC model points to the fact that the state is not always complicit in CFR integration, as it can be a promoter of resistance, and at the very least is an arena of contention (cf. Otero, 2012). It has also provided a discursive identity for the zones as territories designed for sustainable campesino development, which gives funders a clear message. Comparative analysis across the two cases, however, reveals that agricultural development in the zones remains constrained by the national agrarian dynamic. For instance, the absence of distributive agrarian reform, comprehensive land titling or a cadastral survey undermines petty-commodity production. Moreover, the model is not equipped to manage disparities in land owning, as it excludes landless campesinos from its vision of development. In turn, this undermines the ability to control the agricultural frontier and develop a sustainable model of agriculture- both key pillars of the model.

This research provided information about the material agricultural developments in two ZsRC, using an interdisciplinary analytical framework that situates the corporate food regime. The two cases have conveyed important insights into the challenges of

agricultural development in sites of ongoing conflict. With this in mind, this research could be expanded to include broader comparisons with other countries experiencing internal conflicts such as Uganda, Myanmar, India and Mexico. These cases would provide interesting comparisons around the interaction between different non-state armed actors, conflict and the development of agriculture along industrial or agroecological lines, as well as whether conflict enables the corporatisation of agriculture in other cases.

This thesis has illustrated the varied ways CFR integration takes place in two ZsRC in Colombia, for instance via straightforward corporate land accumulation or through violent conflict that has expelled smallholders from their land. This can be undertaken by numerous actors including but not limited to corporations. In fact, other actors have been crucial to CFR integration in Colombia, such as the state, non-state armed actors and campesinos themselves. CFR integration is a complex process undertaken through different dimensions that are heavily interlinked. Likewise, campesino resistance is present in all four analytical dimensions. Despite highly asymmetrical conditions and ongoing conflict, framed by macroeconomic policies that disadvantage smallholder production, campesinos in both cases continue to produce food commercially and for subsistence in sites of conflict. Diverse campesinos are contesting the CFR through a myriad of conjunctural expressions from everyday acts of resistance, like sharing surplus produce, to building solidarity connections through AFNs and hybrid agriculture. This thesis underlines the need to see framing structures and concepts, such as CFR integration and resistance, through the lens of situated cases.

References

Abebe, Y; Bogale, A; Hambridge, M; Stoecker, B. (2008). Inadequate Intakes of Dietary Zinc Among Pregnant Women from Subsistence Households in Sidama, Southern Ethiopia. Public Health Nutrition (11:4), 379-386.

Acevedo-Osorio, A; Angarita, A. (2014). *Proyecto Territorio, Memoria y Desarrollo en Cundinamarca: Una Mirada a Las Zonas De Reserva Campesina De Cabrera, Cundinamarca*. Bogota: Colombia.

Acevedo-Osorio, A; Martínez-Collazos. (2016). La Agricultura Familiar en Colombia: Estudios de Caso Desde La Multifuncionalidad y Su Aporte a La Paz. *Fondo Edititorial Ediciiones Universidad Cooperativa De Colombia*. Bogota: Colombia.

Acevedo-Osorio, A; Chohan, J. (2019). Agroecology as Social Movement and Practice in Cabrera's Peasant Reserve Zone, Colombia. *Agroecology And Food Systems Studies*.

Alcaldía Municipal De Cabrera. (2008*). Formulación Del Esquema De Ordenamiento Territorial Del Municipio De Cabrera*. Alcaldía Municipal De Cabrera. Cabrera: Colombia.

Alonso-Fradejas, A; Borras, S.M; Holmes, T; Holt-Giménez, E; Robbins, M.J. (2015) Food Sovereignty: Convergence and Contradictions, Conditions and Challenges. *Third World Quarterly* (36:3), 431-448.

Agarwal, A; Wollenburg, E; Persha, L. (2014). Governing agriculture-forest landscapes to achieve climate change mitigation. *Global Environmental Change* (28), 270–280.

Agarwal, B. (2014). Food Sovereignty, Food Security and Democratic Choice:

Critical Contradictions, Difficult Conciliations. *The Journal of Peasant Studies* (41:6), 1247-1268.

Agencia Nacional De Tierras. (2017). *Las Zonas De Reserva Campesina*. Bogota: Colombia.

Aguilar-Støen, M; Toni, F; Hirsch, C. (2016). 'Forest Governance in Latin America: Strategies for Implementing REDD'. In (eds) De Castro, D; Hogenboom, B; Baud, M. *Environmental Governance in Latin America*. Palgrave Macmillan. Basingstoke: United Kingdom.

Akram-Lodhi, H; Kay, C. (2010). Surveying the Agrarian Question (Part 2): Current Debates and Beyond. *The Journal of Peasant Studies* (37:2), 255-284.

Aktar, W; Sengupta, D; Chowdhury, A. (2009). Impact of Pesticides Use in Agriculture: Their Benefits and Hazards. *Interdisciplinary Toxicology* (2:1), 1-12.

Aliber, M; Hart, G. (2009). Should Subsistence Agriculture be Supported as a Strategy to address Rural Food Insecurity?. *Agrekon* (48:4), 434-458.

Altieri, M. (1999). Applying Agroecology to Enhance the Productivity of Peasant Farming Systems in Latin America. *Environment, Development and Sustainability* (1), 197-217.

Altieri, M; Nicholls, C. (2002). Un Método Agroecológico Rápido para la Evaluación de la Sostenibilidad de Cafetales. *Manejo Integrado De Plagas* (64:3), 17-24.

Altieri, M; Toledo, V. (2011), The Agroecological Revolution in Latin America: Rescuing Nature, Ensuring Food Sovereignty and Empowering Peasants. *The Journal of Peasant Studies* (38*:3)*, 587-612.

Asociación Campesina Valle del Río Cimitarra; Corporación Desarrollo y Paz del Magdalena Medio; Instituto Colombiano de Desarrollo Rural. (2012). *Plan De Desarrollo Sostenible (2012-2022)*. Barrancabermeja: Colombia.

Asociación Campesina Valle del Río Cimitarra. (2012). *Economía Campesina en la Región de la Zona de Reserva Campesina del Río Cimitarra: Propuesta de Economía Alternativa y Sostenible*. Barrancabermeja: Colombia.

Asociación Campesina Valle del Río Cimitarra. (2014). Estudio de Tenencia de La Tierra Y el Territorio, Usos y Conflictos en La ZRC del Valle del Río Cimitarra. *Programa de las Naciones Unidas para el Desarrolo*. Barrancabermeja: Colombia.

Asociación Campesina Valle del Río Cimitarra. (2018). *Informe de Gestion Año 2017*. Asociación Campesina Valle del Río Cimitarra. Barrancabermeja: Colombia.

Agencia Nacional de Tierras. (2017). *Las Zonas de Reserva Campesina*. Bogotá: Colombia.

Araghi, F. (2003). Food Regimes and The Production of Value: Some Methodological Issues. *The Journal of Peasant Studies* (30:2), 41-70.

Araghi, F. (2009). Accumulation by Displacement: Global Enclosures, Food Crisis, And the Ecological Contradictions of Capitalism. *Review (Fernand Braudel Centre)* (32:1), 113-146.

Arévalo Uribe, D. (2012). Una Mirada a la Agricultura de Colombia desde su Huella Hídrica. *WWF*. Bogota: Colombia.

Bajwa, A. (2014). Sustainable Weed Management in Conservation Agriculture. *Crop Protection* (65), 105-113.

Ballvé, T. (2013). Grassroots Masquerades: Development, Paramilitaries, And Land Laundering in Colombia. *Geoforum* (50), 62-75.

Banco De La República. (2013). Composición de la Economía de la Región Caribe de Colombia. *Banco De La República*. Cartegena: Colombia.

Barthel, S; Crumley, C; Svedin, U. (2013). Biocultural Refugia: Combating the Erosion of Diversity in Landscapes of Food Production. *Global Environmental Change* (23:5), 1142-1152.

Beck, U; Sznaider, N. (2000). Unpacking Cosmopolitanism for the Social Sciences: A Research Agenda. *The British Journal of Sociology*, 381-403.

Bellamy, A.S; Ioris, A. (2017). Addressing the Knowledge Gaps in Agroecology and Identifying Guiding Principles for Transforming Conventional Agri-Food Systems. *Sustainability* (9:330), 1-17.

Bello, M. (2003). El Desplazamiento Forzado en Colombia: Acumulación de Capital y Exclusión Social. *Revista Aportes Andinos* (7), 1-8.

Bergius, M. (2014). Expanding the Corporate Food Regime- The Southern Agricultural Growth Corridor of Tanzania (Thesis). Norwegian University of Life Sciences.

Bernstein, H. (2009). V.I.Lenin and A.V.Chayanov: Looking Back, Looking Forward. *The Journal of Peasant Studies* (36:1), 55-81.

Bernstein, H. (2015). Food Regimes and Food Regime Analysis: A Selective Survey. Conference Paper for *Land Grabbing, Conflict and Agrarian-Environmental Transformations: Perspectives from East and Southeast Asia*. Chiang Mai University.

Bernstein, H. (2016). Agrarian Political Economy and Modern World Capitalism: The Contributions of Food Regime Analysis. *The Journal of Peasant Studies* (43:3), 611-647.

Berry, A. (2006). Has Colombia Finally Found An Agrarian Reform That Works?. Conference Paper for *Egalitarian Development in the Era of Globalization*. University of Massachusetts Amherst.

Bin, D. (2018). So-Called Accumulation by Dispossion. *Critical Sociology* (44:1), 75-88.

Blanquer, J.M; Fajardo, D. (1991). *La Descentralización En Colombia: Estudios Y Propuestas*. Institut Français d'Etudes Andines/ Universidad Nacional De Colombia. Lima: Peru.

Blok, S. (2016). *Zonas De Reserva Campesina: An Alternative Model for Rural Development in Colombia* (Masters Thesis). Utrecht University. Utrecht: Holland.

Bohorquez, A. (2013). Las Zonas de Reserva Campesina Como Figuras para el Desarollo Rural Colombiano. *Perspectivas Rurales* (11: 22), 109-120.

Borras, S. (2003). Questioning Market-Led Agrarian Reform: Experiences from Brazil, Colombia And South Africa. *Journal of Agrarian Change* (3:3), 367-394.

Bulmer-Thomas, V. (2003). *The Economic History of Latin America Since Independence: Second Edition.* Cambridge University Press. Cambridge: United Kingdom.

Burger, J; Weinberger, V; Marquet, P. (2017). Extra-metabolic Energy Use and the Rise in Human Hyper-Density. *Scientific Reports* (7), 1-5.

Butler, C; Dixon, J. (2012). Plentiful Food? Nutritious Food?. In (eds), Rosin, C; Stock, P; Campbell, H. Food Systems Failure: *The Global Food Crisis and the Future of Agriculture*. Earthscan. London; New York.

(eds) Cano, G; Iregui, A.M; Ramírez, M.T; Tribín, A.M. (2016). *El Desarrollo Equitativo, Competitivo y Sostenible del Sector Agropecuario en Colombia*. Banco De Desarrollo De América Latina & Banco De La República. Bogotá: Colombia.

Camacho, A; Mejía, D. (2017). The Health Consequences of Aerial Spraying of Illicit Crops: The Case of Colombia. *Journal of Health Economics* (54), 147-160.

Campbell, H. (2009). Breaking New Ground in Food Regime Theory: Corporate Environmentalism, Ecological Feedbacks and the 'Food From Somewhere' Regime?. *Agriculture Human Values (26)*, 309-319.

Cardoza Sanchez, G. (2015). *Vacíos Jurídicos y Oportunidades: Zonas de Reserva Campesina* (Thesis). Pontificia Universidad Javeriana. Cali: Colombia.

Carolan, M. (2005). Realism Without Reductionism: Toward an Ecologically Embedded Sociology. *Human Ecology Review* (12:1), 1-20.

Carolan, M. (2005). Society, Biology, And Ecology: Bringing Nature Back into Sociology's Disciplinary Narrative Through Critical Realism. *Organization and Environment* (18:4), 393-421.

Carolan, M. (2012). Food and Human Security Index: Rethinking Food Security and 'Growth'. *International Journal of Sociology of Agriculture And Food* (19:2), 176-200

Carolan, M. (2014). Getting to the Core of Food Security and Food Sovereignty: Relationality With Limits?. *Dialogues in Human Geography* (42:2), 218-220

Carolan, M. (2016). *The Sociology of Food and Agriculture: Second Edition*. Routledge, London, UK: New York, USA.

Castellanos-Navarrete, A; Jansen, K. (2018). Is Oil Palm Expansion a Challenge to Agroecology? Smallholders Practising Industrial Farming in Mexico. *Journal of Agrarian Change (18:1)*, 132- 155.

Centro Nacional De Memoria Historia. (2013). La Politica de Reforma Agraria YyTierras en Colombia: Esbozo de una Memoria Institucional. *Imprenta Nacional De Colombia*. Bogota: Colombia

Centro Nacional De Memoria Histórica. (2016). Tierras y Conflictos Rurales: Historia, Políticas Agrarias y Protagonistas. *Imprenta Nacional De Colombia*. Bogota: Colombia.

Chappell, J; Wittman, H; Bacon, C; Ferguson, B; Barrios, L; Barrios, R; Jaffee, D; Lima, J; Méndez, E; Morales, H; Pinto, L; Vandermeer, J; Perfecto, I. (2013). Food Sovereignty: An Alternative Paradigm for Poverty Reduction and Biodiversity Conservation in Latin America. *F1000Research* (2:235), 1-17.

Clausen, R; Clark, B; Longo; S. (2015). Metabolic Rifts and Restoration: Agricultural Crises and the Potential of Cuba's Organic, Socialist Approach to Food Production. *World Review of Political Economy* 6 (1:4), 4-32.

Clement, M. (2011). The Town-Country Antithesis and the Environment: A Sociological Critique of a 'Real Utopian' Project. *Organization and Environment* 24(3), 292–311.

Colombian Ministry of Environment; Colombian Ministry of Health. (2014). *Parte 1 Glifosato*. Bogota: Colombia.

Colombian Ministry of Agriculture. (2014). *Palma de Aceite: Evaluaciones Agropecuarias Municipales*. Colombian Ministry of Agriculture. Bogota: Colombia.

Coomes, O; Grimard, F; Burt, G. (2000). Tropical Forests and Shifting Cultivation: Secondary Forest Fallow Dynamics Among Traditional Farmers of the Peruvian Amazon. Ecological Economics (32: 2000), 109-124.

Cooper, J; Dobson, H. (2007). The Benefits of Pesticides to Mankind and the Environment. *Crop Protection* (26:9), 1337-1348.

Contraloría General de la República. (2015). *Informe de Auditoria a Políticas Pública (Actuación Especial) INCODER- Zonas de Reserva Campesina (ZRC_ y Zonas de Desarrollo Empresarial (ZRE). Instrumentos de la Política de Desarrollo Rural (Vigencias 1997 a 2014)*. Contraloría General de la República. Bogotá: Colombia.

Córdoba, L. (2017). *Zona de Reserva Campesina del Valle Del Río Cimitarra: Informe de Gestión*. Agencia Nacional De Tierras. Barrancabermeja: Colombia.

Corporación Desarrollo y Paz Del Magdalena Medio. (2011). *Plataforma Municipal para la Autonomía Alimentaria en Simiti: Informe Final de Productos*. Barrancabermeja: Colombia.

Das, R. (2017). David Harvey's Theory of Accumulation by Dispossession: A Marxist Critique. *World Review of Political Economy* (8:4), 590-616.

Deininger, K; Lavadenz, I. (2004). *Colombia: Land Policy in Transition*. World Bank. Washington, D.C: USA.

Delgado, M; Martin, J; Miralles De Imperial, R; León-cófreces, C; Cruz García, M. (2010). Phytotoxicity of Uncomposted and Composted Poultry Manure. *African Journal of Plant Science* 4(5),151–59.

