BSE controversy in Korea

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I, Hyun Sook Cho, 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 has examined the Bovine Spongiform Encephalopathy (BSE) controversy in Korea in terms of civic epistemology conceptualised by Jasanoff. The Korean BSE controversy occurred as a result of uncertainty over BSE being mobilised within complex political and economic contexts between Korea and the US, particularly over the issue of the import of US beef after 2003. The complexity of the interests impeded the Korean government from adopting a clear position on BSE risk in beef, and thus led to public distrust and massive public protests in 2008.

The controversy demonstrated what I have called an authoritarian character of civic epistemology in Korea, such as the dominance of the government in knowledge production, public accountability limited to procedural form, and dependence on foreign authority. It can be ascribed to the traces of the development process which had been led by a powerful state and which relied on importing advanced countries' knowledge and skills. However, simultaneously, the controversy showed that this civic epistemology is in transition, challenged by a growing civil society and an increasing demand for public participation. In light of this, rather than a one-off phenomenon, the BSE controversy in Korea could be defined as a symptom of tension caused by friction between the ingrained approach to policy-making and increasing public awareness of democracy. This pattern of civic epistemology, I suggest, is a distinctive outcome of Korea's status as a latecomer country which has achieved compressed economic growth and recent political democratisation.

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1 Introduction

1.1 Background and research aim

This thesis considers the controversy in South Korea (hereafter Korea) regarding potential Bovine Spongiform Encephalopathy (BSE) risks associated with the importation of US beef.

Summary of the controversy

In 2008, Korea saw massive public protests in opposition to the newly formulated regulations for imported US beef. The Korean government, which had allowed only boneless muscle meat from cattle younger than 30 months since 2006, made an agreement with the US government to import beef from cattle older than 30 months and some by-products such as bone and intestine which had previously been prohibited. Public outrage was sparked by a TV program which criticised the government for allegedly allowing beef products with potential risk of BSE. Indeed, this led to scare and panic over BSE spreading rapidly through the country. Online discussion boards of major internet portal sites represented the main places where BSE-related information was disseminated and rallies organised. Candlelight rallies calling for the beef agreement to be scrapped swept the entire country, lasting more than 2 months. According to the Korean National Police Agency, 2,398 assemblies were held, whilst approximately 1 million people participated in demonstrations

from 2nd May to 15th August 2008.[1]

Figure 1 Downtown Seoul full of candlelight on 10th June 2008 (© Nam Soyeon, *OhmyNews*)

Bovine Spongiform Encephalopathy (BSE) is a fatal cattle disease which is known by its popular name 'mad cow disease.' When BSE first emerged in British cattle in the 1980s, it was a completely unknown disease. British policy-makers and scientists did not have clear information regarding where the disease had originated from, how it should be treated, or whether it posed risks to humans. The British government set up scientific advisory bodies and promoted regulatory policies on BSE (e.g. cull of infected cattle, ban on ruminant protein feed for ruminant animals, removal of risky materials in human food chain). There were voices which criticised the government for being complacent over the introduction of beef regulations and requested more precautionary regulations. However, the UK government argued that the policies were grounded on purely scientific evidence and independent experts' recommendations. It also reassured the public that beef was safe to eat despite the

[1] Seoul Central District Prosecutors' office, *White Paper on Illegal Violent Demonstrations Objecting US Beef Import*, 2009.

potential presence of BSE, and that the disease would not be transmitted to humans. Nevertheless, in Britain, tens of thousands of infected cattle were slaughtered every year in the 1990s whilst approximately 170,000 BSE cases were confirmed cumulatively by 1996.[2] The tragedy peaked when the UK government stated in March 1996 that the deaths of a number of young people in the UK were due to a new variant Creutzfeldt-Jakob Disease (vCJD) and that this disease was suspected to have resulted from the consumption of BSE-contaminated beef products. More than ten years of assurance from the UK government regarding the safety of beef ended with the mass slaughter of cattle and the death of hundreds of people. The trust in the government as well as the beef market seriously collapsed.

With this said however, following the tragedy in the 1990s in Europe, BSE incidence diminished drastically with world-wide risk control measures in place. Regulatory standards on BSE are proposed and monitored world-wide by the World Organization for Animal Health (Office International des Epizooties, OIE). The disease is now recognised as having entered a controllable stage, in spite of the remaining uncertainties.

The Korean government claimed that US beef was safe to eat due to the fact that new beef sanitary requirements were based on science and international standards. However, the safety claims could not resolve the public concern regarding BSE risk in beef, though they were generally supported by the scientific community. The trustworthiness of official assurances regarding the safety of US beef was

[2] OIE, "Number of Cases of Bovine Spongiform Encephalopathy (BSE) Reported in the United Kingdom," http://www.oie.int/animal-health-in-the-world/bse-specific-data/number-of-cases-in-the-united-kingdom/.

undermined by the earlier policy, namely the import of only boneless beef from cattle under the age of 30 months in 2006. Fundamentally speaking, the import of US beef was always politically sensitive issue in Korea. US beef meant a threat to domestic agriculture, and the Korean government's regulatory policy on US beef was always mixed with its consideration of the beef industry. BSE had been linked to US beef issues since the detection of BSE-infected cattle in the US in 2003, whilst political and economic considerations of the Korean government such as the domestic livestock industry and the US-Korea alliance complicated the beef issue.

Korean civil organisations raised dissenting accounts regarding BSE risk in US beef against the government's safety claims. Contradictory claims about BSE and beef safety raised by the government and the dissenters presented 'scientific truth' as a solution to the controversy. However, scientific discussions could not resolve the controversy. Public protest ended when the government stepped back, reintroducing the ban on beef from cattle over the age of 30 months.

Previous studies of the Korean controversy

Studies examining the Korean BSE controversy have mainly concerned politics and the political implications of the massive civil protests. The views on the public protests are different according to commentators' political positions. Conservative groups argued that distorted media reports, the spread of false information through the Internet, and the intervention of anti-government groups caused irrational public

responses.[3] On the other hand, opposition parties and progressive groups argued that the protests were the expression of a demand for the correction of policy failure, and focussed on the candlelight vigils as a new type of social movement highlighting the participants, Internet mobilisation, or drawbacks of old party system in Korea.[4] Although the scientific disputes about BSE and vCJD were central to the controversy, these studies considered scientific knowledge as given, fixed thing, and consequently failed to pay attention to the scientific disputes.

Studies by certain Korean STS scholars have paid attention to the uncertainty of BSE risk. Bak's criticism centred on Public Understanding of Science, specifically that the Korean government and the conservative press ignored the ability of the public to learn scientific knowledge and considered the BSE issue as a scientific problem which should be decided by experts. [5] He argued that public anxiety about US beef and distrust of the government's safety claims were not caused by the public deficit of scientific knowledge, but instead the uncertainty of BSE knowledge, and thus the public anxiety and panic should not be disparaged as irrational. Kim examined how oppositional experts formed and consolidated their expertise during the BSE controversy. He argued that alliance of dissenting experts in various disciplines, such as veterinary science, public health, law and international trade,

[3] Seoul Central District Prosecutors' office, *White Paper on Illegal Violent Demonstrations Objecting US Beef Import*. ; Sung-gi Hong, "A Look at the Changes in Debate Structure in Korea through the Candlelight Vigils", *Korea jornal* 50, 3 (2010): 100–127.

[4] Kisuk Cho, "The Ideological Orientation of 2008 Candlelight Vigil Participants : Anti-American, pro-North Korean Left or Anti-Neoliberalism?," *Korean Political Science Review* 43, no. 3 (2010): 125–148.; Suhong Chae, "The Candlelight Protest and the Politics of the Baby Stroller Brigades," *Korea Jornal* 50, no. 3 (2010): 71–99.;Chul-Kyoo Kim, "Teenage Participants of the 2008 Candlelight Vigil: Their Social Characteristics and Changes in Political Views," *Korea Jornal* 50, no. 3 (2010): 14–37.; Won Koh, "The Party Politics, a Hot Potato of Candlelight Vigil", *Citizen and the World* 14 (2008): 165–174.

[5] Heeje Bak, "The Controversy over American Beef and Rationality in Public Perceptions of Risk : A Perspective of Public Understanding of Science," *Phenomena and Cognition* 109 (2009): 91–116.

formed ‘hybrid expertise’ during the BSE controversy, and the hybrid expertise of the dissenting experts was more powerful than the government’s only science-dependent claims, because political and economic interests were mixed up with health concern.[6] Jung and Sung argued that the Korean government neither understood the public health concerns nor managed BSE risk issue, because it did not recognise the political aspects of risk such as public acceptance of risk or trust in the government.[7]

All these studies noted that the risk issue over US beef was a hybrid area in which both social and scientific considerations were needed and the scientific knowledge was uncertain. However, they simply used the uncertainty of scientific knowledge about BSE to support the authority of counter-claims from dissenters or to criticise the government for its ignorance regarding the precautionary principle. In the above studies, scientific claims presented by the government were downgraded as flawed, and the policy making process within the government did not receive attention. However, the regulatory policy on US beef of the Korean government cannot simply be regarded as the result of the government’s ignorance or intentional distortion of scientific knowledge. Each country has different regulatory policies regarding BSE and beef safety (as will be shown in Chapter 4). Indeed, the application of a ‘precautionary principle’, which was frequently cited as grounds for criticism of the government’s claims is constructed in different ways in different countries according

[6] Jongyoung Kim, “Construction of Oppositional Know Ledge: Hybrid Expert Alliance and Development of Oppositional Logics in the 2008 Candlelight Movement,” *Korean Journal of Sociology* 45, no. 1 (2011): 109–152.

[7] Byung-Kul Jung and Jie-un Seong, “Politicized Risk and Failed Management of Technological Risk,” *Journal of Science and Technology Studies* 8, no. 2 (2008): 27–56.

to the character of the issue and the context of each society.[8] As such, it is necessary to examine how the Korean government reached its regulatory policy decision and what factors were involved in the policy-making in order to develop a better understanding of the BSE controversy in Korea.

The study of Ha focussed on BSE risk as a socio-technological construct.[9] He examined the disputes over the definition of Specified Risk Materials (SRMs) and the difference in genetic vulnerability to vCJD among different ethnic groups, which were raised during the Korean controversy. He showed that the disputes originated from the implicit complexity and uncertainty embedded in risk assessment practice. According to him, different experimental methods (tissue infectivity and pathogenesis) detected BSE-infectivity in different bovine tissues, and different 'styles of scientific practice' (prevention epidemiology vs. general laboratory research style) resulted in different interpretations of the causation between polymorphism of genotype and occurrence of vCJD. His study explained the internal complexity and uncertainty of BSE knowledge, but it could not explain why the socially-constructed uncertainties regarding BSE, which were not problematic in the other countries, brought about huge conflict in Korean society.

Studies from STS perspective noted the uncertainty and the socially constructed nature of BSE risk, but they failed to consider the internal policy process of the

[8] Wiener and Rogers (2002) showed the application of precautionary principle of EU and US to beef related risk were issue-specific, unlike the traditional concept that EU is more precautious than the US. Europe has been more precautionary about hormones in beef, while the US has been more precautionary about mad cow disease (BSE) in beef and blood donations. Jonathan B. Wiener and Michael D. Rogers, "Comparing precaution in the United States and Europe", *Journal of Risk Research* 5, 4 (2002): 317–349.

[9] Dae-Cheong Ha, "The Social Construction of BSE Risk: SRM as a Socio-Technological Construct and MM Type in the 'Styles of Scientific Practice,'" *The Korean Association For Environmental Sociology* 15, no. 2 (2011): 225–268.

Korean government and the underlying knowledge ways which will be addressed in this thesis.

Research questions

Risk issues - which are defined as harmful and how the risk should be avoided - are differently framed in different countries. The regulation of BSE risk belongs to the domain of what Sheila Jasanoff called 'regulatory science', which demands intervention of non-scientific factors to achieve policy aims.[10] The appraisal of BSE risk and the formulation of the regulatory policies are constrained by practices within the government and institutional, political and cultural frameworks as well as scientific evidence. Therefore, the importance of the Korean BSE controversy does not lie only in the scale of public protests, but also in the fact that many of the fundamental problems which characterised the ways in which the Korean authorities dealt with BSE were also inherent in the ways in which the Korean government dealt with numerous other science-based risk policy challenges.

Accordingly, the central research questions of this thesis are: 'what caused the huge BSE controversy in Korea in 2008 when the disease seemed to be controlled and not threatening?', 'how was the risk and uncertainty of BSE addressed?' and 'what was the character of the Korean response?' From these questions, a number of subsidiary questions arise. They can be grouped together and will structure the chapters of this thesis. Firstly, Chapter 3 deals with the questions designed to

[10] Sheila Jasanoff, *The Fifth Branch: Science Advisers as Policymakers* (Harvard University Press, 1990).

facilitate an understanding of the nature of BSE and its implications: ‘what is BSE and what is the current situation of the disease?’, and ‘what happened in the UK in the 1980-1990s and what caused the policy failure?’ In order to understand the broader context of the Korean BSE controversy, Chapter 4 focusses on the following questions: ‘what are the characters of Korean political culture and how has the relationship between science and politics been developed in Korea?’ and ‘how is BSE risk controlled internationally and in Korea?’ Chapter 5 aims to address the policy process for US beef and BSE risk within the Korean government with the following questions: ‘what were the interests and background logic involved in the Korean government’s decision making on beef regulation?’, ‘how were the advisory bodies operated, and what was their role in policy-making?’ Chapter 6 addresses the following questions: ‘how were the public scare of BSE and the serious public protest in 2008 formed?’ and ‘how did the claims of the government and the counter-claims confront each other?’ Finally, Chapter 7 aims to identify the particularities of the Korean ways in which scientific knowledge was dealt with, and as such focusses on the following question: ‘what were the ways in which scientific knowledge in the policy area was produced and presented for policy making in Korea and how were they different from those of the UK?’ Through these questions, I will explore how claims regarding BSE and US beef issues were made and challenged during the Korean BSE controversy, including the way in which the Korean political and administrative systems managed BSE risk and the uncertainty. This will facilitate the identification and description of the national pattern of civic epistemology in Korean society.

1.2 Methodology

With regard to obtaining data, the main method employed involved the studying of official and non-official documents. The documents examined included official documents of the government, stenographic records of the standing and the special committees at the Korean National Assembly, documents submitted to the Assembly by the Korean government, and press releases and promotional materials of the government. Indeed, generally speaking, the Korean policy process is a closed affair, and minutes of the governmental advisory committee meetings are not open or accessible. However, as the BSE controversy was accompanied by serious public outrage, I was able to secure many documents submitted to the Assembly and open to the media. Regarding the knowledge of BSE and the regulatory measures in place, research papers and documents of international organisations such as the World Organization for Animal Health (Office International des Epizooties, OIE), European Commission (EC), and the "Trust in Animals and Food Safety" (TAFS forum, a Switzerland-based international non-profit organisation) were examined.

In addition to official documents of the government, I collated information presented by dissenting organisations; interview articles and opinions expressed by scientists, politicians and civil servants, industry and dissenting activists; and materials presented at the related conferences. Contemporary news reports were searched by using a newspaper archive and a TV program archive at the Korean National Library as well as the databases of the Korea Press Foundation and NAVER (a Korean Internet portal site). I used 'BSE' and 'Mad cow disease' (in Korean) as keywords during my searches. I was not directly concerned with the

political orientation of newspapers as the political orientation of media and reporting had been widely recognised during the controversy, and several media studies had already addressed the issue. I nevertheless summarise these orientations where relevant.