Departamento Nacional de Planeación. (2006). Plan Nacional de Desarrollo: 2006-2010. Departamento Nacional de Planeación. Bogotá: Colombia.

Departamento Nacional de Planeación. (2010). Plan Nacional de Desarrollo: 2010-2014. Departamento Nacional de Planeación. Bogotá: Colombia.

Dixon, M. (2014). The Land Grab, Finance Capital, and Food Regime Restructuring: The Case of Egypt. *Review of African Political Economy* (41:140), 232-248.

Dourojeanni, J.M. (1992). Environmental Impact of Coca Cultivation and Cocaine Production in the Amazon Region of Peru. *Bulletin on Narcotics* (44:2), 37-53.

Drewnowski, A; Popkin, B. (1997). The Nutrition Transition: New Trends in the Global Diet. *Nutrition Reviews* (55:2), 31-43.

Esser, F; Vliegenthart, R. (2017). Comparative Research Methods. *The International Encyclopedia of Communication Research Methods*, 1-22.

Fajardo, D. (1983). Notas Sobre el Minifundio en Colombia: Su Marco Historico y Espacial. *Maguaré* (2), 155-176.

Fajardo, D. (2000). 'Las Zonas de Reserva Campesina: Estrategia de Desarrollo Regional y Contra el Desplazamiento?'. In (ed) Darío González. *Las Claves Territoriales de la Guerra y la Paz*. Agenda Ciudadana por la Paz, la Vida y la Libertad. Bogota: Colombia.

Fajardo, D. (2010). *La Colombia de los Agrocombustibles*. Grupo Semillas. Bogotá: Colombia.

Fajardo, D. (2014). *Las Guerras de la Agricultura Colombiana 1980-2010*. ILSA. Bogotá: Colombia.

FAO. (2014). *Agroecología paralLa Agricultura Familiar Campesina*. Bogotá: Colombia.

FAO. (2017). *The State of Food Security in the World: Building Resilience for Peace and Security*. FAO. Rome: Italy.

FAO. (2018). *Las Zonas de Reserva Campesina: Retos y Experiencias Significativas en su Implementación: Aportes para una Adecuada Aplicación de la Ley 160 De 1994, la Reforma Rural Integral y las Directrices Voluntarias para la Gobernanza Responsible de la Tenencia de la Tierra*. FAO & ANT. Bogotá: Colombia.

Ferro, J; Tobón, G. (2012). Zonas de Reserva Campesina y la Naciente Autonomía Territorial. *Autonomías Territoriales: Experiencias y Desafíos*. Observatoria de Territorios Étnicos. Bogota: Colombia.

Forero, J; Davila, R. (1997). Cooperativismo y Desarrollo Rural en una Provincia Colombiana. *Cuadernos fe Desarrollo Rural* (38:39), 25-33.

Forero, L; Urrea, D. (2014). *Colombia and Free Trade Agreements: Between Mobilisation and Conflict*. Censat Agua Viva/ Transnational Institute. Bogota: Colombia.

(eds) Forgacs, D; Hobsbawm, E. (2000). *The Antonio Gramsci Reader: Selected Writings: 1916-1935*. New York University Press. New York: United States.

Forsyth, Tim (2001) *Critical realism and political ecology.* In (eds.) Lopez, J and Potter, G. *After Postmodernism: An Introduction to Critical Realism. Continuum Studies in Critical Theory*. Athlone Press. London: United Kingdom.

Forsyth, T. (2003). *Critical Political Ecology: The Politics of Environmental Science*. Routledge. London: United Kingdom.

Forsyth, T. (2008). Political Ecology and the Epistemology of Social Justice. *Geoforum* 39(2), 756–64.

Forsyth, T. (2015). Integrating Science and Politics in Political Ecology. In (ed) R.L. Bryant. *The International Handbook of Political Ecology*. Edward Elgar. Cheltenham: United

Kingdom.

Foster, J. (1999). Marx's Theory of Metabolic Rift: Classical Foundations for Environmental Sociology. *American Journal of Sociology* (105:2), 366-405.

Fox, J; Minh Truong, D; Rambo, T; Tuyen, P, Cuc, L; Leisz, S. Shifting Cultivation: A New Old Paradigm for Managing Tropical Forests. *BioScience* (50: 6), pp.521-528

Fragoso, C; Leyequién, E; García-Robles, M; Montero-Muñoz, J; Rojas, P. (2015). Dominance of Native Earthworms in Secondary Tropical Forests Derived from Slash-and-Burn Mayan Agricultural Practices (Yucatán, Mexico). *Applied Soil Ecology* (104: 2016), 116-124.

Friedmann, H; Mcmichael, P. (1989). Agriculture and The State System: The Rise and Decline of National Agricultures, 1870 to the Present. *Sociologia Ruralis* (29:2), 93–117.

Friedmann, H. (1993). The Political Economy of Food: A Global Crisis. *New Left Review* (197), 29–57.

Friedmann, H. (2005). From Colonialism to Green Capitalism: Social Movements and Emergence of Food Regimes. In (eds) Buttel, F; Mcmichael, P. *New Directions in The Sociology of Global Development*. Elsevier. Amsterdam: Netherlands.

Friedmann, H. (2009). Discussion: Moving Food Regimes Forward: Reflections on Symposium Essays. *Agriculture and Human Values* (26), 335–344.

Galli, R. (1979). Colombia: El Desarrollo Rural Como Mecanismo de Control Social. *Revista Mexicana De Sociología* (41:2), 545-570.

Galli, R. (1981). 'Colombia: Rural Development as Social and Economic Control'. In (ed) R. Galli. *The Political Economy of Rural Development: Peasants, International Capital, and the State*. State University Of New York Press. Albany: United States.

García Reyes, P. (2013). *Informe III Encuentro Nacional de las Zonas De Reserva Campesina: San Vicente del Caguán 22 y 23 de Marzo.* Programa Observatorio de Restitución de Bienes de Propiedad Rural. Bogota: Colombia.

Gibson, R; Abebe, Y; Hambidge, M; Arbide, I; Teshome, A; Stoecker, B. (2009). Inadequate Feeding Practices and Impaired Growth Among Children from Subsistence Farming Households in Sidama, Southern Ethiopia. *Materal and Child Nutrition* (5:3), 260-275.

Girlado, O. (2008). Seguridad Alimentaria y Producción Pecuaria Campesina: El Caso de la Localidad Rural de Sumapaz. *Revista Luna Azul (27)*, 49-59.

Giraldo, O; & Rosset, P. (2018). Agroecology as a Territory in Dispute: Between Institutionality and Social Movements. *The Journal of Peasant* Studies (45:3), 545-564.

Glaser, B; Strauss, A. (1967). *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Aldine. New Bruswick: USA.

Gliessman, S. (2011). Transforming Food Systems to Sustainability with Agroecology. *Journal of Sustainable Agriculture* (35:8), 823–25.

Gliessman, S. (2012). Agroecology: Growing the Roots of Resistance. *Agroecology and Sustainable Food Systems* (37:1), 19–31.

Gliessman, S. (2015). *Agroecology: The Ecology of Sustainable Food Systems*. CRC Press/ Taylor & Francis Group. Boca Raton: London: New York.

Gliessman, S. (2016). Transforming Food Systems with Agroecology. *Agroecology and Sustainable Food Systems* (40:3), 187-189.

Global Nutrition Report. (2017). *Nourishing the Sdgs*. Development Initiatives Poverty Research Ltd. Bristol: United Kingdom.

Gonzalez, R; Thomas, J; Chang, M. (2018). Translating Agroecology into Policy: The Case of France and the United Kingdom. *Sustainability* (10:2930), 2-19/

Grajales, J. (2015). Land Grabbing, Legal Contention and Institutional Change in Colombia. *The Journal of Peasant Studies*, *42*(3–4), 541–560.

Grolleau, G; Ibanez, L; Mzoughi, N. (2015). Helping Eco-Labels to Fulfill their Promises. *Climate Policy* (16:6), 792-802.

Guarín, A. (2013). The Value of Domestic Supply Chains: Producers, Wholesalers, and Urban Consumers in Colombia. *Development Policy Review* (31:5), 511-530.

Gunderson, R. (2011). The Metabolic Rifts of Livestock Agribusiness. *Organization and Environment* 24(4), 404–22.

Gutiérrez, J. (2014). Smallholders' Agricultural Cooperatives in Colombia: Vehicles for Rural Development?. *Desarrollo Y Sociedad* (73), 219-271.

Guyton, K; Loomis, D; Grosse, Y; Ghissassi, F; Benbrahim-Tallaa, L; Guha, N. (2015). Carcinogenicity of Tetrachlorvinphos, Parathion, Malathion, Diazinon, An Glyphosate. *The Lancet* (16:5), 490-491.

Hall, D. (2013). Primitive Accumulation, Accumulation by Dispossession and the Global Land Grab. *Third World Quarterly* (34:9), 1582-1604.

Harvey, D. (2004). The 'New' Imperialism: Accumulation by Dispossession. *Socialist Register*, 63-87.

Hayakawa, K; Kimura, F. (2014). How Much do Free Trade Agreements Reduce Impediments to Trade?. *Open Economic Review* (26), 711-729.

Heffernan, W. (2000). Concentration of Ownership and Control in Agriculture. In (eds.) Magdoff,F; Bellamy-Foster, J; Buttel, F. *Hungry for Profit.* Monthly Review Press. New York: United States.

Heis, A. (2015). The Alternative Agriculture Network Isan and its Struggle for Food Sovereignty – a Food Regime Perspective of Agricultural Relations of Production in Northeast Thailand. *Austrian Journal of South-East Asian Studies*, 8(1), 67-86.

Hewitt, A.J; Solomon, K; Marshall, E. (2009). Spray Droplet Size, Drift Potential, and Risks to Nontarget Organisms from Aerially Applied Glyphosate for Coca Control in Colombia. *Journal of Toxicology **and** Environmental Health* (72: 15-16), 921-929.

Himmelgreen, D; Cantor, A; Arias, S; Daza, N. (2014). Using a Biocultural Approach to Examine Migration/Globalization, Diet Quality, and Energy Balance. *Physiology and Behavior* (134), 76-85.

Holt-Giménez, E. (2006). *Campesino a Campesino: Voices from Latin America's Farmer to Farmer Movement for Sustainable Agriculture*. Food First Books. Oakland: California.

Holt-Giménez, E; Shattuck, A. (2011). Food Crises, Food Regimes And Food Movements: Rumblings of Reform or Tides of Transformation?. *The Journal of Peasant Studies* (38:1), 109- 144.

Holt-Giménez, E; Shattuck, A; Altieri, M; Hans, Herren; Gliessman, S. (2012). We Already Grow Enough Food for 10 Billion People…and Still Can't End Hunger. *Journal of Sustainable Agriculture* (36:6), 595-598.

Holt-Gimenez, E; Altieri, M. (2013). Agroecology, Food Sovereignty, and the New Green Revolution. *Agroecology and Sustainable Food Systems* (37:1), 90-102.

Horne, R. (2009). Limits to Labels: The Role of Eco-Lables in the Asssessment of Product Sustainability and Routes to Sustainable Consumption. International Journal of Consumer Studies (33:2), 175-182.

Hunsberger, C; Alonso-Fradejas, A. (2016). The Discursive Flexibility of 'Flex Crops': Comparing Oil Palm and Jatropha. *The Journal of Peasant Studies* (43:1), 225-250.

Igoe, J; Brockington, D. (2007). Neoliberal Conservation: A Brief Introduction. *Conservation and Society* (5:4), 432-449.

Instituto Latinoamericano Para una Sociedad y Un Derecho Alternativo & Instituto Colombiano de Desarrollo Rural. (2012). *Plan De Desarrollo Sostenible Zona de Reserva Campesina de Cabrera (Cundinamarca): Por una Zona de Reserva Campesina Garante de Derechos Económicos, Sociales, Culturales y Ambientales para los Cabrerunos*. ILSA/INCODER. Bogota: Colombia.

Instituto Latinoamericano para una Sociedad y un Derecho Alternativo. (2015) *Zonas de Reserva Campesina de La Región Central Informe De Derechos Humanos*. Bogota: Colombia.

Instituto Colombiano de Antropología & Corporación Ecofondo. (1998). *Poblamiento y Cambio del Paisaje en Sumapaz*. Bogota: Colombia.

Instituto Colombiano de Desarrollo Rural. (2012). *Las Zonas de Reserva Campesina en un Contexto Insitucional de Reactivación*. Ministerio de La Agricultura. Bogota: Colombia.

Ioris, A. (2015). Cracking the Nut of Agribusiness and Global Food Insecurity: In Search of

a Critical Agenda of Research. *Geoforum* (63),1–4.

Ioris, A. (2018). The Politics of Agribusiness and the Business of Sustainability. *Sustainability (*10:1684), 1-21.

Jakobsen, J. (2018). Neoliberalising the Food Regime 'Amongst its Others': The Right to Food and the State in India. *The Journal of Peasant Studies*, 1-21.

Jansen, K. (2014). *Food Sovereignty: Re-Peasantization/Dispossession/Agro-Ecology Versus Expanded Reproduction*. Conference Paper in Food Sovereignty: A Critical Dialogue. International Institute of Social Studies. The Hague: Netherlands.

Jaramillo, C. (2001). Liberalization, Crisis, and Change: Colombian Agriculture in the 1990s. *Economic Development and Cultural Change* (49:4), 821–46.

Jaramillo, C. (2002). *Crisis y Transformación de la Agricultura Colombiana: 1990-2000*. Fondo de Cultura Economica. Bogota: Colombia.

Kay, C. (2008). Reflections on Latin American Rural Studies in the Neoliberal Globalization Period: A New Rurality?. Development and Change (39: 6), 915-943.

Kay, C. (2015). The Agrarian Question and the Neoliberal Rural Transformation in Latin America. *European Review of Latin American and Caribbean Studies / Revista Europea de Estudios Latinoamericanos y del Caribe* (100), 78-83.

Krasner, S. (1982). Structural Causes and Regime Consequences: Regimes as Intervening Variables. *International Organization* (36: 2), 185-205.

LeGrande, C. (1986). *Frontier Expansion and Peasant Protest in Colombia: 1850-1936*. University of New Mexico Press. Texas: USA.

(eds) Lester, S; Mercurio, B. (2009). *Bilateral and Regional Trade Agreements*. Cambridge University Press. Cambridge: United Kingdom.

Longo, S; Clausen, R; Clark, B. (2015). *The Tragedy of the Commodity*. Rutgers University Press. New Brunswick: United States.

Lote, T. (2016). *Trans-formaciones Campesinas. A Propósito de la Economía Campesina en las Zonas de Reserva Campesina de Cabrera y del Valle del Río Cimitarra* (Masters Thesis). Universidad Nacional De Colombia. Bogota: Colombia.

(eds) Machado, A; Suárez, R. (1999). *El MercadodDe Tierras en Colombia: Una Alternativa Viable?*. Tercer Mundo Editores. Bogotá: Colombia.

Machado, A. (2002). *Tenencia de Tierras, Problema Agrario y Conflicto*. Universidad Nacional. Bogotá: Colombia.

(ed) Machado, A. (2005). *La Academia y el Sector Rural. Universidad Nacional de Colombia*. Bogotá: Colombia.

Magdoff, F. (2013) Twenty-First-Century Land Grabs: Accumulation by Agricultural Dispossession. *Monthly Review* Vol.65 No. 6, Nov 2013, pp.1-18.

Magnan, A. (2013). The Rise of a Prarie Giant: The Canadian Wheat Board in Food Regime History. In (eds) Steven Wolf & Alessandro Bonanno. *The Neoliberal Regime in the Agri-Food Sector: Crisis, Resilience, and Restructuring*. Routledge. London: United Kingdom.