Evidence from documents was supplemented by interviews. A total of 15 interviews were conducted with the government's advisory scientists, civil servants, and journalists. Interviews were conducted during the second and third year of this PhD in 2011 and 2012. I used a semi-structured interview approach. Interviews were conducted face-to-face or by telephone. The interviews were recorded when interviewees consented, and in cases where consent was not given I took notes during the interviews, also with interviewees' consent. The interview recordings and notes were analysed thematically with documents I collected. I identified certain frequently mentioned reasons and phrases, which I then grouped together.

The interviewees were chosen following documentary research on the Korean controversy. Of those who were interviewed, three were research scientists who were chosen because they had served or are currently serving on the government advisory body. Three other academic scientists participated in the press conferences of the government or of the scientific communities during the controversy. Two civil scientists at the National Veterinary Research and Quarantine Service (NVRQS) were interviewed to gain an insight into the workings of BSE research and the risk assessment process in NVRQS. Civil servants at the Ministry for Food, Agriculture, Forestry and Fisheries (MIFAFF) and the Ministry of Education, Science and Technology were also selected, due to the fact that they had been in charge of the

beef policy or involved with the issue during the controversy. In order to understand views outside the government and scientific community, journalists were included in the interviews: A list of these interviewees can be found in Appendix 1 with details of the questions listed in Appendix 2.

The main constraint was that scientists and civil servants were generally reluctant to be interviewed. The BSE controversy was very recent and had led to serious political conflict in Korea, thus meaning that they were concerned about the political sensitivity of the issue. I did promise anonymity to interviewees who said that it would be necessary. In addition, I had difficulty in contacting certain people who had been promoted to higher positions (e.g. vice minister or presidential secretary).

1.3 Structure of this thesis

The thesis is divided into eight chapters. This first chapter provides an introduction to the thesis, setting out the background and aim of the research.

In Chapter 2, I review existing work in the fields of STS, shedding light on the relationships between science, policy-making and the public. In particular, Jasanoff's concept of civic epistemology is presented as a tool with which to understand and explain the general features of national political culture regarding the uses of scientific knowledge in policy areas.

Chapter 3 provides an overview of BSE and the BSE crisis in the UK in the 1980-1990s. This chapter shows that BSE remains a controversial disease with continuing

uncertainty, despite the seemingly controlled status. Political and cultural factors in British society shaped the crisis, increasing its controversial status above and beyond the uncertainty caused by lack of knowledge.

Much like the BSE crisis in the UK, the BSE controversy in Korea must be understood in a wider political and cultural context as well as within the international regulatory regime which was established after the BSE crisis in the UK. Chapter 4 outlines the political culture of Korea and in particular the relationship between science and politics in the country. Following this, a description is provided of the regulatory regime put in place for the control of BSE in Korea as well as the international conditions.

The following two chapters examine the BSE controversy in Korea. Chapter 5 traces the Korean government's policy-making over BSE risk and US beef. This chapter discusses the Korean government's strategies for beef import from the US, as well as the role of scientific advisory bodies within the policy process. I provide chronological accounts of events and an analysis of the government's policy change, identifying specific factors involved along the way. Chapter 6 looks at the public controversy over BSE and US beef as it developed in 2008, eventually forcing the Korean government to revert back to its more precautionary policy. In this chapter, I investigate the disputes over BSE risk in US beef as well as the strategies used by the government and dissenters to achieve the authority of their claims.

Chapter 7 pulls together the evidence and arguments presented in earlier chapters in order to answer the overall research questions. I summarise the Korean BSE controversy, before comparing and contrasting the ways in which science was

addressed in the Korean and the UK policy process. Following this, I attempt to identify the particularity of the ways in which scientific knowledge was produced and presented during the Korean BSE controversy. Specifically, I propose a Korean 'civic epistemology' which may well help STS scholars understand science-based controversies in South Korea.

The final chapter, Chapter 8, concludes this thesis by summarising each preceding chapter, considering the wider implications, and identifying lines of further research.

2 Theories and Frameworks

2.1 Introduction

The BSE controversy has a variety of characteristics: it is a case of science-based public controversy and a regulatory policy-making issue related to risk of beef. This chapter provides an overview of literature which can aid the understanding of these various features of the BSE controversy and answer my research questions.

The first section of this chapter provides a survey of literature concerned with the use of scientific knowledge in policy areas. Scientific knowledge regarding BSE represents an area of policy-relevant science needed to control the risk and make regulation policy rather than a pure research area. The second section looks at literature on the approaches to risk and the ways in which the public perceive risk. The third section provides a survey of literature pertaining to public understanding of science and explores the capability of the public who can contribute to science-related issues. The fourth section provides an account of the concept of civic epistemology suggested by Jasanoff as the ground of legitimacy for scientific knowledge on which policy is based.

2.2 Science in policy-making

In this section, I will survey the literature pertaining to scientific knowledge in policy areas. Science has always been seen as a potentially reliable source of information for policy-making. Access to knowledge and the ability to exploit data

are essential bases on which to legitimise experts' participation in policy decision-making.[11] With the increasing technological complexity of modern society, policy-makers have become increasingly dependent on scientific knowledge. I will first explore how science has achieved a privileged status since the World Wars and the way in which policy-relevant science has been characterised in relation to politics.

Science has formed closer relations with politics since the World Wars. Especially in the US, the contribution of science during the war time offered scientific experts a direct path to political influence and privileged status as a major intellectual interest group.[12] Scientific advice expanded the realm to wider public policy areas, closely connected to the notion of science as a source of national wealth. As scientific advisory bodies became institutionalised within the government in many industrial countries and the budget for scientific research increased, they had great influence on the distribution of resources and setting the national policy priority.[13]

There was a shared notion that decisions related to science should be made within science. This was based on the assumption of science as self-governed with a distinctive ethos and norms.[14] For best performance, science, following this assumption, should be separated and protected from the intervention of social and

[11] Guy Benveniste, *The Politics of Expertise*, 2nd ed. (Boyd & Fraser Pub. Co, 1977).

[12] Don K Price, "The Scientific Establishment The American System Gives Scientists in Government a Freedom and Influence Unmatched in Other Countries", *Science* 136 (3522) (1962): 1099–1106.;

[13] Aant Elzinga and Andrew Jamison, "Changing Policy Agendas in Science and Technology", in *Handbook of Science and Technology Studies*, ed Sheila Jasanoff et al. (Sage Publications, Inc, 1995).; Peter Weingart, "Scientific Expertise and Political Accountability: Paradoxes of Science in Politics", *Science and Public Policy* 26, 3 (1999): 151–161.

[14] Robert K Merton, "Science and the Social Order," *Philosophy of Science* 5, no. 3 (1938): 321–337.; Harvey Brooks, "Expertise and Politics-Problems and Tensions," *Proceedings of the American Philosophical Society* 119, no. 4 (1975): 257–261.; Weingart, "Scientific Expertise and Political Accountability."

political interests. Michael Polanyi compared science to free market, and as such would be the most efficient when self-regulated by interactions among scientists without political intervention.[15] Vannevar Bush argued for the autonomy of scientists from political, economic and social interests.[16] Policy-making delegated by scientific expertise was expected to be effective by excluding political biases and vested interests.[17]

However, the neutral and pure image of science as a commitment to objective truth has been challenged since the 1960-1970s.[18] Expectation surrounding the progress which technological development would bring was tempered, and an explosion of public controversies under the influence of broad social movements such as anti-war, anti-nuclear, and environmental movement, called public attention to the hidden side of technological development.[19] Expanding concerns over health and environmental regulatory issues led to the proliferation of science-oriented administrative agencies and expert advisory bodies. However, reliance on science was not sufficient to resolve public controversies.[20] Scientific claims were entangled with broader tensions among different social values and interests which motivated the controversy.[21] For example, in Dorothy Nelkin's study of the public disputes

[15] Michael Polanyi, "The Republic of science", *Minerva* 1, 1 (1962): 54–73.