Malkanthi, R; Sila, K; Chandrasekera, G, Jayasingha, J. (2007). High Prevalence of Malnutrition and Household Food Insecurity in the Rural Subsistence Paddy Farming Sector. *Tropical Agricultural Research* (19), 136-149.

Mancus, P. (2007). Nitrogen Fertilizer Dependency and its Contradictions: A Theoretical Exploration of Social-Ecological Metabolism. *Rural Sociology* 72(2), 269–288.

Martinez-Torres, M.E; Rosset, P. (2010). La Vía Campesina: The Birth and Evolution of a Transnational Social Movement. *The Journal of Peasant Studies* (37:1), 149-175.

Martínez-Torres, E; Rosset. (2014). Diálogo De Saberes in La Vía Campesina: Food Sovereignty and Agroecology. *The Journal of Peasant Studies*, 979-997.

Martínez-Torres, E; Rosset. (2016). Agroecology, Territory, Re-Peasantization and Social Movements. *Estudios Sociales: Revista de Investigación Científica* (25:47), 275-299.

Martínez Cortés, P. (2013). *The Victims and Land Restitution Law in Colombia in Context: An Analysis of the Contradictions Between the Agrarian Model and Compensation for the Victims*. Forschungs-Und Dokumentationszentrum. Berlin: Germany.

McCalla, A; Nash, J. (2007). *Reforming Agricultural Trade for Developing Countries: Volume One: Key Issues for a Pro-Development Outcome of the Doha Round*. The World Bank. Washington DC: United States.

McKay, B; Nehring, R. (2013). *The 'State' of Food Sovereignty in Latin America: Political Projects and Alternative Pathways in Venezuela, Ecuador, And Bolivia*. Conference Paper in Food Sovereignty: A Critical Dialogue. Yale University: United States.

McKay, B; Muñoz, F; Fajardo, D. (2016). *The Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security in Colombia: Towards Democratic Land-Based Resource Control*. Conference Paper in Global Governance/Politics, Climate Justice and Agrarian/Social Justice: Linkages and Challenges. The Hague: The Netherlands.

McMichael, P. (1992). Tensions Between National and International Control of the World Food Order: Contours of a New Food Regime. *Sociological Perspectives* (35:2), 343–365.

McMichael, P. (2005). Global Development and the Corporate Food Regime. In (eds) F.H. Buttel And P. Mcmichael. *New Directions in the Sociology of Global Development*. Elsevier Amsterdam: The Netherlands.

McMichael, P. (2008). Agro-fuels, Food Security, and the Metabolic rift. *Kurswechsel* (3), 14–22.

McMichael, P. (2009). A Food Regime Genealogy. *Journal of Peasant Studies* (36:1), 139–169.

McMichael, P. (2013). *Food Regimes and Agrarian Questions*. Fernwood Publishing. Halifax, NS.

McMichael, P. (2014). A Comment on Henry Bernstein's Way with Peasants, and Food Sovereignty. *The Journal of Peasant Studies* (42:1), 193–204.

McMichael, P. (2014). Historicizing Food Sovereignty. *Journal of Peasant Studies* (41:6), 933-957.

McMichael, P. (2016). Commentary: Food Regime for Thought. *The Journal of Peasant Studies* (43:3), 648–670.

McMichael, P. (2016). Food Sovereignty In (eds.) Pritchard, B., Rodomiro, O., Meera, S. *Routledge Handbook of Food and Nutrition Security*. Routledge. New York: USA.

Méndez, V. E; Bacon, C. M; Cohen, R.; Gliessman, S. (2015). Agroecology as a Transdisciplinary, Participatory, and Action-Oriented Approach. *Agroecology and Sustainable Food Systems* (37:1), 3–18.

Méndez Blanco, Y. (2015*). Repartir la Tierra es Muy Sencillo: Derecho Campesino al Territorio Justicia y Zonas de Reserva Campesina*. Bogota: Colombia.

Mier Y Terán Giménez Cacho, M; Giraldo, O; Aldasoro, M; Morales, H; Ferguson, B; Rosset, P; Khadse, A; Campos, C. (2018). Bringing Agroecology to Scale: Key Drivers and Emblematic Cases. *Agroecology and Sustainable Food Systems*, 1-29.

Ministerio de Agricultura y Desarrollo Rural; Ministerio de Ambiente, Vivienda y Desarrollo Territorial; Dirección de Desarrollo Agrario; Departamento Nacional de Planeación; Instituto Interamericano de Cooperación para la Agricultura; INCODER. *Proyecto Piloto Zonas de Reserva Campesina: Los Manuales Operativos*. World Bank. Bogota: Colombia.

Molano, A. (1984) *Selva Adentro: Una Historia Oral de la Colonización Del Guaviare*. El Ancora. Bogota: Colombia.

Molano, A. (2009). *En Medio del Magdalena Medio*. CINEP. Bogota: Colombia.

Montoya, A. (2007). *El Modelo Agrícola Colombiano Y Los Alimentos En La Globalización*. Ediciones Aurora. Bogotá: Colombia.

Mora, L; Ortiz, D. (2006). Los Avatares de la Paz. Por Senderos de la Vida de Juan de la Cruz Varela. *Tabla Rasa (4)*, 267-286.

Mora, L; Ortiz, D. (2011). Estrategia de los Agrarios de Sumapaz y Oriente del Tolima Durante el Frente Nacional. *Historia Y Sociedad (21)*, 171-193.

Movimiento Regional Por La Tierra. (2015). Zona de Reserva Campesina de Cabrera: Memorias de Lucha por la Permanencia en el Territorio. *Gente Nueva Editores*.

Bogota: Colombia.

Narvaez Peña, S. (2018). *Historia Ambiental del Valle del Río Cimitarra: El Problema es que la Riqueza ee esta Región está en Manos del Campesinado, y Quieren Tenerla'* (Undergraduate Thesis). Universidad de Antioquia. Medellín: Colombia.

Nicholls, C; Altieri, M. (2018). Pathways for the amplification of agroecology. *Agroecology and Sustainable Food Systems* (42:10), 1170-1193.

Norgaard, R. (1997). A Coevolutionary Environmental Sociology, In (eds) Michael Redclift & Graham Woodgate, *The International Handbook Of Environmental Sociology*. Edward Elgar Publishing Ltd. Cheltenham: United Kingdom.

OECD. (2015). *OECD Review of Agricultural Policies: Colombia 2015*. OECD Publishing.

Oliveira, G; Schneider, M. The Politics fo Flexing Soybeans: China, Brazil and Global Agroindustrial Restructuring. *The Journal of Peasant Studies* (43:1), 167-194.

Olivero-Verbal, J. (2011). Colombia: Environmental Health Issues. *Elsevier*, 740-754.

Oquist, P. (1980). *Violence, Conflict, And Politics in Colombia*. Academic Press. New York: United States.

Otero, G. (2012). The Neoliberal Food Regime in Latin America: State, Agribusiness Transnational Corporations and Biotechnology. *Canadian Journal of Development Studies/Revue Canadienne D'études Du Développement* (33:3), 282-294.

Orduz, A. (2008). *Aspersión Aérea de Cultivos en Colombia: Una Estratedia Fallida*. WOLA. Bogota: Colombia.

Ortiz Guengue, L. (2017). *Contribuciones Metodológicas para Evaluar la Sustentabilidad de los Agroecosistemas en Zonas de Reserva Campesina: El Caso del Valle del Río Cimitarra* (Masters Thesis). Universidad Nacional De Colombia. Bogota: Colombia.

Ortiz Guerrero, C; Pérez Martínez, M; Castillo Brieva, D; Muñoz Wilches, L. (2004*). Zonas de Reserva Campesina: Aprendizaje e Innovación para el Desarrollo Rural*. Pontificia Univerisdad Javeriana. Bogota: Colombia.

Oxfam International. (2013). Divide and Purchase: How Land Ownership is Being Concentrated in Colombia. *Oxfam GB*. Oxford: United Kingdom.

Oxford Business Group. (2015). *The Report: Colombia 2015*. Oxford: United Kingdom.

Park, C. M. Y; White, B. (2015). We Are Not All the Same: Taking Gender Seriously in Food Sovereignty Discourse. *Third World Quarterly* (36:3), 584–599.

Pechlaner, G; Otero, G. (2008). The Third Food Regime: Neoliberal Globalism and Agricultural Biotechnology in North America. *Sociologia Ruralis* (48:4), 351-371.

Pechlaner, G; Otero, G. (2010). The Neoliberal Food Regime: Neoregulation and the New Division of Labor in North America. *Rural Sociology* (75:2), 179-208.

Peine, E. (2009). *The Private State of Agribusiness: Brazilian Soy on The Frontier of a New Food Regime* (PhD Thesis). Cornell University. New York: United States.

Perfecto, I; Vandermeer, J; Wright, A. (2019). *Nature's Matrix: Linking Agriculture, Biodiversity Conservation and Food Sovereignty*. Routledge. London: United Kingdom.

Pimbert, M. (2018). *Food Sovereignty, Agroecology and Biocultural Diversity: Constructing and Contesting Knowledge*. Routledge. Oxon: New York.

Plahe, J.K; Hawkes, S; Ponnamperuma, S. (2013). The Corporate Food Regime and Food Sovereignty in the Pacific Islands. *The Contemporary Pacific* (25:2), 309-338.

Polania, D. (2016). *Principales Dificultades Presentadas en el Proceso de Acompañamiento Primario de Atención a Víctimas en el Municipio de Cabrera-Cundinamarca, desde la Aplicación de la Ley 1448 de 2011* (Masters Thesis). Uniminuto De Dios. Bogota: Colombia.

Polanyi, K. (1957). *The Great Transformation*. Beacon Press, Boston: United States.

Popay, I; Field, R. (1996). Grazing Animals as Weed Control Agents. *Weed Technology* (10:1), 217-231.

Poteete, Am (2004). *Is Decentralization a Reliable Means of Increasing Equity?*. Conference Paper: Tenth Biennial Conference of the International Association for the Study of Common Property (9-13th August), Oaxaca, Mexico.

Poveda, P. (2017). Descripción de Veredas que Hacen Parte de ZRC Cabrera,

Cundinamarca: Con Datos del CNA 2014. *Banco De La República*. Bucaramanga: Colombia.

PNUD. (2011). Colombia Rural: Razones para la Esperanza: Informe Nacional de Desarrollo Humano. *PNUD/INDH*. Bogota: Colombia.

Pritchard, B. 2007. Food Regimes. In (eds) R. Kitchin And N. Thrift. *The International Encyclopedia of Human Geography*. Elsevier. Amsterdam: Netherlands.

Pritchard, B. (2009). The Long Hangover from the Second Food Regime: A World Historical Interpretation of the Collapse of the WTO Doha Round. *Agriculture and Human Values* (26:4), 297-307.

Pritchard, B; Dixon, J; Hull, E; Choithani, C. (2016). "Stepping Back and Moving In": The Role of the State in the Contemporary Food Regime. *The Journal of Peasant Studies* (43:3), 693–710.

Renting, H; Marsden, T; Banks, J. (2003). Understanding Alternative Food Networks: Exploring the Role of Short Food Supply Chains in Rural Development. *Environment and Planning A* 35(3), 393–411.

Restrepo, J; Bernal Morales, A. (2014). *La Cuestión Agraria: Tierra y Posconflicto en Colombia*. Penguin Random House Group Editorial Colombia, Bogota: Colombia.

Reyes Posada, A. (2009). *Guerreros y Campesinos, el Despojo de la Tierra en Colombia*. Editorial Norma. Bogotá: Colombia.

Reyes Posada, A. (2016). La Reforma Rural Para La Paz. Penguin Random House Grupo Editorial. Bogotá: Colombia.

Ribot, J. (2003). Democratic Decentralisation of Natural Resource: Institutional Choice and Discretionary Power Transfers in Sub-Saharan Africa. *Public Adminstration and Development* (23), 53-65.

Richani, N. (2014). *Systems of Violence: The Political Economy of War and Peace in Colombia*. State University of New York Press. New York: United States.

Robbins, M. (2015), Exploring the 'Localisation' Dimension of Food Sovereignty*. Third World Quarterly* (36:3)*,* 449-468.

Romero, J. (2017). *Zonas de Reserva Campesina Como Instrumento de Orenamiento Territorial para Colombia: El Caso del Municipio de Cabrera* (Masters Thesis). Universidad Nacional De Colombia. Bogota: Colombia.

Rosset, P. (2006). Food Is Different: Why We Must Get the WTO Out of Agriculture. *Zed Books*. USA.

Rosset, P. (2013). Re-Thinking Agrarian Reform, Land and Territory In la Via Campesina. *Journal of Peasant Studies* (40:4), 721-775.

Rosset, P; Martínez-Torres, M.E. (2016). Agroecología, Territorio, Recampesinización y Movimientos Sociales. *Revista de Investigación Científica* (25:47), 275-299.

Rosset, P; Altieri, M. (2017). Agroecology: Science and Politics. Fernwood Publishing. Warwickshire: United Kingdom.

Roudometof, V. (2016). Glocalization: A Critical Introduction. *Routledge*. Oxford: United Kingdom.

Safford, F; Palacios, M. (2002). *Colombia: Fragmented Land, Divided Society*. Oxford University Press. Oxford: United Kingdom.

Sankey, K. (2017). Communities Against Capital? The Politics of Palm Oil Expansion in Colombia's Middle Magdalena In (eds) Alessandro Bonanno & Steven Wolf. *Resistance to the Neoliberal Agri-Food Regime: A Critical Analysis*. Routledge. London: United Kingdom.

Sankey, K. (2019). *Agrarian Transformations and New Peasant Movements in Colombia* (PhD Thesis). Queen Mary University. London: United Kingdom.

Sartori, G. (1991). Comparing and Miscomparing. *Journal of Theoretical Politics* 3(3):243 - 257.

Scales, I. (2014). Green Consumption, Ecolabelling and Capitalism's Environmental Limits. *Geography Compass* (8:7), 477–489.

Schnaiberg, A. (1980). *The Environment: From Surplus to Scarcity*. Oxford University Press. Oxford: United Kingdom.

Schneider, M; McMichael, P. (2010). Deepening, and Repairing, the Metabolic Rift. *The Journal of Peasant Studies* (37:3), 461-484.

(eds) Schroth, G; Fonseca, G; Harvey, C; Gascon, C; Vasconcelos, H; Izac, A. (2004). *Agroforestry and Biodiversity Conservtion in Tropical Landscapes*. Island Press. Washington: United States.

Sevilla-Guzmán, E; Woodgate, G. (1997). Sustainable Rural Development: From Industrial Agriculture to Agroecology. In (eds) Redclift, M; Woodgate, G. *The International Handbook of Environmental Sociology*. Edward Elgar Publishing Ltd. Cheltenham: United Kingdom.

Sharp, G. (2016). Metabolic Rift Theory and the Crisis of our Foodways. In (ed.) Ormrod, J. *Changing our Environments, Changing Ourselves: Nature, Labour, Knowledge and Alienation*. Palgrave Macmillan. London: United Kingdom.

Sibhatu, K; Qaim, M. (2017). Rural Food Security, Subsistence Agriculture, and Seasonality. *PloS ONE* (12:10), 1-15.

Smith, K; Lawrence, G; Richards, C. (2010). Supermarkets' Governance of the Agri-Food Supply Chain: Is the 'Corporate-Environmental' Food Regime Evident In Australia?. *International Journal of Sociology of Agriculture and Food* (17:2), 140-161.

Solomon, K; Houghton, D; Harris, S. (2005b). Nonagricultural and Residential Exposures to Pesticides. *Scand J Work Environ Health* (31: Suppl 1), 74–81.

Solomon, K; Anadón, A; Carrasquilla, G; Cerdeira, A; Marshall, J; Sanin, L. (2007). Coca and Poppy Eradication in Colombia: Environmental and Human Health Assessment of Aerially Applied Glyphosate. *Revista Environmental Contamination Toxicology* (190:43), 43-125.