[16] Vannevar Bush, *Science The Endless Frontier* (Washington, 1945).

[17] Patrick Van Zwanenberg and Erik Millstone, *BSE: Risk, Science, and Governance* (Oxford University Press, 2005).; Weingart, "Scientific Expertise and Political Accountability."

[18] Sylvia Kraemer, *Science and Technology Policy in the United States: Open Systems in Action* (Rutgers University Press, 2006).;

[19] Elzinga and Jamison, "Changing Policy Agendas in Science and Technology."

[20] In the US Food and Drug Administration (FDA) and Environmental Protection Agency (EPA) were established in 1970 and Office of Technology Assessment (OTA) was established under Parliament in 1972 to control the negative effect of technology.

[21] Nelkin classified the type of social controversies associated with science and technology. The first

over the plan to build a nuclear power plant on Cayuga Lake, scientists formed no consensus during scientific deliberation with regard to the state of pollution and possible change in the lake.[22]

The more dependent on scientific knowledge policy-making was, the more undermined the authority of scientific advice became.[23] Polarised claims of contesting parties exposed uncertainty and lack of consensus within science.[24] Several studies have attempted to explain the limitation which scientific knowledge in the policy area disclosed by distinguishing policy-relevant science from science proper. For example, Harvey Brooks defined 'science in policy' as "matters that are *basically political or administrative* but are significantly dependent on technical factors", and said that in policy-relevant science "the distinction between means and ends is often blurred and technical uncertainties leave a wide-open door for the entry

type is controversy related to the moral or religious implications of scientific theory or research practice such as controversy about animal experiment and embryo research. The second is controversy accompanied with the conflict between environmental value and political or economic priorities such as building detrimental material facilities or environmental pollution. The third is associated with the risk to public health, especially conflict between interest groups and the public concerned about possible harm from industrial and commercial practice. The fourth is about tension between the right of the individual and social goal. For example, fluoridation of tab water or compulsory vaccination is said to infringe the right of self-determination of individual. The last one is about resource allocation within scientific community. Dorothy Nelkin, "Science Controversies: The Dynamics of Public Disputes in the United States", in *Handbook of Science and Technology Studies*, ed. Sheila Jasanoff et al. (Sage Publications, Inc, 1995). ;

[22] Dorothy Nelkin, *Nuclear Power and Its Critics;: The Cayuga Lake Controversy* (Cornell University Press, 1971)..

[23] Dorothy Nelkin, ed., *Controversy: Politics of Technical Decisions*, 3rd ed. (Sage Publications, Inc, 1992).; Nelkin, "Science Controversies: The Dynamics of Public Disputes in the United States," 1995.; Allan Mazur, "II Disputes between experts", *Minerva* 11, 2 (1973): 243–262.

[24] Louise Wells Bedsworth, Micah D. Lowenthal and William E. Kastenberg, "Uncertainty and Regulation: The Rhetoric of Risk in the California Low-Level Radioactive Waste Debate", *Science, Technology & Human Values* 29, 3 (2004): 406–427.; Simon Shackley and Brian Wynne, "Representing Uncertainty in Global Climate Change Science and Policy: Boundary-Ordering Devices and Authority", *Science, Technology & Human Values* 21, 3 (1996): 275–302.; Karin Bäckstrand, "Civic Science for Sustainability: Reframing the Role of Experts, Policy-Makers and Citizens in Environmental Governance", *Global Environmental Politics* 3, 4 (2003): 24–41.; Daniel Sarewitz, "How science makes environmental controversies worse", *Environmental Science & Policy* 7, 5 (2004): 385–403.

of personal values and political predilections."[25] He was concerned that scientists' participation in policy processes would undermine the autonomy of science as a self-governed institution as well as the credibility of science in the political process. Thus, he advised scientists involved in policy-making to be insulated from interest and pressures.[26] Likewise, Alvin M. Weinberg said that 'trans-scientific' issues in policy areas are those that "can be asked of science and yet which cannot be answered by science."[27] He stated that judgment about 'trans-scientific' issues was beyond laboratory science and required the intervention of non-scientific factors. He presented low level radiation effects and serious nuclear reactor accidents as examples of trans-science. According to his explanation, such issues cannot be fully resolved by using scientific methods only, because enormous cost is incurred when it comes to finding solutions or the possible occurrence is extremely low. With this in mind, he stated that the role of the scientists in matters of trans-science differed from that of scientists in issues which could be answered clearly by science.[28] The concepts about policy-relevant science suggested by Brooks and Weinberg presupposed that the indeterminate and fallible character of science which appeared in controversies and policy area was not intrinsic to science proper. Therefore, the authority of scientific knowledge could be left untouched and scientists could still play a significant role in policy-related scientific issues.[29] According to Weinberg,

[25] Harvey Brooks, "The Scientific Adviser," in *Scientists and National Policy-Making*, ed. Robert Gilpin and Christopher Wright (Columbia University Press, 1964). p. 76 (my emphasis)

[26] Brooks, "Expertise and Politics-Problems and Tensions."; Harvey Brooks, "The Resolution of Technically Intensive Public Policy Disputes.," *Science, Technology, and Human Values* 9, no. 1 (1984): 39–50.

[27] Alvin M. Weinberg, "Science and trans-science", *Minerva* 10, 2 (1972): 209–222.

[28] Alvin M. Weinberg, "Science and Trans-Science", *Science* 177, 4045 (1972): 211–211.

[29] Sheila S. Jasanoff, "Contested Boundaries in Policy-Relevant Science", *Social Studies of Science*

scientists could at least "help delineate where science ends and trans-science begins."[30]

Similarly, Sheila Jasanoff defined 'regulatory science' as "a hybrid activity that combines elements of scientific evidence and reasoning with large doses of social and political judgment."[31] She stated that as regulatory science tends to be done "at the margin of existing knowledge" where scientific consensus in fragile, the criteria for judging the validity are "fluid, controversial, and arguably more politically motivated."[32] As such, she said that knowledge in regulatory science is susceptible to pressure from external oversight, and has indeterminate and marginal characteristics.

The point which distinguishes the 'regulatory science' of Jasanoff from the definitions of Brooks and Weinberg's policy-relevant science is Jasanoff's acceptance of the 'socially constructed' nature of scientific knowledge.[33] According to her, the way in which scientific evidence is produced and presented in regulatory science does not depend on science alone, but is intimately related to social commitments in an unacknowledged way. Consequently, it is impossible to find clearly 'where science ends and politics begins.' For example, regarding the commercial cultivation of GM crops, while risk assessments in the US considered only direct effect on agriculture, risk assessments in Europe included effects on non-

17, 2 (1987): 195–230.

[30] Weinberg, "Science and Trans-Science," July 21, 1972. p.211

[31] Jasanoff, *The Fifth Branch*. p. 229

[32] Ibid., pp. 77-79

[33] Alan Irwin et al., "Regulatory science—Towards a sociological framework", *Futures* 29, 1 (1997): 17–31.; Henry Rothstein et al., "Regulatory Science, Europeanization, and the Control of Agrochemicals", *Science, Technology & Human Values* 24, 2 (1999): 241–264.

agricultural environment such as wild flora and fauna.[34] This resulted in different conclusions regarding the risk of GM crops.

Due to this constructive nature of regulatory science, according to Jasanoff, the authority and credibility of scientific advice are not granted by solely seeking better technical expertise. It is essential to conform to the standards of political legitimacy and has to do with the accountability in democratic governance.[35] In Jasanoff's case, the Environmental Protection Agency (EPA) in the US succeeded in legitimising the carcinogen regulation policy not by verifying transparency in its methodology but by establishing an authoritative governance system, such as the Science Advisory Board which embraced external experts and the Health Effect Institute which was jointly established with the automobile industry.[36]

As the way in which regulatory scientific knowledge acquires legitimacy is subject to the way in which public accountability is constituted within a society, the same scientific evidence can be exploited differently in different contexts. It reflects the rule-making principle and process; both of which are perceived as proper in each society. Many comparative studies regarding regulation policy in Western countries showed that policy strategies and outcomes relied on different policy styles and

[34] Sheila Jasanoff, *Designs on Nature: Science and Democracy in Europe and the United States* (Princeton University Press, 2005).

[35] Sheila Jasanoff, "Judgment Under Siege: The Three-Body Problem of Expert Legitimacy," in *Democratization of Expertise?*, ed. Sabine Maasen and Peter Weingart, vol. 24, Sociology of the Sciences Yearbook (Springer Netherlands, 2005), 209–224, http://www.springerlink.com/content/h4723675662267r3/abstract/.; Sheila Jasanoff, "Technologies of Humility: Citizen Participation in Governing Science", *Minerva* 41, 3 (2003): 223–244.

[36] S Jasanoff, "Science, Politics, and the Renegotiation of Expertise at EPA," *Osiris* 7 (1992): 195–217.

institutional factors in each country.[37] For example, in the US where the interpretation of scientific evidence by an expert advisory committee was often challenged in the adversarial political culture and prevalence of litigation, the regulatory process relied heavily on formal quantitative analysis for the objective rationale of policy.[38] On the contrary, in European countries where regulatory processes were less exposed to the public than in the US, the approach to evidence of risks was more informal and flexible, and regulatory policy-makers were under little pressure to make explicit principles to prove the authority of their analysis.[39] For example, the US and the UK disagreed on how to regulate aldrin and dieldrin even though they were based on the same pesticide studies. Whereas EPA in the US found aldrin and dieldrin to be carcinogenic to humans, the British MAFF (Ministry of Agriculture, Fisheries and Food) concluded that they did not pose a risk to human health. This divergence was caused by the difference between the two countries in dealing with inconclusive evidence. EPA accepted animal test results as legitimate grounds on which to classify aldrin and dieldrin as human carcinogens, but the UK

[37]Gillespie B, Eva D and Johnston R, "Carcinogenic risk assessment in the United States and Great Britain: the case of Aldrin/Dieldrin.", Soc Stud Sci 9 (3) (1979): 265–301.; Ronald Brickman, Sheila Jasanoff, and Thomas Ilgen, *Controlling Chemicals: The Politics of Regulation in Europe and the United States* (Cornell Univ Pr, 1985).; Sheila Jasanoff, Risk Management and Political Culture: A Comparative Study of Science in the Policy Context (Russell Sage Foundation, 1986).; David Vogel, National Styles of Regulation: Environmental Policy in Great Britain and the United States (Cornell University Press, 1986).; Sheila Jasanoff, "Cultural Aspects of Risk Assessment in Britain and the United States," in *The Social and Cultural Construction of Risk: Essays on Risk Selection and Perception*, ed. Branden B. Johnson and Vincent T. Covello (D. Reidel Pub. Co., 1987).; Kate O'Neill, "Regulations as Arbiters of Risk: Great Britain, Germany, and the Hazardous Waste Trade in Western Europe", International Studies Quarterly 41, 4 (1997): 687–718.; Christopher K. Ansell and David Vogel, What's the Beef?: The Contested Governance of European Food Safety (MIT Press, 2006).; Joseph Murphy, Les Levidow and Susan Carr, "Regulatory Standards for Environmental Risks Understanding the US-European Union Conflict over Genetically Modified Crops", Social Studies of Science 36, 1 (2006): 133–160.; Dave Toke, *The Politics of GM Food: A Comparative Study of the UK, USA and EU*, 1st ed. (Routledge, 2007).

[38] Brickman, Jasanoff and Ilgen, *Controlling Chemicals*.; Jasanoff, *Risk Management and Political Culture*.; Vogel, *National Styles of Regulation*.

[39] Ibid.

government regarded the evidence as insufficient to verify risk to humans.[40]

As international 'harmonization' is given an increasing amount of consideration in regulation policy, international standards such as the World Trade Organization (WTO) rules or the Codex Alimentarius are considered more important than before in domestic regulatory policy making issues, and convergence in regulatory policies is often considered to be inevitable.[41] Nevertheless, this convergence does not mean that the influence of the national context on regulatory policy-making should be disregarded. Indeed, not only do most international organisations recognise the member's autonomy in making domestic regulatory policy, but even an identical regulatory policy can be made by different mechanism or on different grounds, depending on the specific context of each country.

In this thesis, I follow the constructivist approach which argues that scientific knowledge in the policy process is intimately related to social commitments as well as scientific processes using the concept of 'regulatory science.' This will be helpful in understanding the complexity associated with the regulatory scientific knowledge over BSE and the policy, which is why I now turn to examine 'risk.'

[40] Brickman, Jasanoff and Ilgen, *Controlling Chemicals*.

[41] David Winickoff et al., "Adjudicating the GM Food Wars: Science, Risk, and Democracy in World Trade Law", *Yale Journal of International Law* 30 (2005): 81-123.; Frans van Waarden, "Taste, Traditions, and Transactions", in *What's the Beef?: The Contested governance of European Food Safety*, ed Christopher Ansell and David Vogel (Cambridge Massachusetts: MIT Press, 2006); .Les Levidow, Joseph Murphy and Susan Carr, "Recasting 'Substantial Equivalence':Transatlantic Governance of GM Food", *Science, Technology & Human Values* 32, 1 (2007): 26–64.

2.3 Risk

This section surveys the literature concerned with risk, mainly focussing on the ways in which risk is perceived and constructed within society. The most important aspect of risk is uncertainty. Wynne subdivided the concepts associated with risk and uncertainty as follows:

> Risk: "when the system behaviour is basically well known, and chances of different outcomes can be defined and quantified by structured analysis of mechanisms and probabilities";
>
> Uncertainty: "if we know the important system parameters but not the probability distributions";
>
> Ignorance: "which by definition escapes recognition";
>
> Indeterminacy: the issue of the "social commitments and conventions which constitute scientific paradigms or technological systems."[42]

With this said however, the concept of risk which I shall use in this section is an integrated one which encompasses all associated concepts, rather than the narrow definition of risk suggested by Wynne.

To quote Renn, "Risks refer to the *possibility that human actions or events lead to consequences that affect aspects of what humans value*."[43] However, risks do not exist just out there as a numerical possibility. Beck stated that "Risks are taken, whereas dangers happen to you."[44] Risks reflect public ways of responding to

[42] Brian Wynne, "Uncertainty and environmental learning--Reconceiving science and policy in the preventive paradigm", *Global Environmental Change* 2, 2 (1992): 111–127. p. 116

[43] Ortwin Renn, "Three decades of risk research: accomplishments and new challenges", *Journal of Risk Research* 1 (1) (1998): 49–71. (emphasis original)

[44] Urlich Beck, *Risk Society: towards a New Modernity*, London: Sage, 1992, cited in Bente Halkier, "Risk and Food: Environmental Concerns and Consumer Practices", *International Journal of Food*

threats and insecurities, not like danger to which people are exposed regardless of their choice.[45] Therefore, "what matters is what people believe about these risks and why they hold those beliefs."[46] How people evaluate and respond to risks becomes the crucial question, and one which must be asked.

Public response to risk does not have a direct relationship to the degree of risk or its scientific assessment. Lay people understand risk in different ways from experts and their concerns reflect what is often excluded from experts' risk assessments.[47] Psychological factors influence lay people's perception and evaluation of risks. For example, people tend to accept risks from voluntary activities, whereas they object to imposed ones with even a much smaller risk; moreover, risks which are seen as familiar and natural are more acceptable to the public than risks from strange and artificial sources (Table 1).

Science & Technology 36, 8 (2001): 801–812.

[45] Bente Halkier, "Handling Food-related Risks: Political Agency and Governmentality", in *The Politics of Food*, ed Marianne E. Lien and Brigitte Nerlich (Berg, 2004).