Solomon, K; Marshall, E; Carrasquilla, G. (2009). Human Health and Environmental Risks from the Use of Glyphosate Formulations to Control the Production of Coca in Colombia: Overview and Conclusions. *Journal of Toxicology and Environmental Health* (72), 914-920.

Szegedy-Maszák, I. (2017). Agricultural Public Policies in Colombia from the 1970s through the Uribe Government- the Story of Recurrent Unresolved Policy Issues. *Vniversitas* (134), 363-398.

Thomson, F. (2011). The Agrarian Question and Violence in Colombia: Conflict and Development. *Journal of Agrarian Change* (11:3), 321-356.

Thorpe, R. (1998). *Progress, Poverty and Exclusion: An Economic History of Latin America in the 20th Century*. Inter-American Development Bank. Baltimore: United States.

Torrado, M. (2016). Food Regime Analysis in a Post-Neoliberal Era: Argentina and the Expansion of Transgenic Soybeans. *Journal of Agrarian Change* (16:4), 693-701.

United Nations Development Programme. (2015). *Perfil Productivo: Municipio San Pablo*. United Nations. Bogota: Colombia.

United Nations Office on Drugs and Crime. (2008). *Organizaciones que Cambian Vida: Programa Familias Guardabosques y Programa Proyectos Productivos*. Impresol Ediciones Ltd. Bogota: Colombia.

USDA. (2014). Retail Food Annual 2014. USDA. USA.

USDA. (2018). Retail Foods Guide 2018. USDA. USA.

Van Bruggen, A; He, M; Shin, K; Mai, V; Jeong, K; Finckh, M; Morris, J. (2018). Environmental and Health Effects Of The Herbicide Glyphosate. *Science of The Total Environment* (616-617), 255-268.

Van Der Pilj, K. (2009). *A Survey of Global Political Economy* (Version 2.1). Centre for Global Political Economy, University of Sussex: United Kingdom.

Van Der Ploeg, J. (2008). *The New Peasantries: Struggles for Autonomy And Sustainability in an Era of Empire and Globalization*. Earthscan. London: United Kingdom.

Van Der Ploeg, J. D. (2010). The Food Crisis, Industrialized Farming and the Imperial Regime. *Journal of Agrarian Change* (10:1), 98–106.

Van Der Ploeg, J. D., Jingzhong, Y., & Schneider, S. (2012). Rural Development through the Construction of New, Nested, Markets: Comparative Perspectives from China, Brazil and the European Union. *The Journal of Peasant Studies* (39:1), 133–173.

Van Der Ploeg, J. D. (2014). Peasant-Driven Agricultural Growth and Food Sovereignty. *The Journal of Peasant Studies* (41:6), 999–1030.

Vandermeer, J., & Perfecto, I. (2013). Complex Traditions: Intersecting Theoretical Frameworks in Agroecological Research. *Agroecology and Sustainable Food Systems* (37:1), 76-89.

Vásquez-León, M; Burke, B; Finan, T. (2017). *Cooperatives, Grassroots Development, and Social Change: Experiences from Latin America*. University of Arizona Press. Arizona: United States.

Vázquez Zea, D. (2017). *Las Zonas de Reserava Campesina Espacios Favorables para el Desarrolo Rural Territorial: El Caso de Cabrera en Cundinamarca* (Masters Thesis). FLACSO Ecuador.

Velandia, B. (2015). Luchas Campesinas y Resistencia Frente a los Conflictos Ambientales en la Zona de Reserva Campesina de Cabrera, Cundinamarca: Una Alternative Territorial para la Paz. *Polisemia* (19), 43-57.

Velez, M. (2014). *Modelling Non-Point Source Pollution of Rivers in the UK and Colombia* (PhD Thesis). University of York: United Kingdom.

Vergara-Camus, L; Kay, C. (2017). Agribusiness, Peasants, Left-Wing Governments, and the State in Latin America: An overview and Theoretical Reflections. *The Journal of Agrarian Change* (17:2), 239-257.

Von Oelreich, J; Milestad, R. (2017). Sustainability Transformations in the Balance: Exploring Swedish Initiatives Challenging the Corporate Food Regime. *European Planning Studies* (25:7), 1129-1146.

Walker, J. (2016). *Weeds: An Organic, Earth-friendly Guide to their Identification, Use and Control*. Earth-friendly Books. London: United Kingdom.

Wang, J. (2014). Recruiting Young Farmers to Join Small-Scale Farming: A Structural

Policy Perspective (Resource Paper). *International Seminar on Enhanced Entry of Young Generation into Farming*. National Taiwan University.

Wattnem, T. (2016). Seed Laws, Certification and Standardization: Outlawing Informal Seed Systems in The Global South. *The Journal of Peasant Studies* (43:4), 850-867.

Wezel. A; Bellon, S; Dor´E, T; Francis, C; Vallod, D. (2009). Agroecology as a Science, a Movement and a Practice: A Review. Agronomy for Sustainable Development, *Springer* (29:4), 503-515.

White, D; Rudy, A; Gareau, B. (2016). *Environments, Natures and Social Theory: Towards a Critical Hybridity*. Palgrave Macmillan. London: United Kingdom.

White, D; Brian, F; Gareau, J; Rudy, A. (2017). Ecosocialisms, Past, Present and Future: From the Metabolic Rift to a Reconstructive, Dynamic and Hybrid Ecosocialism. *Capitalism, Nature, Socialism* 28(2), 22–40.

Wilson, M. (2016). Food and Nutrition Security Policies in the Caribbean: Challenging T=the Corporate Food Regime?. *Geoforum* (73), 60-69.

Wittman, H. (2009). Reworking the Metabolic Rift: La Vía Campesina, Agrarian Citizenship, And Food Sovereignty. *The Journal of Peasant Studies* (36:4), 805-826.

Wonnacott, R. (1996). Free-Trade Agreements: For Better or Worse?. *The American Economic Review* (86:2), 62-66.

World Bank. (1998). *Colombia - Peasant Enterprise Zones for Peace Project (English)*. World Bank. Washington, DC: United States.

World Bank. (2004). *Colombia - Peasant Enterprise Zones Development Project (English)*. World Bank. Washington, DC: United States.

Woodgate, G. (2015). Agroecology as Post-Development Discourse and Practice. In (ed) Redclift, M. *Routledge Handbook of Sustainable Development*. Springett. Oxford: United Kingdom.

Zamosc, Leon. (1986). *The Agrarian Question and the Peasant Movement in Colombia: Struggles of the National Peasant Association 1967-1981*. Cambridge University Press. Cambridge: United Kingdom.

Online Resources

ACVC-RAN. (2017). II Escuela Campesina Agroecológica “Orlando Triana Moncada”. *YouTube*. Accessed 15/10/17. Https://Www.Youtube.Com/Watch?V=Lcnny8a_Zto&Feature=Youtu.Be&Fbclid=Iwar0-Lgmaviwxz9natkxvn-7abvflbzforam6grtzezslo3qb8rwj7lywtzi

Altieri, M. (2000). What is Agroecology? *Agroecology in Action*. Accessed 23/02/2017. https://agroeco.org/

Asociación Campesina del Valle del Río Cimitarra. (2017). A Defender la Zona de “Línea Amarilla” al Sur de la Serranía de San Lucas- Colombia. *Prensa Rural*. Accessed 01/07/18. Https://Www.Prensarural.Org/Spip/Spip.Php?Article21569.

Angarita, C. (2016). Colombia’s Nutritional Status: A Wake-Up Call. *Feed*. Accessed 04/01/2018. Https://Feed.Jeronimomartins.Com/Pulse/Colombias-Nutritional-Status-A-Wake-Up-Call/

Chohan, J. (2017). Colombia: Consultation Vs Extraction. *Latin American Bureau*. Accessed 29/08/17. Https://Lab.Org.Uk/Colombia-Consultation-Vs-Extraction/

Chohan, J; Montenegro, V. (2019). In Colombia, Civil Society Fights for Peace. *North American Congress on Latin America*. Accessed 25/04/2019. https://nacla.org/news/2019/04/25/colombia-civil-society-fights-peace

El Espectador. (2016). Como Le Fue a Colombia Cuantro Años Después de TLC con Estados Unidos?. *El Espectador*. Accessed 05/01/2017. Https://Www.Elespectador.Com/Noticias/Economia/Le-Fue-Colombia-Cuatro-Anos-Despues-De-Tlc-Estados-Unid-Articulo-632394

El Tiempo. (2010). Cacao del Sur de Bolivar Recibió Certificación Internacional Socioambiental. *El Tiempo*. Accessed 20/08/2018. Https://Www.Eltiempo.Com/Archivo/Documento/CMS-7870627

Environmental Performance Index. (2018). EPI Report. *Yale*. Accessed 11/11/2019. Https://Epi.Envirocenter.Yale.Edu/2018-Epi-Report/Agriculture

IndexMundi. (2018). Colombia- Food Imports (% of Merchandise Imports). *World Bank*. Accessed 30/12.2019.

https://www.indexmundi.com/facts/colombia/indicator/TM.VAL.FOOD.ZS.UN

Isacson, A. (2019). Restarting Aerial Fumigation of Drug Crops in Colombia Is a Mistake. WOLA. Accessed 07/06/19.

Https://Www.Wola.Org/Analysis/Restarting-Aerial-Fumigation-Of-Drug-Crops-In-Colombia-Is-A-Mistake/

Jerez, C. (2018). El Decreto del Gobierno Santos que Afectaría Gravemente a las Zonas de Reserva Campesina (ZRC). *La Silla Vacia*. Accessed On 24/ 07/2018. Http://Lasillavacia.Com/Silla-Llena/Red-Rural/Historia/El-Decreto-Del-Gobierno-Santos-Que-Afectaria-Gravemente-Las-Zonas-De

Keeley, B. (2007). Human Capital: How what you Know Shapes your Life. *OECD*. Accessed 08/03/2018.

Https://Www.Oecd.Org/Insights/37966934.Pdf

Lane, N. (2018). The Benefits of Vermiculture in Agroecology and the Detriment of Invasive Earthworms to Northern Michigan Forest Ecosystems. *University of Michigan*. Accessed 20/08/2019. https://deepblue.lib.umich.edu/bitstream/handle/2027.42/147900/Lane_2018.pdf?sequence=1&isAllowed=y

Malm, A. (2018). In Defence of Metabolic Rift Theory. Verso. Accessed 15/08/2019. https://www.versobooks.com/blogs/3691-in-defence-of-metabolic-rift-theory?fbclid=IwAR2ELEEgRmMiyAYyEcXO4HzplL3ADgRugDGtd-VMYahRPaF4rV5F0t_3kew

Ministerio Del Ambiente. (2014). Alerta por Ocho Nuevos Núcleos de Deforestación en Colombia. *Ministerio Del Ambiente*. Accessed 02/07/2018. Http://Www.Minambiente.Gov.Co/Index.Php/Component/Content/Article/2-Noticias/814-El-Uso-Sostenible-De-Los-Bosques-Prioridad-De-Minambiente-179

Montoya, D. (2016). Juan De La Cruz Varela: La Primera Voz Campesina en el Archivo General de la Nación. *¡Pacifista!*. Accessed 20/06/2018. Http://Pacifista.Co/Juan-De-La-Cruz-Varela-La-Primera-Voz-Campesina-Del-Archivo-General-De-La-Nacion/

Oficina Del Alto Comisionado para la Paz. (2016). El Plan de desarrollo de tu Municipio: Construye Paz? Ya lo Viste?. *Oficina Del Alto Comisionado para la Paz.* Accessed 04/04/2019. Http://Www.Altocomisionadoparalapaz.Gov.Co/Documents/Informes-Especiales/Plan-Desarrollo-Territorial/Index.Html

Pearce, F. (2018). Rivers in the Sky: How Deforestation is Affecting Global Water Cycles. *Yale Environment 360*. Accessed 16/09/2019. https://e360.yale.edu/features/how-deforestation-affecting-global-water-cycles-climate-change.

RIMISP. (2017). El Panorama de la Juventud Rural en Colombia. *RIMISP*. Accessed 20/06/2018. Https://Rimisp.Org/Noticia/El-Panorama-De-La-Juventud-Rural-En-Colombia/

Ritchie, H; Roser, M. (2017). Our World in Data. Accessed 12/04/2018.

Https://Ourworldindata.Org/Diet-Compositions

Romaña, D; Cediel, G. (2017). Current Situation of Micronutrients in Latin American and the Caribbean: Prevalence of Deficiencies and National Micronutrient Delivery Programs. *Sight and Life*. Accessed 10/02/18. Https://Sightandlife.Org/Wp-Content/Uploads/2017/07/SAL_WFP_Ricefort_Latinam-Current-Situation-Of-Micronutrients.Pdf

Sánchez-Garzoli, G; Bernal, S. (2018). June Update: Deadliest Month of the Year for Human Rights Defenders in Colombia. *WOLA*. Accessed 15/06/18. Https://Www.Wola.Org/Analysis/June-Update-Deadliest-Month-Year-Human-Rights-Defenders-Colombia/

Schiffman, R. (2018). Lessons Learned from Years of Indigenous Forest Management. *Yale 360*. Accessed 20/08/2018. Https://E360.Yale.Edu/Features/Lessons-Learned-From-Centuries-Of-Indigenous-Forest-Management

Soil Association. (2016). The Impact of Glyphosate on Soil Health: The Evidence to Date. Soil Association. Accessed 10/02/2019. Https://Www.Soilassociation.Org/Media/7202/Glyphosate-And-Soil-Health-Full-Report.Pdf

Unidad de Victímas. (2016). Informes Regionales: Magdalena Medio. *Unidad de Victímas*. Accessed 10/06/2018. https://www.unidadvictimas.gov.co/especiales/especial-rendicion-2016/docs/magdalena-medio.pdf

World Food Programme. (2017). The Year Hunger Fought Back. *United Nations World Food Programme*. Accessed 16/04/2018. Https://Publications.Wfp.Org/En/Annual-Report/2017/?_Ga=2.91244498.974491352.1565794872-1094462505.1565794872

WTO. (2018). Regional Trade Agreements Database: Colombia. WTO. Accessed 20/01/2019. Https://Www.Wto.Org/English/News_E/News18_E/Rta_19jun18_E.Htm

Appendix 1: Fieldwork Questions for Semi-structured Interviews

Questions for National Actors

Economic:

1. What do you think about land distribution in the country? Has it changed significantly in recent years?
   Has land tenure become any more equal over the years? If not, what do you see as the main reasons for this?
2. How has agribusiness interacted within this context? Would you say this holds a large share in the agricultural sector?
3. How has transnational agribusiness worked in this context?
4. Would you say there has been an increase in the involvement of transnational corporations in Colombian agriculture?
5. What has been the impact of these actors in the ZsRC you have worked in?
6. Do you see these two forms of economic activity as reconcilable?
7. Has there been a rise in the number of supermarkets in the country? What percentage of the food market would you say this is? When would you say this change took place?
8. Consequently, has there been an increase in the consumption of imported foods? Which socio-economic groups has this favoured?
9. Has this phenomenon economically impacted the ZsRC?
10. What potential do you think the model has? Do you think these are or could be economically viable for peasants living in them?
11. What have the principal reasons been for the lack of credit available to the ZsRC?

Social:

1. What role do campesinos play in national food production?
2. Has there been a change in the quantity of oils, fats and sugars and consumed? Why would you say that is?

3. How has the intervention of agribusiness impacted levels of food supply and undernourishment?
4. How do you think smallholder agriculture impacts this? What changes have taken place in this sector in terms of agricultural practice and social cohesion?
5. What is food supply in the ZsRC themselves like? How different is this to the national context?
6. Do you think the ZRC model has the institutional and community-based tools to provide a better quality of life to the campesinos living in them?
7. Does this model promote greater female participation in landownership and farm planning?
8. Does this model help to re-build the social fabric and augment farmer to farmer exchanges?

Ecological:

1. What effect has agribusiness had on CO2 emissions in the country?
2. Do national institutions and NGOs promote agroecology in the country? What are the motivations for doing so?
3. What would you say the impact has been of agribusiness on biodiversity and soil fertility?
4. What kind of ecology focused projects have been undertaken in ZsRC? Have agroecology projects been undertaken in these spaces? Did this help to better soil fertility, crop diversity and or annual production?
5. How was this received by campesinos themselves -was it difficult to convince them of the need to protect the natural environment? Were they receptive to the reduced use or elimination of pesticides and fertilisers? Did this change the way farmers farmed land in the ZsRC?
6. Do you see the ZRC project as a possible corrective for the ecological excesses of agro-industrial farming?

Other questions:

1. Which ZsRC would you say have been the most ‘successful’ and why?
2. What problems does the model face?

Questions for Campesinos in ZsRC

Social:

1. How is knowledge about farming shared? Is it passed on generationally or have you been involved in workshops?
   Do farmers in the local area help/ share knowledge about growing crops?
2. What is the role of women in the family and the farm?
   What is their involvement in wider gender activism in the ZRC?
   What if any activities are there in the local area to highlight gender differences?
3. What factors effect peoples' health most?
   Would you say your family is healthy? What are the different ailments they frequently suffer from?
4. Does your family consume many oily, fatty or sugary foods? If so, how often?
   Where are these purchased from? Do you think the family diet has changed much over the years? Why do you think this is?
5. Are you and your family happy with the quality of life you have?
   How has living in a ZRC impacted this?
   What if anything would you change or like to improve?
   Would you recommend other campesinos to live in ZsRC and why or why not?

Economic:

1. How big is your farm in hectares?
   How does this compare to other farms in the area?
   Do you have a land title? Has being part of the ZRC helped you receive titles?
   Has the amount of land you have changed through the years? If so, why?
2. Are you able to feed your family from your farming, gathering and other activities? Does everyone have enough food to eat all year round?
   What kind of crops do you grow? In which seasons? Which are the most economically profitable?

   What happens in the case of drought or crop ruination?

Is there any supplementary support given to the campesinos in the area from the ZRC committee or from neighbours?

Do you supplement this diet with products bought in markets also? If so why, and how often?

How much of the family's monthly income is spent on buying food?

3. Do you earn cash income from your farming? Do you find this is enough to cover all your family's needs?
   Do you need to supplement your farming income with off-farm work? If so, what other work do you undertake to earn cash? Is this work well remunerated?
   How have the ZRC's projects impacted your income?
4. Do you sell your crops in regional markets?
   Do you have access to markets? If not, what are the obstacles?
   What do you think of export markets and crops? How do export markets impact your livelihood and economic prospects?
   Do you face competition from agribusinesses in the area?
5. Do you have or have you had access to government or private credit?
   If so, how did this impact your farm and farming?
   If not, what are the obstacles to obtaining credit?
   Do you think the ZRC model will you help you acquiring further credit?
6. Do you face financial burden (in the forms of debts or monetary loss) as a result of your farming?
   If so, has this effected your farm and how?

Ecological:

1. How fertile is the soil on your farm?
   Is it a very healthy soil? How do you know this?
   Does your farm suffer from soil erosion?
   From what you know, are there more fertile areas in the ZRC and who farms on them?
2. Is there a range of plants and animals on the farm?
   Would you say your farm is quite biodiverse? Is this important to you?

What function if any does biodiversity have in your understanding of farming and in your farming practices?

3. How many different crops do you grow in the field at one given time?
   How are these crops produced e.g. using intercropping?
   What do you think of monocrop farming?
   Which of these forms of farming do you favour and why?
   Are your fields irrigated?
4. What is the annual production output of your farm in tonnes per hectare?
   How does this compare to others in the ZRC?
   Which crops produce a greater yield of food for the household and for cash crops?
5. Do you use chemical inputs e.g. pesticides or fertilisers?
   If so, which ones and how often?
   If not, given access to these would you choose to apply them?
   What effect if any do you think pesticides have on soils, animals and fauna?
   What do you understand about agroecological farming? Do you see this as important?

Appendix 2: Short descriptions for cited Interviewees

Jaskiran Kaur Chohan conducted all interviews between March 2017- October 2017 in a number of sites across Colombia.

Interviews in the ZRC Cabrera

Interviewee 1: Middle aged male, owner of 3.5 ha in Bajo Ariari. Produces coffee, oranges, mandarins, maize and cassava; also, a range of other foods for family consumption.

Interviewee 2: Middle aged female. Owner of unknown amount of land in Santa Rita. Produce peas, tree tomato, apples.

Interviewee 3: Middle aged male, owner of 30 ha of land in Pueblo Viejo. Produces sweet granadilla and banana passionfruit in bulk for national markets and sometimes export in association with other farmers.

Interviewee 4: Middle aged male, owner of 8 ha of land in Santa Lucia. Produces raspberry, lulo and milk for the market; also, a range of other foods for family consumption.

Interviewee 5: Middle aged male, owner of 15 ha of land in Gualcala. Produces tree tomato and caped gooseberry for the market; also, a range of other foods for familyconsumption.

Interviewee 6: Middle aged male, owner of 34 ha of land in Quebrada Negra. Produces livestock for slaughter.

Interviewee 7: Middle aged male. Owner of unknown amount of land in Paquilo. Produces milk and maize.

Interviewee 8: Middle aged female, owner of unknown amount of land in Bajo Ariari. Produces coffee oranges and mandarins; also, a range of other foods for family consumption.

Interviewee 9: Middle female, owner of 6.5 ha in Santa Marta. Produces courgettes, coriander, celery, lettuce, potatoes, pineapple guava or guavasteen, tomatoes, peas,

onions, avocados, carrots, green beans, radish, pears, lemongrass and cheese curd from milk.

Interviewee 10: Middle aged male, owner of 9 ha of land in Pueblo Viejo. He produces banana passionfruit, sweet granadilla, maize, tree tomato and various food for family consumption, including beans, carrots, onions and coriander.

Interviewee 11: Young man working in association with owner but is not landowner in Peñas Blancas. Producing sweet granadilla and potato for family consumption.

Interviewee 12: Engineer working for the agribusiness Bayer in Cabrera.

Interviewee 13: Older man. Owner of unknown amount of land in Peñas Blancas. Produces Avocados, peas and caped gooseberry.

Interviewee 14: Middle aged male. Owner of unknown amount of land in Santa Marta. Produces sweet granadilla, tree tomatoes, maize, beans, peas, spinach, carrots, lulu, raspberry, baby papayas courgette, *acelgas, aba*, pumpkin and passion fruit.

Interview 15: Middle aged male. Owner of 36 ha in Bajo Ariari. Produces runner beans, arajol anding, cassava, arracacha, avocado, mandarine trees, guava trees, banana trees, pumpkin, spring onion, lemons and sugar cane.

Interview 16: Middle aged male. Owner of 5 ha of land in Alto Ariari. Produces beans, tree tomatoes, banana passionfruit, tomatoes and has pasture for livestock.

Interview 17: Older man. Owner of 3 ha of land. produces banana passionfruit, maize, potatoes, wheat, has cows, chickens and pigs.

Interviewee 18: Older man and resident of Cabrera without a farm.

Interview 19: Middle aged male. Rents 3 ha of land in Santa Lucia. Produces tree tomato.

Interviewee 20: Middle aged man. Farm not visited but individual accompanied researcher on some farm visits.

Interviewee 21: Middle aged male. Renting 6 ha of land in Alto Ariari. Produces beans, banana passionfruit, tree tomato, plantain, plums, onions, poor potato, avocado, pumpkin, coriander, has ducks, chickens and turkey.

Interviewee 22: Middle aged man. Owner of 10 ha of land in Santa Rita. Produces maize, beans, avocados, peas and poor potato.

Interviewee 23: Middle aged man. Owner of unknown number of ha in Peñas Blancas. Produces apples, pears, avocados and lemons.

Interviewee 24: Middle aged man. Owner of unknown number of ha in Peñas Blancas. Produces livestock for milk and cheese.

Interviewee 25: Middle aged female. Owner of unknown number of ha in Peñas Blancas. Participant in an ANZORC project to produce and sell saplings of various herbs, including marigold, basil, common rue, coriander, lettuce, mint, tomato, celery and melissa.

Interviewee 26: Middle aged female. Member of ASOGNAC and Steering Committee.

Interviewee 27: Elderly man. Victim of armed conflict and owner of 5.5-6 ha of land. He grows tree tomato, raspberry, sweet granadilla, potatoes, maize, beans, caped gooseberry, banana passionfruit and lulo. He also has 3 cows and 12 chickens.

Interviewee 28: Middle aged man. Victim of armed conflict, owner of unknown amount of land predominantly left in pasture.

Interviewee 29: Middle aged female, a housewife whose husband rents land. She grows maize in a small house garden and other vegetables.

Interviewee 30: Middle aged female. Has 16 ha of land that are still not fully titled. She grows sweet granadilla, has a home garden and grown coffee for family consumption.

Interviews in the ZRC-VRC

Interview 31: Older man and founding member of the ACVC. Owner of unknown amount of land in Puerto Nuevo Ité. Displacement has left the farm unproductive but also cultivates a patch in the communal farm in Puerto Matilde: *arruca*, plantain, papaya, *bore,* lemon grass, alfalfa, ginger, orange, sapote, lemon, chilli, guava, beans, sagu, arasa, malanga, cassava and mango.

Interview 32: Young man. Campesino in the ACVC's technical team working as farm administrator in Puerto Matilde.

Interview 33: Middle aged man. Campesino in the ACVC's technical team working as sectional co-ordinator in San Pablo.

Interview 34: Middle aged man and JAC President of el Descanso, Yondó, Antioquia. Owner of 150 ha. Produces maize, cassava, ñame, pumpkin, beans, runner beans, has 35 cows and has 75 ha in virgin forest. Off-farm work includes gold mining and logging.

Interview 35: Older man and founding member of the ACVC. Owns 40-50 ha near Puerto Matilde, Yondó, Antioquia. Produces avocado, oranges, sapote, mango, has 14 cows and 1 bull in pasture.

Interview 36: Middle aged man. Owns 150-200 ha in el Tamar, Remedios, Antioquia. Produces oranges, soursop, *toronbolo,* guava, pineapple, cassava, maize, yam, buffaloes, pigs, chickens, turkey and 60-70 ha in pasture.

Interview 37: Older man and founding member of the ACVC. Owner of 80 ha in an in an unknown rural ward in San Pablo, Bolivar.

Interview 38: Female member of the ACVC in San Pablo and participant in a number of community vegetable garden projects.

Interview 39: Female member of the ACVC working on themes related to gender.

Interview 40: Older man and founding member of the ACVC. Owns an unknown amount of land in an unknown ward in Yondó, Antioquia. Produces cassava, yams, plantains, maize, rice, has 10 buffalos and 10 cows.

Interview 41: Older man. He owns 20 ha in la Union, San Pablo, Bolivar. Produces coca, cassava, mango, avocado, coffee, mandarin, plantain and has pastures.

Interview 42: Older man. Member of the ACVC working in San Pablo.

Interview 43: Middle aged man. Member of the ACVC working with Comunal Paz and the EcoBufalo programme.

Interview 44: Middle aged woman and leading member of the JAC in el Bagre, Yondo, Antioquia. Her husband owns 15 ha. They produce plantains, cassava, maize, yam and coca.

Interview 45: Middle aged man. Owns 150 ha in Puerto Nuevo Ité, Remedios, Antioquia. Produces rice, maize, plantains, cassava and sugar cane.

Interview 46: Older man and founding member of the ACVC. Owns an unknown amount of land in la Concha, Cantagallo, Bolivar. Produces plantain, cassava, pigs, hens, sheep, turkey, ducks, buffalo, horses, oregano, basil, coriander and land in pasture.

Interview 47: Young woman. Agronomist working with the ACVC's technical team on the EcoBufalo programme.

Interview 48: Middle aged man. Livestock and buffalo consultant working with the ACVC on the EcoBufalo programme.

Interview 49: Older woman. Owner of 14 ha in Dos Quebradas, Remedios, Antioquia. Produces cassava, onion, tomato, coriander, chilli, plantain, yam, maize, rice, orange trees, mandarine trees, mango, guava, *zapote*, avocado, papaya, pineapple, borojo and has buffalo. The family also practices unlicensed logging and gold mining.

Interview 50: Middle aged woman. Owns 96 ha in la Concha, Cantagallo, Bolivar. Produces cassava, plantain, maize and has livestock. She practices logging.

Interview 51: Middle aged man. Owns 94 ha of land in Puerto Matilde, Yondó, Antioquia. Produces cassava, plantain and has buffalos.

Interview 52: Young women and leading member of the JAC in la Union, San Pablo. Her family owns 20 ha in la Union, San Pablo. Produces avocado, sugar cane, cacao, has pastures and land in virgin forest.

Interview 53: Middle aged man. Works with the ACVC's technical team.

Interview 54: Young man. Agroecologist working with the ACVC's technical team. (2017).

Interview 55: Young man. ACVC's sectional organiser for Remedios.

Interview: 56: Young man**.** ACVC representative in San Pablo.

Interview 57: Middle aged man, working as a farm administrator in Yondó, Antioquia.

Interview 58: Middle aged woman**,** lives on a farm with her husband in el Tamar, Remedios, Antioquia. Together they cultivate oranges, soursop, *toronbolo,* guava, pineapple, cassava, maize, yam; rear buffaloes, pigs, chickens, turkey; and maintain 60-70 ha in pasture. She also prepares pastries and other confectionary from the fruit she grows and sells this to her neighbours.

Appendix 3: Prospective ZsRC

These tables detail the ZsRC that have yet to gain legal recognition, including those with applications in process and those at the preliminary stages of request.

Table 1: ZsRC in Process

ZRC NAME (IN PROCESS)	DEPARTMENT	MUNICIPALITY	AREA (HA)	RESOLUTION (DATE)
MONTES DE MARÍA POLÍGONO I	Sucre, Bolívar	Chalán, Colosó, Los Palmitos, Morroa, Ovejas, San Onofre, Tolú, El Carmen de Bolívar, María la Baja, San Jacinto, San Juan Nepomuceno	380,000	189 (01/02/2011)
GÜEJAR CAFRE	Meta	Ariari, Güejar, Cafre, Puerto Rico	35,187	2059 (11/08/2011)
CATATUMBO	Norte de Santander	Convención, El Carmen, El Tarra, Hacarí, San Calixto, Teorama, Tibúa	353,000	2060 (11/08/2011)
SUMAPAZ	Bogotá D.C.	Bogotá D.C. Localidad 20	25,318.82	3180 (25/11/2011)
LOZADA PERDIDO	Meta	Macarena, La Uribe	164,661.21	0431 (23/03/2012)

PERIJÁ	Cesar	Chimichagua, Chiriguaná, Curumaní, Pailitas	74,946.88	1952 (26/09/2012)
		Total	**1,033,110.91**	

Table 2: Areas that have requested ZsRC status in the preliminary phases of application

ZRC NAME (REQUESTED)	DEPARTMENT	MUNICIPALITY	AREA (HA)	RESOLUTION (DATE)
-	Cauca	Inzá, Totoró	75,000	(12/05/2011)
-	Cauca	Itaibe, Páez, Riochiqito	26,410	(12/05/2011)
-	Cauca	Caloto	No. of ha unknown, covers 8 rural wards	(08/08/2011)
-	Cauca	Corinto	No. of ha unknown, covers 44 rural wards	(08/08/2011)
-	Arauca	Fortúl	No. of ha unknown	(12/09/2011)
-	Cauca	Miranda	No. of ha unknown, covers 20 rural wards	(10/10/2011)
-	Arauca	Araucam Arauquita, Puerto Rondón Tame (Aires de Paz)	233,893	(13/06/3012)
-	Cauca	La Vega	35,000	(27/07/2012)

-	Valle del Cauca	Tuluá	No. of ha unknown, covers 26 rural wards	(02/08/2012)
-	Valle del Cauca	Ginebra, Guacarí	No. of ha unknown	(02/08/2012)
-	Cauca	Patía, Argelia, Balboa	No. of ha unknown	(07/12/2013)
-	Santander	Bucaramanga, Girón, Lebrija, Río negro, Sabana de Torres	No. of ha unknown, covers 70 rural wards	(19/01/2013) & (26/07/2013)
-	Cauca	Piendamó	18,000	(23/07/2013)
	Valle del Cauca	Pradera	7,235.17	(28/05/2014)
-	Cauca	Santa Rosa	124,249	(12/2014)
		Total	**519,787.17**	

Appendix 4: Agrochemical Toxicity Class

Soil fumigants, fungicides, herbicides, insecticides or general pesticides are all ranked by toxicity class to denote the strength and caution with which these substances should be used. The class system ranks from I-IV, going from smallest to largest in terms of hazard. This is measures according to the 'amount or concentration of a toxicant…required to kill 50 percent of the animals in a test population. This measure is usually expressed as LD_{50} (lethal dose 50) or LC_{50} (lethal concentration 50)' (Pennsylvania State University, 2006, p.1). See Table 1 below for a breakdown of the active ingredients of agrochemicals and Table 2 for the clothing and handling requirements.