[46] Horton, R. Genetically modified foods: 'absurd' concern or welcome dialogue?, *Lancet*, 354, 1999, p.1372 cited in Stuart Allan, *Media, Risk and Science*, 1st ed. (Open University Press, 2002). p.174

[47] Paul Slovic, "Beyond Numbers: A Broader Perspective on Risk Perception and Risk Communication," in *Acceptable Evidence: Science and Values in Risk Management*, ed. Deborah G. Mayo (Oxford University Press, 1994). p.63

Table 1 Factors Important to Risk Perception and Evaluation[48]

Factor	Conditions Associated with Greater Public Concern	Conditions Associated with Less Public Concern
Catastrophic potential	Fatalities and injuries grouped in time and space	Fatalities and injuries, scattered and random
Familiarity	unfamiliar	Familiar
Understanding	Mechanisms or process not understood	Mechanisms or process understood
Uncertainty	Risks scientifically unknown or uncertain	Risks known to science
Controllability (personal)	uncontrollable	Controllable
Voluntariness of exposure	involuntary	Voluntary
Effects on children	Children specifically at risk Delayed effects	Children not specifically at risk Immediate effects
Manifestation of effects on future generations	Risk to future generations	No risk to future generations
Identification of victim	Identifiable victims	Statistical victims
Dread	Effects dreaded	Effects not dreaded
Trust in institutions	Lack of trust in responsible institutions	Trust in responsible institutions
Media attention	Much media attention	Little media attention
Accident history	Major and sometimes minor accidents	No major and minor accidents
Equity	Inequitable distribution of risks and benefits	Equitable distribution of risks and benefits
Benefits	Unclear benefits	Clear benefits
Reversibility	Irreversible effects	Reversible effects
Personal stake	Individual personally at risk	Individual not personally at risk
Origin	Caused by human actions or failures	Caused by acts of nature or God

[48] Form Vincent T. Covello, Peter M. Sandman and Paul Slovic, "Guidelines for Communicating Information About Chemical Risks Effectively and Responsibly", in *Acceptable Evidence: Science and Values in Risk Management*, ed Deborah G. Mayo (Oxford University Press, 1994). p. 67, table 4.1

This cognitive approach showed that the public do not perceive and evaluate risk only by probabilities. However, it was criticised for regarding the lay perception of risk as distorted or problematic by assuming a pre-existing and objective risk which can be identified through scientific measurement and calculation; it was also criticised for reducing the public perception of risk to an issue of individual psychological level unrelated to the social and cultural context in which perception and assessment are generated.[49]

In contrast, the social and cultural approach sees risk as what is constructed as social facts.[50] From this perspective, wrote Jasanoff, "risks … do not represent objective assessment of nature's unpredictability but are refracted in every society through lenses shaped by history, politics, and culture."[51] The cultural study of Douglas explained the distinctive representation of risk in a society as part of a mechanism to support the way of life, which is a combination of 'cultural bias' (shared values and beliefs) and 'social relations' (patterns of interpersonal relations).[52]

Social constructivist studies have also rejected the notion of an objective risk which is given from the outer world, and have argued that the way in which risk is characterised is bound to the socio-cultural context such as embedded values and

[49] Sheila Jasanoff, "The political science of risk perception", *Reliability Engineering & System Safety* 59, 1 (1998): 91–99.

[50] Ortwin Renn, "Concepts of Risk: Classification", in *Social Theories of Risk*, ed Sheldon Krimsky and Dominic Golding (Praeger, 1992).

[51] Sheila Jasanoff, "The political science of risk perception", p.95

[52] Mary Douglas and Aaron Wildavsky, *Risk and Culture: An Essay on the Selection of Technological and Environmental Dangers* (University of California Press, 1983).; Aaron Wildavsky and Karl Dake, "Theories of Risk Perception: Who Fears What and Why?," *Daedalus* 119, no. 4 (1990): 41–60.; Michael Thompson et al. *Cultural Theory* (1990). cited in Sigve Oltedal et al., *Explaining Risk Perception. An Evaluation of Cultural Theory* (Rotunde, 2004). p.17

interests, political or institutional cultures and power.[53] Johnson and Covello, together with Stallings, noted that societal actors influence characterising and framing risk issues and social processes to resolve them.[54] Dietz et al. showed that differences in resources among conflicting groups influence the way in which the nature of disputes is framed.[55] In their study, conflicts were defined differently according to the values and interests of intervening organisations, as well as the resources that each organisation possessed in relative abundance. Rayner and Cantor argued that people were more concerned about fairness, competence, and responsibility than probabilities or technical issues, especially when the actions for choice involved very low probabilities and the differences in probability between the actions were so small, which most typifies the conditions faced by policy-makers when making decisions on risks.[56]

Certain social constructivist authors focussed on the construction of risk knowledge. They argued that all knowledge regarding risk, and even experts' risk assessment, was neither objective nor value-free, and was bound to the social and cultural context.[57] In light of this, they opposed the perspectives which take the lay

[53] Les Levidow, "Precautionary Uncertainty Regulating GM Crops in Europe", Social Studies of Science 31, 6 (2001): 842–874.; Wynne, "Uncertainty and Environmental Learning."; Theresa Garvin, "Analytical Paradigms: The Epistemological Distances Between Scientists, Policy Makers, and the Public", Risk Analysis 21, 3 (2001): 443–456.; Adam Burgess, "Comparing national responses to perceived health risks from mobile phone masts", *Health, Risk & Society* 4, 2 (2002): 175–188.

[54] Branden B. Johnson and Vincent T. Covello, *The Social and Cultural Construction of Risk: Essays on Risk Selection and Perception* (D. Reidel Pub. Co., 1987).; Robert A. Stallings, *Promoting Risk: Constructing the Earthquake Threat* (Transaction Publishers, 1995).

[55] Thomas Dietz, Paul C. Stern and Robert W. Rycroft, "Definitions of conflict and the legitimation of resources: The case of environmental risk", *Sociological Forum* 4 (1) (1989): 47–70.

[56] Steve Rayner and Robin Cantor, "How Fair Is Safe Enough? The Cultural Approach to Societal Technology Choice1", *Risk Analysis* 7, 1 (1987): 3–9.; Steve Rayner, "Cultural Theory and Risk Analysis," in *Social Theories of Risk*, ed. Sheldon Krimsky and Dominic Golding (Praeger, 1992).

[57] Deborah Lupton, *Risk* (Psychology Press, 1999).; Levidow, "Precautionary Uncertainty Regulating GM Crops in Europe."; Wynne, "Uncertainty and Environmental Learning."

perception of risk as distorted or problematic contrary to neutral and objective expert assessment. According to their explanation, lay people are not irrational, but instead pursue a specific form of knowledge based on a much broader context than experts' scientific assessment, which is perceived by numbers or incidences of harmful events. Brian Wynne said:

> … legitimate public ambivalence and resistance to expert presumptions about framing of risk issues was first interpreted as simple ignorance, then "misunderstanding," and latterly as a naïve wish for an impossible "zero-risk" environment. The construction of the public ignores sociological evidence that shows that *people are by no means naive about the existence or complete eradication of risks, and points rather to scientists' unacknowledged insecurity about recognizing the conditionality of their own knowledge*…[58]

The factors which are involved in public evaluation of risks are impossible to quantify or fully articulate. Renn et al. stressed the importance of procedure for decision-making, especially for the people who would be affected by the decision.[59] Freudenburg argued that trust in institutions' ability to manage risks predicts public perception better than personal characteristics of the public such as age, sex, political party affiliation and ideology.[60] Similarly, Hornig stated that how the public felt about the institutions which managed the risk was crucial to determining the public level of concern regarding risk.[61] Wynne argued that "the basic framework of public

[58] Brian Wynne, "Public Understanding of Science," in *Handbook of Science and Technology Studies*, ed. Sheila Jasanoff et al. (Sage Publications, Inc, 1995). p.385 (my emphasis)

[59] Ortwin Renn et al., "Public participation in decision making: A three-step procedure", *Policy Sciences* 26, 3 (1993): 189–214.