Table 1: Toxicity Categories for Active Ingredients of Agrochemicals

	Toxicity Category			
Routes of Exposure	**I**	**II**	**III**	**IV**
Oral LD_{50}	Up to and including 50 mg/kg	50–500 mg/kg	500–5,000 mg/kg	>5,000 mg/kg
Inhalation LC_{50}	Up to and including 0.2 mg/l	0.2–2 mg/l	2–20 mg/l	>20 mg/l
Dermal LD_{50}	Up to and including 200 mg/kg	200–2,000 mg/kg	2,000–20,000 mg/kg	>20,000 mg/kg
Eye Effects	Corrosive corneal opacity not reversible within 7 days	Corneal opacity reversible within 7 days; irritation persisting for 7 days	No corneal opacity; irritation reversible within 7 days	No irritation
Skin Effects	Corrosive	Severe irritation at 72 hours	Moderate irritation at 72 hours	Mild or slight irritation at 72 hours
Signal Word	DANGER POISON	WARNING	CAUTION	CAUTION

Source: Pesticide Safety Fact Sheet, Pennsylvania State University, p.2.

Table 2: Routes of Exposure and Required Clothing for Agrichemical Handling

Route of Exposure	Toxicity Category of End-Use Product			
	I	II	III	IV
Dermal toxicity or skin irritation potential	Coveralls worn over long-sleeved shirt and long pants	Coveralls worn over short-sleeved shirt and short pants	Long-sleeved shirt and long pants	Long-sleeved shirt and long pants
	Socks	Socks	Socks	Socks
	Chemical-resistant footwear	Chemical-resistant footwear	Shoes	Shoes
	Chemical-resistant gloves	Chemical-resistant gloves	No minimum	No minimum
Inhalation toxicity	Respiratory protection device	Respiratory protection device	No minimum	No minimum
Eye irritation potential	Protective eyewear	Protective eyewear	No minimum	No minimum

Source: Pesticide Safety Fact Sheet, Pennsylvania State University, p.3.

Appendix 5: Wards in the ZRC-VRC

134 Rural Wards in the ZRC-VRC, according to the Municipality and Department they are located in.

Municipality and Department	Rural Ward
Yondó, Antioquia	Puerto Matilde, Jabonal, No te pases, Bocas de Don Juan, El Vietnam, Caño Don Juan, La Concha, El Bagre, El Campo Cimitarra, Cuatro Bocas, La Raya, San Miguel del Tigre, El Descanso, Las Lomas, El Totumo, Bellavista, Caño Blanco, Caño Bodegas, La Congoja, Bocas de San Francisco, El Disparo, La Soledad, La Orquídea, La Arrinconada, El Dique, Yondó Nuevo, La Represa, Puerto de los Mangos, X10, Rompida I y Rompida II, La Condor, Caño Bonito, Caño Negro, Caño Las Cruces, Peñas Blancas, Remolinos, El Paraíso, Sardinata Baja, Caño Huila, Patio Bonito, Rompedero, La Paz, La Unión, El Porvenir, La Felicidad, El Puerto, Puerto Nuevo, El Cedro, La Capilla, La Punta, San Juan de Ité, Hacienda La Ganadera, Barbacoas, Santa Clara, San Bartolo, Bodega Las Reglas, Cruce La Virgen, Bocas de Barbacoas, Sardinata Alta, San Juan Ité, El Campo, San Luis Beltrán, Puerto Casabe, Altamar, El Terminal, La Rinconada, El Amparo, Peñas Blancas,

	Laguna del Miedo, La Condor, La Cabaña
Remedios, Antioquia	Tamar Alto, Puerto Nuevo Ité, Dos Quebradas, Campo Vijao, Ojos Claros, Pananá Nueve, Alto de Manilas, Carrizal, Lejanías, Anacoreto, Caimana Alta, Caimana Baja, Caño Tigre, Camelias II, Plaza Nueva, Rio Negrito, Paso de La Mula, La Gorgona, El Popero, Cerro de Lágrimas, El Costeñal, El Chiquillo, La Ceiba, El Carmen, El Piñal, Santa Marta, Porvenir, El Puná, Cañaveral, Buenos Aires, El Río, La Cianurada, La Ratonera, Camelias, Bominas, Río Bagre, La Argentina, El Porvenir, La Sonadora, El Soldado
Cantagallo, Bolivar	La Poza, Las Nutrias, El Cagüi, El Paraguas, Patio Bonito, Buenos Aires, Coroncoros, El Porvenir, Lejanías, La Floresta, La Esperanza, Puerto Argelia, Cedro Alto, Yanacué, Chaparral, La Victoria, La Palúa, Muribá, El Diamante, Caño Doradas, Santo Domingo, Patico Alto y Patico Bajo, Sinzona, Brisas de Bolivar, Caño Seco, La Peña, Miralindo y La Bija, Floresta, La Esperanza, Caño Seco, El Limón, La granja, Isla no hay como Dios, El Cedro, San Juan Medio, El firme, Puerto Mina, Coyangal, El Porvenir, La Feria, La Pava, Lejanias, Nuevo Galán, Sinzona, Taladro

San Pablo, Bolivar	Bocas de Las Pavas,Caño Barbú, El Rosario, Las Margaritas, Boca del Zorro, Lomafresca, Mata de Guineo, Mata de Fique, Porvenir, Bajo Guarigüa, Los Cagüices, La Estrella, Las Mellizas, San Martín, La Pedregosa, La Esmeralda, Aguas Blancas, Patio Bonito, Las Virgencitas, La Unión, La Fria, La Florida, La Golondrina, El Jardín, Dos Quebradas, Los fundos, Montecarmelo, Caño Frio, Taracué , Medio Sicué, Alto Sicué, Alto San Juan, La Colina, Alto Berlín, Bajo Sicué, San Juan Bajo, Caño de Oro, Sinzona baja, Boca Cimitarra, Tabacurú, Cañabraval, La Loma, El Jardín, Mata de Guineo, La Estrella, Cerro Azul, Villanueva, Paraíso, Alto Cañabraval, Fría alta, Cerro Azul, Pozo Azul, Socorro, Bajo Ticué, Bocas de las Pavas, Tres Bocas, Isla Medellín, La pedregoza, La Ye, Las Colinas, el Retorno, Hachazo, Caño de oro

Source: ACVC, 2012, p.23.

Appendix 6: Items Sold in Three *Comunal Paz* Stores in the ZRC-VRC

Table 1: Items sold in the Puerto Matilde Comunal Paz Store (items are translated into English in brackets).

Processed Items/Price (COP)	**Empty Calories/Price (COP)**	**Fresh Food/Price (COP)**	**Non-Food Items/Price (COP)**
Arroz Casanare 460g/ $1.900 (Rice)	Aceite Bucaro 2000ml/$12.500 (Cooking Oil)	Cebolla Cabezona por Libra/$3.300 (Onions per Kilo)	Acetaminofen 500 mg/ $100 (Paracetamol)
Arroz Diana 500g/ $1.900 (Rice)	Aceite Z 300ml/$17.800 (Cooking Oil)	Huevo/$400 (Eggs)	Amoxicilina 100 ml/ $8.500 (Amoxicilin Antio-Biotics)
Arroz el Sol 460g/ $1.700 (Rice)	Aceite Bucaro 3000ml/$17.800 (Cooking Oil)	Papa por Libra/$600 (Potatoes per Kilo)	Ampicilina 500 g / $400 (Ampicillin Anti-Biotics)
Arveja Bodega Bogata 460g/ $1.600 (Canned Peas)	Avena Instantanea Extra Señora/ $2.000 (Flavoured Oat Drink Ready-mix)	Tomate por Libra/$1.800 (Tomatoes per Kilo)	Aromatel 205 ml/ $1.200 (Liquid Softener for Clothes)
Atun Soberana 170g/$4.300 (Canned Tuna)	Azucar Rio Paila/$2.000 (Sugar)		Blanqueador Yes 450 Ml/ $1.100 (Liquid

Processed Items/Price (COP)	Empty Calories/Price (COP)	Fresh Food/Price (COP)	Non-Food Items/Price (COP)
			Stain-remover for Clothes)
Avena En Hojuela Don Pancho 250g /$3.200 (Oatmeal)	Azucar Incauca/$2.000 (Sugar)		Bombillo Astro Bright/ $7.000 (Light Bulb)
Café Sello Rojo 125 g/$2.950 (Ground Coffee)	Azucar Suelto X Libra/$1.800 (Sugar)		Bateria Varta Grande Por Par/ $3.500 (AA Batteries)
Café Sello Rojo 500g/$11.00 (Ground Coffee)	Barquillo Piaza/$300 (Chocolate Filled Wafers)		Blancox 1000 ml/$2.200 (Liquid Stain-Remover for Clothes)
Color Sasones En Sobre /$100 (Spices)	Besiqueso Paquete /$400 (Cheese snack)		Bronquisol Jgb /$2.500 (Cough Syrup)
Café Sello Rojo 250 g /$5.500 (Ground Coffee)	Bombombum Chicle/$100 (Chewing gum)		Buscapina 500 g/$1.100 (Buscopan)
Fecula Deliplatano 200g/$2.200 (Baby Food Mix)	Bombombum Colombina/$300 (Lollypops)		Cepillo De Lavar Imusa/$3.000 (Brush to Clean Clothes)
Frijol 500 g/$3.000 (Beans)	Bianchi/ $100 (White Chocolate)		Costales/$1.200 (Linen Sacks)

Processed Items/Price (COP)	**Empty Calories/Price (COP)**	**Fresh Food/Price (COP)**	**Non-Food Items/Price (COP)**
Harina De Arroz Extraseñora/$500 (Rice Flour)	Chicle Agogo/$100 (Chewing gum)		Cigarrillos Kentuky/$2.300 (Cigarettes)
Harina Arepa Nieve 500g/$1.400 (Arepa Flour)	Chicle Agogo Bolita X 3/$100 (Chewing gum)		Cigarrillos Premier X 20/$4.700 (Cigarettes)
Leche En Polvo El Rodeo 380 g /$10.150 (Powdered Milk)	Chicle Splot/$100 (Chewing gum)		Crema De Peinar Savital 23 ml/$600 (Hair Cream)
Leche Klim En Sobre 28 g/$1.000 (Powdered Milk)	Chicle Splot Bolita/$100 (Chewing gum)		Crema Dental Colgate 60 ml Blanqueadora/$12.800 (Whitening Toothpaste)
Lenteja 480 g/$3.200 (Lentils)	Chitos Chistoso/$800 (Crisps)		Crema Dental Colgate Colgate Tripe Acción 60 ml/$2.500 (Toothpaste)
Jamoneta Zenu /$5.050 (Canned ham)	Choco Ball/$100 (Chocolate Balls)		Desodorante En Sobre Lady Speed Stick 10 g /$700 (Deodarant)
Maggie En Cubo/$300 (Cubed Stock)	Chocolate Corona En Pastilla 25 g /$500 (Instant Hot Chocolate)		Diclofenaco En Pastilla/$300 (Diclofenac Anti-inflamatory Tablet)

Processed Items/Price (COP)	**Empty Calories/Price (COP)**	**Fresh Food/Price (COP)**	**Non-Food Items/Price (COP)**
Nescafe 50g/$5.000 (Instant Coffee)	Chocolatina Jet 12 g /$500 (Chocolate Bar)		Diclofenaco Inyección 75 ml /$1.200 (Diclofenac Anti-inflamatory Injection)
Nestun Trigomiel 200g/$8.200 (Wheat and Honey Baby Food Mix)	Chocolisto 300g /$6.000 (Instant Hot Chocolate)		Dioxogen JGB 120 ml/$3.000 (Dixogen Antiseptic Solution)
Nescafe en Sobre 10g/$1.100 (Instant Coffee)	Chupeta De Piña Colada/$300 (Lolipops)		Dipirone Inyección 2 ml /$2.000 (Metamizole Painkiller Injection)
Pasta Fideo Comarico 120g/$600 (Pasta)	Colombina MR Look/$400 (Coffee Flavoured Sweets)		Esfero Bic/$700 (Ballpoint Pen)
Pasta Macarron 125g/$600 (Pasta)	Colombina Tipitin/$100 (Lolipops)		Esponja De Brillo Gol/$200 (Cleaning Sponge)
Pasta Spaguetti Pugliese 125g/$700 (Pasta)	Coridal 500g/$600 (Flavoured Cordial)		Esponja Lavaloza/$500(Cleaning Sponge)

Processed Items/Price (COP)	**Empty Calories/Price (COP)**	**Fresh Food/Price (COP)**	**Non-Food Items/Price (COP)**
Sardina Bocado De Mar 425g/$4.500 (Canned Sardines)	De Todito 45 g/$1.800 (Crisps)		Esponja Watrix/$500 (Cleaning Sponge)
Salchicha Zenu 150g/$3.800 (Canned Hotdogs)	Dulce Big Ben/$100 (Sweets)		Gentamicina Adultos 2 ml/$4.000 (Gentamicin Antibiotic for Adults)
Salchichon Cervecero/$8.000 (Cured Sausage)	Dulce Coffee Delight/$100 (Coffee Flavoured Sweets)		Ibuprofeno 800 mg/$400 (Ibruprofen)
Sardina Soberana 115g/$2.950 (Canned Sardines)	Dulce Fruticas/$100 (Fruit Flavoured Sweets)		Jabon De Baño 125 g/$2.200 (Shower Gel)
Trisason Caja Por 20g/$600 (Spices)	Dulce Morita/$50 (Raspberry Flavoured Sweet)		Jabon Dersa En Barra 350 g/$2.300 (Detergent in Bar Form)
	Fritura 500g/$4.200 (Crisps)		Jabon Dersa En Bolsa 500g/$3.600 (Powdered Detergent)
	Frutiño /$800 (Fruit Flavoured Drink)		Jabon Dersa Blanco en Bolsa 250g /$1.650 (Powdered Detergent)

Processed Items/Price (COP)	Empty Calories/Price (COP)	Fresh Food/Price (COP)	Non-Food Items/Price (COP)
	Frutiño Cremosito/$1.200 (Fruit Flavoured Drink)		Jabon Dersa En Bolsa 250 g/$1.900 (Powdered) Detergent)
	Frutura 1000g/$9.000 (Flavoured Milk)		Jabon Fab En Barra/$2.000 (Detergent in Bar Form)
	Galleta Capri Xl /$500 (Biscuits)		Jabon De Baño Lak /$2.000 (Soap Bar)
	Galleta Festival /$700 (Biscuits)		Jabon Dersa En Barra 250g/$2.000 (Detergent in Bar Form)
	Galletas Ducales 294g/$5.000 (Biscuits)		Jabon Unico /$1.500 (Detergent in Bar Form)
	Gomas Aros/$100 (Sweets)		Jabon Supremo En Barra 300 g /$2.300 (Detergent in Bar Form)
	Gomas Gusanitos/$100 (Sweets)		Jabon Top Terra En Barra 250 g/$1.800 (Detergent in Bar Form)
	Gomas Ranitas/$200 (Sweets)		Katori En Sobre/$600 (Anti-insecticide Ring)

Processed Items/Price (COP)	Empty Calories/Price (COP)	Fresh Food/Price (COP)	Non-Food Items/Price (COP)
	Lecherita En Sobre/$600 (Condensed Milk)		Lapiz Norma/$600 (Pencil)
	Masmelos Millows/$100 (Marshmellows)		Linterna Varta/$13.200 (Torch)
	Max Coco/$300 (Chocholate Wafers)		Naproxeno 500g/$600 (Naprox Anti-Inflammatory Tablet)
	Max Combi /$100 (Sweets)		Pañales Winny Etapa 1/$500 (Nappies)
	Mayonesa Fruco En Sobre 90g/$1.200 (Mayonnaise)		Pañales Winny Etapa 2/$700 (Nappies)
	Mayonesa La Constancia Sobre 90g/$1.000 (Mayonnaise)		Pañales Winny Etapa 3/$800 (Nappies)
	Menta Blanda/$100 (Mint Sweets)		Pañales Winny Etapa 4/$900 (Nappies)
	Menta Chao/$100 (Mint Sweets)		Papel Higinieco Familia Mega Rollo/$2.000 (Toilet Paper)

Processed Items/Price (COP)	Empty Calories/Price (COP)	Fresh Food/Price (COP)	Non-Food Items/Price (COP)
	Menta Helada/$100 (Mint Sweets)		Pila Varta Doble A/$3.500 (AA Batteries)
	Milo En Sobre 25 g/$1.100 (Biscuits)		Pila Varta Triple A /$3.400 (AAA Batteries)
	Nucita/$400 (Chocolate Spread)		Piroxicam 40 ml/$1.800 (Piroxicam Anti-Inflammatory Tablet)
	Papa Oreada/$1.200 (Crisps)		Prestobarba Gillete Ultra Great/$3.900 (Razor)
	Papa Mixton/$1.200 (Crisps)		Protectores Nosotras/$200 (Sanitory Towels)
	Papas Salsita/$1.000 (Crisps)		Puntilla El Caballo Por Kilo/$3.900 (Nails)
	Panela 960g/$1.900 (Sugar Cane)		Puntilla El Caballo Por Libra/$2.600 (Nails)
	Popetas/$1.200 (Caramel Popcorn)		Rollo De Cinta Pegante/$200 (Sellotape)

Processed Items/Price (COP)	Empty Calories/Price (COP)	Fresh Food/Price (COP)	Non-Food Items/Price (COP)
	Sal Refisal 500g/$600 (Salt)		Rula Gavilan/$13.800 (Machete)
	Super Coco/$100 (Coconut Flavoured Sweet)		Sacapuntas/$400 (Sharpener)
	Salsa De Tomate Fruco Sobre 90g/$1.200 (Tomato Ketchup)		Shampoo H&S En Sobre/$1.000 (Shampoo)
	Salsa De Tomate La Constancia Sobre 90gr/$1.000 (Tomato Ketchup)		Shampoo Savital 530 ml/$10.200 (Shampoo)
	Saltin Noel Por Taco/$1.300 (Salted Crackers)		Toalla Higienica Por Unidad/$400 (Sanitary Towels)
	Saltin Noel Queso Mantequilla Por Taco /$1.700		Toallas Higienicas Nosotras /$4.000 (Sanitary Towels)
	Tarro De Milo 200g/$9.000		Vela Por Unidad/$300 (Candles)
	Tipitin Corazon/$200		Tabaco El Motilon/$500 (Tobacco)

Total number of processed goods= 30

Total number of goods with empty calories= 64

Total number of fresh goods= 4

Total number of non-food items= 65

Table 2: Items sold in the Puerto Argelia Comunal Paz Store (items are translated into English in brackets).

Processed Items/Price (Cop)	**Empty Calories/Price (Cop)**	**Fresh Food/Price (Cop)**	**Non-Food Items/Price (Cop)**
Arepasan X 500/ $1,650 (Arepa Flour)	Aceite Bon Life X 5000/ $26,000 (Cooking Oil)	Carton De Huevo X 30/ $400 (Box Of 30 Eggs)	Acetaminofen X 500 Pastilla/$300 (Paracetamol)
Arroz Diana X 500/ $1,800 (Rice)	Aceite Bucaro X 2000/ $11,200 (Cooking Oil)	Cebolla Cabezona Por Libra/ $2,100 (Onions Per Pound)	Betun Buffalo X18/ $1,000 (Shoe Polish)
Arveja Con Zanahoria X 300/ $3,300 (Canned Peas and Carrots)	Aceite Bucaro X 3000/ $16,600 (Cooking Oil)	Papa Por Libra/$600 (Potatoes Per Pound)	Betun Cherry Promoción/ $8,200 (Shoe Polish)
Arveja X 500/ $1,400 (Canned Peas)	Aceite Bucaro X 450/ $2,800 (Cooking Oil)	Tomate Por Libra/ $1,500 (Tomatoes Per Pound)	Biovarso 850ml/ $8,450 (Bleach)
Arveja Zenu X 300/ $2,500 (Canned Peas)	Aji Respin X 90/ $1,400 (Chili Sauce)		Biovarsol 500ml/ $6,000 (Bleach)
Atun Soberana X 110/ $3,900 (Canned Tuna)	Alcohol Botella X 350/ $2,500 (Bottled Alcohol)		Blancox 500ml/ $1,000 (Stain-Remover for Clothes)

Processed Items/Price (COP)	**Empty Calories/Price (COP)**	**Fresh Food/Price (COP)**	**Non-Food Items/Price (COP)**
Avena En Hojuela Extra Señora X 200/ $1,000 (Oatmeal)	Arequipe X 250 / $3,500 (Caramel)		Blancox 530ml/ $1,200 (Stain-Remover for Clothes)
Avena Molida Extra Señora/ $1,000 (Ground Outmeal)	Avena Extra Señora De Sabores X 200/$2,000 (Flavoured Out Drink)		Bujia B7 Ngk/ $6,000 (Car Part)
Café Sello Rojo 125 G/ $2,800 (Ground Coffee)	Azucar Por Libra/ $1,750/ $1,750 (Sugar)		Bujia Champion/$5,800 (Car Part)
Café Sello Rojo 250g/ $5,200	Barquillos Piazza/ $500 (Chocolate Filled Wafer)		Cepillo Colgate/$2,000 (Toothbrush)
Café Sello Rojo En Sobre 50gr/ $1,000	Boka En Sobre/ $500 (Fruit Juice)		Clavo De Herrar Caja/$16,000 (Nails)
Café Sello Rojo X 500/ $10,500	Bom Bom Bum Colombina/ $300 (Lollipop)		Copas Paquete 1 Onza/ $1,500 (1 Ounce Of Plastic Cups)
Crema De Arroz Baby X 450/ $1,500 (Creamed Rice For Babies)	Chicle Splot Tatoo/ $100 (Chewing Gum)		Crema Dental Colgate X 22/ $1,200 (Toothpaste)

Processed Items/Price (COP)	**Empty Calories/Price (COP)**	**Fresh Food/Price (COP)**	**Non-Food Items/Price (COP)**
Cuajo Marchal Liquido/$19,000 (Rennet Liquid)	Chicle Xtime/ $100 (Chewing Gum)		Crema Para Peinar Konzil/ $700 (Hair Cream)
Cuajo Marshal Pastilla/$1,200 (Rennet Paste)	Chicle Splot Acid X 5/$200 (Chewing Gum)		Curitas/ $100 (Plasters)
Ensalada Vegetal Zenu X 300/ $3,500 (Canned Vegetables)	Chocolate Corona En Pastilla/ $400 (Chocholate)		Desodorante Balance Hombre/ $700 (Deoderante)
Esencia Y Extracto X 500/ $2,000 (Essential Extracts E.G. Vanilla)	Chocolate Corona X 250gr/ $6,000 (Chocholate)		Desodorante Balance Mujer/ $700 (Deoderante)
Fideos Pugliese X 125gr/ $500 (Pasta)	Chocolate Cruz X 250gr/ $7,000 (Chocholate)		Desodorante Lady Speed Stick/ $700 (Deoderante)
Harina Arepasan X 500/ $1,650 (Arepa Flour)	Chocolatina Jumbo Flow/ $1,000 (Chocholate)		Desodorante Speed Stick/ $700 (Deoderante)
Harina De Trigo X 500/ $1,100 (Wheat Flour)	Chocolisto X 1000/ $17,500 (Chocholate)		Escobas Plasticas/ $4,000 (Plastic Brush)

Processed Items/Price (COP)	**Empty Calories/Price (COP)**	**Fresh Food/Price (COP)**	**Non-Food Items/Price (COP)**
Jamoneta Zenu X 180/$ 4,500 (Canned Ham)	Chocolisto X 20/ $500 (Chocholate)		Esponja China / $550 (Sponge)
Leche En Polvo El Rodeo X 200 /$4,400 (Milk Powder)	Chocolisto X 300/ $6,200 (Chocholate)		Esponja Doble Uso / $800 (Sponge)
Leche En Polvo El Rodeo X 384 /$8,000 (Milk Powder)	Colombina Super Coco/ $300		Esponja Dorada Plata/ $1,000 (Sponge)
Leche Klim Nutri Rinde X 28/$1,000 (Milk Powder)	Colombina Tipitin Corazon/$100		Fabuloso X 200/ $1,200 (Liquid Floor Cleaner)
Leche Klim Nutri Rinde X 364 /$7,800 (Milk Powder)	Dulce Bianchi/$100 (Chocolate)		Gel Ego/$800 (Hair Gel)
Maggi Desmenuzado/$300 (Stock)	Dulce Supercoco/$100 (Chocolate)		Intibon X 14/$1000 (Intimate Soap)
Maggi En Cubo/$300 (Stock)	Fritura X 3000/$17,600 (Crisps)		Jabon Axion X 450/$4,500 (Soap)

Processed Items/Price (COP)	**Empty Calories/Price (COP)**	**Fresh Food/Price (COP)**	**Non-Food Items/Price (COP)**
Maiz Pira/$1,600 (Popcorn)	Frituras X 1000/$7,300 (Crisps)		Jabon Axion X 900/$8,500 (Soap)
Nestun Trigo Miel X 200/$7,500 (Ground Wheat Baby Food)	Frituras X 2000/$12,500 (Crisps)		Jabon Dersa En Bolsa X 250 /$1,500 (Soap)
Ricostilla Desmenusado/$300 (Stock)	Frituras X 500/$4,300 (Crisps)		Jabon Dersa En Bolsa X 500/$2,950 (Soap)
Salchicha Rica X 150/$2,500 (Canned Sausage)	Frutiño En Sobre/$650 (Fruit Juice Concentrate)		Jabon Dersa En Bolsa X 96/$800 (Soap)
Salchicha Zenu X 150/$2,800 (Canned Sausage)	Galleta Festival /$700 (Biscuits)		Jabon Dersa X 250/$1,500 (Soap)
Sardina Soberana X 155/ $2,650 (Canned Sardines)	Galleta Rondalla Leche /$200 (Biscuits)		Jabon Especial X 250/$1,200 (Soap)
Sardina Soberana X 425/$4,200 (Canned Sardines)	Gelatina Frutiño X 41/ $1,000 (Fruit Jelly)		Jabon Jhonson X 125 /$3,600 (Soap)
Spaguetti La Muñeca X 250gr/$600 (Pasta)	Gol/ $800 (Chocolate)		Jabon Losa Cream X 150/$1,000 (Soap)

Processed Items/Price (COP)	**Empty Calories/Price (COP)**	**Fresh Food/Price (COP)**	**Non-Food Items/Price (COP)**
Spaguetti Plugiese X 125/$500 (Pasta)	Lecherita Nutritive/$600 (Condensed Milk)		Jabon Losa Cream X 200/$2,100
Trisason/ $500 (Spices)	Maizena De Sabores/$1,000 (Flavoured Drink)		Jabon Losa Cream X 450/$3,900 (Soap)
	Mantequilla Gustocita/ $2,900 (Butter)		Jabon Oro/$700 (Soap)
	Mayonesa Fruco X 400/$10,500 (Mayonnaise)		Jabon Palmolive X 130/$1,800 (Soap)
	Mayonesa Fruco X90/$1,100 (Mayonnaise)		Jabon Protex X 25/$1,300 (Soap)
	Mayonesa La Constancia X 90/$1,000 (Mayonnaise)		Jabon Protex X130/$1,800 (Soap)
	Menta Helada/$100 (Mint Sweet)		Jabon Puro En Polvo X 450/$3,500 (Soap)
	Milo En Sobre/$3200 (Biscuits)		Jabon Super Riel X 450/$2,350 (Soap)

Processed Items/Price (COP)	Empty Calories/Price (COP)	Fresh Food/Price (COP)	Non-Food Items/Price (COP)
	Milo X 25/$1,000 (Biscuits)		Jabon Supremo X 340/$2,000 (Soap)
	Nucita/$400 (Chocolate)		Jabon Supremo X240/$1,500 (Soap)
	Okaloka/$450 (Sweets)		Jabon Top Terra X 250/$1,600 (Soap)
	Okaloka/$1,800 (Sweets)		Jabon Unico X 450/$1,500 (Soap)
	Palitos Laser/$500 (Sweets)		Juegos De Herraduras/ $5,000 (Horseshoe Game)
	Panelas/$2,000 (Sugar Cane)		Katori/$800 (Insect Repellent Ring)
	Quipitos/$400 (Sweets)		Lapicero Bic De Colores/$500 (Ballpoint Pen)
	Sal Bonfiest Plus/$2000 (Salt)		Lapicero Bic Negro/$500 (Ballpoint Pen)
	Sal Por Libra/$600 (Salt)		Lima Redonda/$5000 (Screwdriver)
	Salsa Negra Respin X 90/$1,500 (Soya Sauce)		Lima Triangula/$4,500 (Screwdriver)

Processed Items/Price (COP)	Empty Calories/Price (COP)	Fresh Food/Price (COP)	Non-Food Items/Price (COP)
	Saltin X 3 Tacos/$3,500 (Crackers)		Mechas De Trapero/$4,500 (Mop Head)
	Suntea Sobre/ $600 (Iced Tea Mix)		Mechas De Trapero X 500/$3,500 (Mop Head)
	Tumix/$500 (Chewing Gum)		Mechera Win/$800 (Lighter)
			Noraver Garganta En Sobre/$1,000 (Throat Medicine)
			Noraver Noche Sobre/$1,500 (Throat Medicine)
			Nosotras Invisible Paquete/$3,600 (Sanitary Towels)
			Nutribela/ $1000 (Hair Cream)
			Palo De Trapero/$2,000 (Mop Pole)
			Pañal Babysec Etapa 3/$ 350 (Nappies)

Processed Items/Price (COP)	Empty Calories/Price (COP)	Fresh Food/Price (COP)	Non-Food Items/Price (COP)
			Pañal Winny Etapa 2/$600 (Nappies)
			Pañal Winny Etapa 3 /$650 (Nappies)
			Pañal Winny Etapa 4 /$800 (Nappies)
			Papel Higienico Rosal Plus Morado/$1,200 (Toilet Paper)
			Prestobarba 3 Hojas/$2,000 (Razors)
			Protectores Nosotras X 15/$3,000 (Sanitary Towels)
			Puntilla X Caja/$3,000 (Serviettes)
			Recogedor/$2,000 (Dustpan)
			Rollo En Fibra/$2,000 (Cleaning Cloth)
			Rulas Con Lima/$14,000 (Machete)

Processed Items/Price (COP)	Empty Calories/Price (COP)	Fresh Food/Price (COP)	Non-Food Items/Price (COP)
			Servilleta Favorita Paquete/$1500 (Serviettes)
			Shampoo 2 En 1 Konzil/$700 (Shampoo)
			Shampoo H&S/$700 (Shampoo)
			Shampoo Konzil Renovación Total/$700 (Shampoo)
			Shampoo Savital/$500 (Shampoo)
			Talco Yodora Promocion/$13,800 (Talcum Powder)
			Toalla Higienica Ledy Soft Paquete X 8/$2,000 (Packet Of Sanitary Towels)
			Toalla Higienica Nosotras Extra Protección X Unidad/$400 (Single Sanitary Towels)

Processed Items/Price (COP)	Empty Calories/Price (COP)	Fresh Food/Price (COP)	Non-Food Items/Price (COP)
			Toalla Higienica Nosotras Invisible Clasica X Unidad/$400 (Single Sanitary Towels)
			Toalla Higienica Nosotras Plus Canal Gel X Unidad/$400 (Single Sanitary Towels)
			Varta AA Alkaline/$3,200 (AA Batteries)
			Varta AAA Alkalina/$3,200 (AAA Batteries)
			Varta Grande X Par/$3,500 (Batteries)
			Vasos 7 Onzas Vasos/$1,500 (7 Ounces of Plastic Glasses)
			Velas/$300 (Candles)
			Yodora En Roll On/$1,500 (Deodorant)

Processed Items/Price (COP)	Empty Calories/Price (COP)	Fresh Food/Price (COP)	Non-Food Items/Price (COP)
			Yodora X 12 /$200 (Deodorant)
			Yodora X 25/$4,500 (Deodorant)

Total number of processed goods= 38

Total number of goods with empty calories= 57

Total number of fresh goods= 4

Total number of non-food items= 91

Table 3: Items sold in the Puerto Nuevo Ité Comunal Paz Store (items are translated into English in brackets).