[60] William R. Freudenburg, "Risk and Recreancy: Weber, the Division of Labor, and the Rationality of Risk Perceptions", *Social Forces* 71, 4 (1993): 909–932.

[61] Susanna Hornig, "Reading Risk: Public Response to Print Media Accounts of Technological Risk", *Public Understanding of Science* 2, 2 (1993): 95–109.

responses depends largely upon the experience and perception of the trustworthiness of relevant institutions or social actors involved, not upon the understanding of technical information."[62] In his sheep farmers' case, experts' evaluations about risk from the Chernobyl nuclear accident did not win the trust of sheep farmers, not only because the experts had little knowledge of local farming practices, but because their institution was affiliated with a government agency which had been in conflict with local farmers.[63]

In this thesis, I follow the social constructivist approach to risk. This approach is selected due to the fact that BSE controversy was an issue of regulatory policy-making, which is accompanied by the intervention of social and political values and the issue of public accountability. In the following two sections, literature concerning the relationship between scientific knowledge and the public will be explored.

2.4 Science and Public

In this section, I will explore the literature pertaining to public understanding of science based on the recent history of public science in the UK.

As previously mentioned, the great expectation and adulation which science enjoyed after the Second World War did not continue. With concerns about environmental and nuclear issues, public attitudes to science were ambivalent and

[62] Brian Wynne, "Misunderstood Misunderstandings: Social Identities and Public Uptake of Science," in *Misunderstanding Science: The Public Reconstruction of Science and Technology*, ed. Alan Irwin and Brian wynne (Cambridge: Cambridge University Press, 1996). p. 40

[63] Ibid.

the government decreased support for science research.[64] In this political condition, the UK's Royal Society set up a working party chaired by Walter Bodmer and published a report in 1985 partly with the aim of restoring enthusiasm and support for science. It led to the Public Understanding of Science (PUS) movement. The British scientific community felt that public lack of interest and the negative attitudes towards science undermined science's political influence and the legitimacy of claims for state-funding, whilst the lack of support from the public resulted from this lack of understanding of science.[65] Accordingly, providing greater knowledge to the public was seen as crucial in terms of increasing the public's appreciation of science. Organisations were set up to improve PUS activities and scientists were encouraged to learn to communicate with the public. A better understanding of science was expected to help the public make better personal decisions and to raise the nation's competitiveness. Further, a better public understanding of science would enhance the status of science and scientists.[66]

However, in the years following the initial PUS movement, surveys revealed that the public's level of knowledge and support for science did not always show a positive correlation, contrary to the expectation of the scientific community.[67] Indeed, there were negative views on PUS activities, with many feeling that they only served the interests of scientists. Shinn and Whitley stated that everything

[64] Jane Gregory and Simon Jay Lock, "The Evolution of 'Public Understanding of Science': Public Engagement as a Tool of Science Policy in the UK", *Sociology Compass* 2, 4 (2008): 1252–1265.

[65] Jane Gregory and Steve Miller, *Science in Public: Communication, Culture, and Credibility* (Plenum Trade, 1998).; Gregory and Lock, "The Evolution of 'Public Understanding of Science.'"

[66] The Royal Society, *The Public Understanding of Science*, 1985.

[67] Alan Irwin and Mike Michael, *Science, Social Theory and Public Knowledge*, 1st ed. (Open University Press, 2003).

written by scientists and about science could be understood as activities for securing resources for the scientific community.[68] In addition, Stephen Hilgartner said that popularisation of science simply contributed to preserving the privilege of scientists rather than narrowing the gap between experts and lay people.[69]

More fundamental criticism of the traditional PUS approach was indebted to the constructivist approach which was based on the tradition of sociology of scientific knowledge. Constructivists argued that scientific knowledge is constructed in context-specific ways, and as such, simply trying to educate or correct the public's cognitive deficit could not be the answer to the PUS problem. With this perspective in mind, the questionnaire format of surveys used to gauge the public's knowledge of and attitudes towards science presumed general and absolute knowledge about which scientists had the right answer and the public were required for it to be counted as 'scientifically literate.'[70] It neglected the finding that scientific knowledge can be uncertain or ambiguous, and attributed all public disagreements with science to ignorance.[71]

Moreover, according to the constructivists, lay people are not passive recipients of knowledge provided by scientists, and have the potential to complement or challenge

[68] Terry Shinn and Richard Whitley, *Expository Science: Forms and Functions of Popularisation* (Springer, 1985).

[69] Stephen Hilgartner, "The Dominant View of Popularization: Conceptual Problems, Political Uses", *Social Studies of Science* 20, 3 (1990): 519–539.

[70] Steven Yearley, *Making Sense of Science: Understanding the Social Study of Science* (SAGE, 2005).

[71] For example, nearly 70 per cent of UK people answered that 'Natural vitamins are better than laboratory made ones', and it is 'wrong' according to chemical science which indicates that 'any molecule of the vitamin will be practically identical irrespective of how it was formed.' However, the response of the public may have to be viewed as not issue of knowledge but issue of agreement or value. The public may believe that materials from nature are always better than artificial ones. Ibid., p.123

expert knowledge. For example, a study by Brian Wynne investigated Cumbrian sheep farmers, and although their knowledge, based on their specific experiences from hill sheep farming (e.g. ecology of sheep or peculiarity of the local terrain) was dismissed by scientists, those scientists failed to predict the behaviour of radioactive fallout in soil and to provide appropriate advice to farmers.[72] What was represented as the universal behaviour of cesium in soil by scientists was in fact a specific experimental result about clay soil and thus it was not relevant to peaty soil in Cumbrian fells. In addition, there are cases which have shown that public knowledge could make an active contribution to experts' knowledge production. The AIDS treatment activists discussed by Epstein made themselves credible participants in knowledge production and brought about changes in conducting biomedical research by learning expertise and expertise culture.[73] Callon showed that knowledge production can be made by lay public participation in his study of the French Muscular Dystrophy Association case.[74] In his case, patients and their parents engaged in knowledge production by communicating with experts, changing research orientation, and making themselves the subjects of research project.

These cases confirmed that expert knowledge has no uniquely privileged status to truth. Especially in risk issues characterised by uncertainty and the lack of knowledge, distinctions between experts and lay public are blurred. Indeed, Beck stated that: "in matters of hazards, no one is an expert - particularly not the

[72] Brian Wynne, "Sheepfarming after Chernobyl: A Case Study in Communicating Scientific Information", *Environment: Science and Policy for Sustainable Development* 31, 2 (1989): 10–39.

[73] Steven Epstein, "The Construction of Lay Expertise: AIDS Activism and the Forging of Credibility in the Reform of Clinical Trials", *Science, Technology & Human Values* 20, 4 (1995): 408–437.

[74] Michel Callon, "The Role of Lay People in the Production and Dissemination of Scientific Knowledge", *Science Technology & Society* 4, 1 (1999): 81–94.

experts."[75] Ravetz and others argued that in 'post-normal science' where "facts are uncertain, values in dispute, stakes high and decisions urgent", 'extended peer community' which involves not only scientists but also stakeholders affected by the science was desirable to guarantee the quality of the science.[76] Besides academic studies, public controversies such as the Bovine Spongiform Encephalopathy (BSE) crisis and the controversy over genetically modified (GM) crops in the mid-to-late 1990s changed the way in which the relationship between science and society was viewed in the political arena, particularly in the UK.[77] Public trust became the main issue, whilst openness and transparency in the policy process were highlighted to re-establish the credibility of the public in science.[78] Two-way and dialogic forms of public consultation and engagement were encouraged.[79]

Collins and Evans tried to delimit and legitimise increasing public participation in the technical debate by acknowledging public expertise, which is distinguished from the legitimacy of public participation as the democratic right.[80] They defined expertise of the public as 'experience based expertise' which was not recognised by

[75] Beck 1992 cited in Myanna Lahsen, "Technocracy, Democracy, and U.S. Climate Politics: The Need for Demarcations", *Science, Technology & Human Values* 30, 1 (2005): 137–169. p. 140

[76] Silvio O. Funtowicz and Jerome R. Ravetz, "Science for the post-normal age", *Futures* 25 (7) (1993): 739–755. P.744; Silvio O. Funtowicz and Jerome R. Ravetz, "Three Types of Risk Assessment and the Emergence of Post-Normal Science," in *Social Theories of Risk*, ed. Sheldon Krimsty and Dominic Golding (Westport: Praeger, 1992).; Silvio O. Funtowicz and Jerome R. Ravetz, "Uncertainty, Complexity and Post-normal Science", *Environmental Toxicology and Chemistry* 13, 12 (1994): 1881–1885.