Processed Items/Price (Cop)	Empty Calories/Price (Cop)	Fresh Food/Price (Cop)	Non-Food Items/Price (Cop)
Arroz Libra Suelto/$1,350 (Rice)	Aceite Bucaro 3000gr/$17,500 (Cooking Oil)	Cebolla Cabezona Libra/$3,400 (Onion Per Pound)	Aromatel 205/$1,200
Arroz Sol 460 Gr/$1,400 (Rice)	Aceite Bucaro 460gr/$2,800 (Cooking Oil)	Cebolla En Rama Libra/$1,900 (Onion Per Bunch)	Atatodo/$2,000 (String)
Arveja Bb Libra/$2,500 (Canned Peas)	Aceite Bucaro 900gr/$5,500 (Cooking Oil)	Huevo Unidad/$400 (Eggs)	Betun Bufalo/$1,000 (Shoe Polish)

Processed Items/Price (Cop)	**Empty Calories/Price (Cop)**	**Fresh Food/Price (Cop)**	**Non-Food Items/Price (Cop)**
Arveja Con Zanahoria En Lata Zenu/$3,300 (Canned Peas And Carrots)	Alcohol 350 Gr/$2,500 (Alchohol)	Papa Libra/$550 (Loose Potatoes)	Biovarsol 500gr/$6,000 (Liquid Detergent)
Atun Soberana/ $3,900 (Canned Tuna)	Azucar Libra Castilla/$1,150 (Sugar)	Tomate Libra/$1,100 (Loose Tomatoes)	Biovarsol 850gr/$8,500 (Liquid Detergent)
Avena Entera Sur 250 Gr/$1,500 (Whole Oatmeal)	Azucar Libra Suelto/$1,150 (Sugar)		Blancox/$1,000 (Stain-Remover for Clothes)
Avena Molida Sur 250 Gr/$1,500 (Ground Oatmeal)	Bombon Dr Look/ $500 (Lollipop)		Blanqueador Yes 450gr/$1,100 (Stain-Remover for Clothes)
Bandeja De Pollo/$3,500 (Packet of Chicken)	Chicle Bolon/$50 (Chewing Gum)		Bombillo San Jorge 1500h/$3,200 (Light Bulb)
Café Sello 250gr/$5,000 (Ground Coffee)	Chicle Splot/$100 (Chewing Gum)		Bujia Champion/$5,800 (Car Part)
Café Sello Rojo 125gr/$2,650 (Ground Coffee)	Chicle Xtim Canela/$100 (Chewing Gum)		Bujia Ngk B710/$6,000 (Car Part)
Café Sello Rojo 250gr/$5,300	Chicle Xtime Mojito/$100		Cepillo Dental Colgate Premier/ $1,800

(Ground Coffee)	(Chewing Gum)		(Toothbrush)
Processed Items/Price (Cop)	**Empty Calories/Price (Cop)**	**Fresh Food/Price (Cop)**	**Non-Food Items/Price (Cop)**
Café Sello Rojo 500gr/$10,500 (Ground Coffee)	Chocolate Corona Libra/$6,900 (Chocolate)		Cigarrillos Premier Paquete/ $4,200 (Cigarettes)
Café Sello Rojo 50gr/$1,100 (Ground Coffee)	Chocolate Corona Pastilla/$450 (Chocolate)		Clavo De Herrar/$16,000 (Nails)
Colcafe Sobre/$800 (Ground Coffee)	Chocolisto 100g/$17,500 (Chocolate)		Copa Aguardientera De 1 Oz Paquete/$1,500 (Aguardiente Cup_
Cuajo Marshal Liquid/$19,000 (Liquid Rennet)	Chocolisto 20gr/$500 (Chocolate)		Crema Dental Colgate/$1,100 (Toothpaste)
Ensalada Vegetal Zenu 300gr/$50 (Canned Mixed Vegetables)	Chocolisto 300 G/$6,200 (Chocolate)		Crema Dental Colgate 60g/$2,500 (Toothpaste)
Fideo Comarico/$600 (Pasta)	Colombina Big Bum/$300 (Sweets)		Crema Dental Colgate 75g/$4,900 (Toothpaste)
Fideo Mariapaz/$500 (Pasta)	Colombina Tipitin Corazon/$100 (Lollipop)		Curitas/$100 (Plasters)

Processed Items/Price (COP)	**Empty Calories/Price (COP)**	**Fresh Food/Price (COP)**	**Non-Food Items/Price (COP)**
Frijol Bb Libra/$2,900 (Canned Beans)	Dulce/$100 (Sweets)		Desodorante Balance Clinical Protection/$600 (Deodorant)
Harina Arepa Arepa/$1,500 (Arepa Flour)	Dulce Fruticas/$3,500 (Fruit Flavoured Sweets)		Desodorante Balance Mujer/$700 (Deodorant)
Harina Arepasan/$1,500 (Arepa Flour)	Fritura 1000gr/$7,300 (Crisps)		Desodorante Yodora 30 Gr/$2,000 (Deodorant)
Harina De Trigo San Miguel/$1,000 (Wheat Flour)	Fritura 2000gr/$13,500 (Crisps)		Desodorante Yodora En Crema 12 Gr/$2,000 (Deodorant)
Harina Siete Granos/$800 (Seven Grain Flour)	Fritura 3000gr/$17,600 (Crisps)		Desodorante Yodora En Crema 25 Gr/$4,500 (Deodorant)
Jamoneta Zenu 180gr/$4,500 (Canned Ham)	Fritura 500gr/$4,300 (Crisps)		Desodorate Lady Speed Stick/600 (Deodorant)
Leche En Polvo El Rodeo 380gr/$9,500 (Powdered Milk)	Frutidelicias Esencia/$2,000 (Fruit Concentrate Extract)		Escoba/$4,000 (Broom)

Processed Items/Price (COP)	Empty Calories/Price (COP)	Fresh Food/Price (COP)	Non-Food Items/Price (COP)
Lenteja Bb Libra/$2,900 (Canned Lentils)	Frutiño Sobre 18gr/$800 (Fruit Concentrate Extract)		Esponja China/$700 (Sponge)
Macarron Corto Maripaz/$500 (Pasta)	Galletas De Leche Muu/$200 (Biscuits)		Esponja Doble/$800 (Sponge)
Maggi En Cubo/$350 (Stock)	Galletas Ducales/$4,850 (Biscuits)		Fabuloso 200 Ml/$1,400 (Liquid Detergent)
Maiz Pira/$1,500 (Popcorn)	Gelatina En Caja/$1,000 (Jelly)		Fabuloso 500 Ml/$3,000 (Liquid Detergent)
Nestun En Caja 200 Gr/$7,500 (Baby Food Mix)	Oka Loka/$500 (Sweets)		Jabon As Azul 1000gr/$6,000 (Soap)
Ricostilla En Cubo/$350 (Stock)	Huerradura Juego/$5,500 (Fruit Juice)		Jabon As Azul 125gr/$1,000 (Soap)
Salchicha Rica 150gr/$2,500 (Cured Sausage)	Mayonesa Fruco 400 Gr/$10,500 (Mayonnaise)		Jabon As Azul 500gr/$3,300 (Soap)
Salchicha Zenu 150 Gr/$2,800 (Canned Ham)	Mayonesa La Constancia 200 Gr/$3,100 (Mayonnaise)		Jabon As Blanco/$1,800 (Soap)

Processed Items/Price (COP)	**Empty Calories/Price (COP)**	**Fresh Food/Price (COP)**	**Non-Food Items/Price (COP)**
Sardina Soberana 297/$4,650 (Canned Sardines)	Mayonesa La Constancia Sobre 90 Gr/$1,200 (Mayonnaise)		Jabon Axion 450 Gr/$4,500 (Soap)
Sasones Sobre/$33 (Spices)	Menta Helada Unidad/$50 (Chewing Gum)		Jabon Axion 950 Gr/$8,500 (Soap)
Spaguetti Comarico/$600 (Pasta)	Milo En Sobre 100gr/$3,200 (Biscuits)		Jabon De Baño Jhonson 125gr/$3,000 (Soap)
Spaguetti Mariapaz 123gr/$500 (Pasta)	Milo Sobre 25g/$1,000 (Biscuits)		Jabon De Baño Palmolive/$2,300 (Soap)
Trisason En Caja/$600 (Spices)	Panela Unidad/$2,000 (Sugar Cane)		Jabon De Baño Protex/$2,400 (Soap)
Vinagre La Constancia 230 Gr/$1,300 (Vinager)	Piaza/$500 (Chocolate stuffed wafers)		Jabon Dersa 250g/$1,500 (Soap)
	Pirulito/$200 (Sweets)		Jabon Especial 250/$1,250 (Soap)
	Sal Refisal Libra/$600 (Salt)		Jabon Intimo Nosotras 50 Ml/$3,500 (Soap)

Processed Items/Price (COP)	Empty Calories/Price (COP)	Fresh Food/Price (COP)	Non-Food Items/Price (COP)
	Salsa De Aji Respin 90 Mg/$1,400 (Chilli Sauce)		Jabon Loza Cream 150 Gr/$1,000 (Soap)
	Salsa De Tomate La Constancia Sobre 90 Gr/$1,200 (Tomato Ketchup)		Jabon Loza Cream 250gr/$2,500 (Soap)
	Salsa Negra Respin 90 Mg/$1,500 (Soy Sauce)		Jabon Loza Cream 450gr/$3,900 (Soap)
	Saltin Normal Taco/$1,350 (Crackers)		Jabon Oro/$800 (Soap)
	Saltin Queso Mantequilla Taco/$1,700 (Cheese Crackers)		Jabon Rey 300g/$1,600 (Soap)
	Suntea Sobre 30 Gr/$1,100 (Iced Tea)		Jabon Superriel 450/$2,350 (Soap)
	Tumix/$100 (Chewing Gum)		Jabon Supremo 240gr/$1,500 (Soap)

Processed Items/Price (COP)	Empty Calories/Price (COP)	Fresh Food/Price (COP)	Non-Food Items/Price (COP)
	Vino Moscatel Botella 750 Cc/$3,500 (Bottled Wine)		Jabon Supremo 346gr/$2,000 (Soap)
			Jabon Top Terra/$1,600 (Soap)
			Katori/$800 (Insecticide Ring)
			Lapicero Bic Azul/$500 (Ballpoint Pens)
			Lapicero Bic Colores/$500 (Ballpoint Pens)
			Lima Redonda/$4,400 (Screwdriver)
			Lima Triangula/$4,400 (Screwdriver)
			Linterna/$7,800 (Torch)
			Linterna China/$6,000 (Torch)
			Mecha Para Trapero 1000gr/$5,000 (Mop Head)

Processed Items/Price (COP)	Empty Calories/Price (COP)	Fresh Food/Price (COP)	Non-Food Items/Price (COP)
			Mecha Para Trapero 500 Gr/$3,500 (Mop Head)
			Mechera/$800 (Lighter)
			Noraver Garganta Sobre/$1,000 (Throat Medicine)
			Noraver Gripa Noche/$1,500 (Throat Medicine)
			Nutribela Sobre/$1000 (Shampoo)
			Palo De Trapero/$2,000 (Mop Pole)
			Pañal Babysec Etapa 3 Unidad/$600 (Nappies)
			Pañal Winny Etapa 2 Unidad/$600 (Nappies)
			Pañal Winny Etapa 3 Unidad/$650

			(Nappies)
Processed Items/Price (COP)	**Empty Calories/Price (COP)**	**Fresh Food/Price (COP)**	**Non-Food Items/Price (COP)**
			Pañal Winny Etapa 4 Unidad/$800 (Nappies)
			Papel Higienico Rosal Grande/$1,200 (Toilet Paper)
			Pila Varta Aa/$3,200 (Aa Batteries)
			Pila Varta Aaa/$3,200 (Batteries)
			Pilas Varta Grande Par/$3,500 (Batteries)
			Prestobarba Gilette/$3,700 (Razors)
			Protectores Nosotras/$200 (Sanitary Towels)
			Protectores Nosotras X 15/$2,200 (Pads)
			Puntila De 3,5/$3,000 (Serviettes)

Processed Items/Price (COP)	Empty Calories/Price (COP)	Fresh Food/Price (COP)	Non-Food Items/Price (COP)
			Puntilla De 2/$3,000 (Serviettes)
			Puntilla De 2,5/$3,000 (Serviettes)
			Recogedor/$1,400 (Dustpan)
			Rula Unidad/$14,000 (Machete)
			Servilleta Favorita 10g/$1,500 (Serviettes)
			Shampoo H&S/$600 (Shampoo)
			Shampoo Konzil Restauración Total/$600 (Shampoo)
			Shampoo Savital Sobre/$500 (Shampoo)
			Tabaco Puma/$350 (Tobbaco)
			Talco Yodora Precio Especial/$13,800 (Talcum Powder)

Processed Items/Price (COP)	Empty Calories/Price (COP)	Fresh Food/Price (COP)	Non-Food Items/Price (COP)
			Toallas Higienicas Nosotras Clasica Tela Unidad/$400 (Individual Sanitary Towels)
			Toallas Higienicas Nosotras Invisble Clasica/$5,000 (Sanitary Towels)
			Toallas Higienicas Nosotras Noche Unidad/$500 (Individual Sanitary Towels)
			Toallas Higienicas Nsotras Canal Gel Unidad/$400 (Individual Sanitary Towels)
			Vela Unidad/$350 (Individual Candles)

Total number of processed goods= 40

Total number of goods with empty calories= 50

Total number of fresh goods= 6

Total number of non-food items= 92