[77] Simon Jay Lock, "Deficits and Dialogues: Science Communication and the Public Understanding of Science in the UK," in *Successful Science Communication: Telling It Like It Is*, ed. David J. Bennett and Richard C. Jennings (Cambridge University Press, 2011).

[78] House of Lords, *Third Report of the House of Lords Select Committee on Science and Technology* (London: The Stationery Office, 2000).; *The BSE Inquiry: The Report* (UK Government, 2000).

[79] Alan Irwin, "The Politics of Talk Coming to Terms with the 'New' Scientific Governance", *Social Studies of Science* 36, 2 (2006): 299–320.

[80] H. M Collins and Robert Evans, "The Third Wave of Science Studies Studies of Expertise and Experience", *Social Studies of Science* 32, 2 (2002): 235–296.

degrees or certificates.[81] They classified expertise into three levels: 1) "No Expertise"; 2) "Interactional Expertise" which is enough to "interact interestingly with participants and carry out a sociological analysis"; and 3) "Contributory Expertise" which is enough to "contribute to the science of the field being analyzed."[82] They argued that even formally trained experts cannot have contributory expertise in a specific issue outside their particular fields and "specific sets of lay people" who have special experience associated with the scientific and technical matters in disputes, can contribute to the issues.[83]

However, the claim by Collins and Evans was criticised for being based on dichotomy and an unequal relationship between experts and the public.[84] Wynne raised the question of how to define appropriate contributory expertise in new domains such as bioscience or GM food, if only specific experience is presumed for legitimate participation. Jasanoff argued that what is counted as expertise in a society is a product of a particular cultural context, and therefore, to be counted as expertise or experts in one society does not mean that it will be always the same in different societies. According to her, public participation is "an instrument for holding expertise to cultural standards for reliable public knowledge" and the standards which are used by the public to identify appropriate public knowledge constitute

[81] Ibid.

[82] Ibid., p 254

[83] Ibid., p.281

[84] Sheila Jasanoff, "Breaking the Waves in Science Studies - Comment on H.M. Collins and Robert Evans, `The Third Wave of Science Studies'", *Social Studies of Science* 33, 3 (2003): 389–400.; Brian Wynne, "Seasick on the Third Wave? Subverting the Hegemony of Propositionalism Response to Collins & Evans (2002)", *Social Studies of Science* 33, 3 (2003): 401–417.

'civic epistemology' in a society, as will be explored in the following section.[85]

The next section examines Jasanoff's concept of 'civic epistemology' as a means by which to achieve "civic engagement with government reasoning" which is grounded on the notion of the public as a knowable agent who can evaluate and validate knowledge of experts, and further can contribute to knowledge production.[86]

2.5 Civic epistemology

The previous section showed that lay people have the competence to contest experts' claims and to contribute to knowledge production even in science-intensive issues. In this section, the concept of civic epistemology will be examined with regard to the ways in which the public engage with science and politics in a democracy.

Ezrahi stated that the rise of experimental science after the scientific revolution provided a space where a state's actions were observable and attestable by the public.[87] Jasanoff focussed on this 'witnessing' public who are 'informed, reasoned, and attestive to the legitimacy of the state's actions.'[88] She argued that the credibility of policy relies on a "citizen's general proclivity to accept the knowledge

[85] Jasanoff, "Breaking the Waves in Science Studies", p.398

[86] Jasanoff, *Designs on Nature*., p. 249

[87] Yaron Ezrahi, *The Descent of Icarus: Science and the Transformation of Contemporary Democracy* (Harvard University Press, 1990).

[88] Sheila S. Jasanoff, "Ordering Knowledge, Ordering Society," in *States of Knowledge: The Co-Production of Science and the Social Order*, ed. Sheila Jasanoff, 1st ed. (Routledge, 2004). p.32

claims and demonstrations of efficacy advanced by the state."[89] According to her, every society has its own way in which it feels credible knowledge should be shown, defended, and represented; indeed, this is subject to the political culture developed from the historical, political, and economic experience. She called this indigenous knowledge way a 'civic epistemology',[90] and stated that civic epistemology is a collection of institutionalised practices by which knowledge for collective choice is tested and achieves its legitimacy in a society (usually a national society). Scientific knowledge is not expected from this shared public knowledge method. In light of this, Jasanoff stated:

> Science, no less than politics, must conform to these established ways of public knowing in order to gain broad-based support – especially when science helps underwrite significant collective choices.[91]

Indeed, 'civic epistemology' is therefore distinguished from the notion of 'public understanding of science' which assumes the universality of scientific knowledge and the ignorance of the public. Civic epistemology is a concept associated with the accountability and legitimacy of scientific knowledge within political cultures rather than knowledge itself.[92] What should be asked is not what and how much the public knows but how knowledge is culturally constructed as grounds for collective action.

Different relationships among the state, the public and science in different countries offer specificity to the ways in which scientific knowledge for policy is

[89] Jasanoff, *Designs on Nature*. p. 249

[90] Ibid.

[91] Ibid, p. 249

[92] Adam Sheingate, "What's the Beef? The Contested Governance of European Food Safety and Designs on Nature: Science and Democracy in Europe and the United States", *Perspectives on Politics* 5, 4 (2007): 820–822.

constructed and legitimised in each country. Jasanoff's comparative study (2005) showed how three industrialized Western countries (US, UK, and Germany) made different policy choices about biotechnology in different ways. Although the countries have a lot in common such as market-oriented economies, comparable levels of economic and technological development, and democracy, their civic epistemologies were nevertheless different. To compare how public knowledge was made and was given legitimacy in a society, she suggested six interrelated dimensions of civic epistemology: 'the dominant participatory styles of public knowledge making'; 'the methods of ensuring accountability'; 'the practices of public demonstration'; 'the preferred registers of objectivity'; 'the accepted bases of expertise'; and 'the visibility of expert bodies.[93] A brief explanation of each dimension, which is based on Jasanoff's description, is presented below.

Dominant public knowledge making style: Scientific knowledge is made and presented in public sphere by the ''established institutional routines'' in a society and different players contribute to public knowledge-making in different styles.[94] While interested parties such as industry and environmentalists play significant roles in supplying information for policy-making in the US, the state's role is more active in Europe. In the UK, public servants have been regarded as trustworthy bodies capable of representing the public interests. In contrast, the German style of knowledge making, where policy making is closely associated with law making, is characterised by the high involvement of legislators and technical experts and wide range of discussion.

[93] Jasanoff, *Designs on Nature*. p. 259 Table 10.1

[94] Ibid., p.260

Methods of ensuring accountability: This is a dimension of civic epistemology concerned with the ways in which the public can be persuaded as to the legitimacy of the knowledge on which policy is based, by showing that the knowledge was formulated using the appropriate process or representatives with specialised expertise. In the US, public knowledge acquired credibility through the adversary process represented by litigation. On the other hand, experts had greater trustworthiness in the UK and Germany than in the US. Experts in the UK, who participate in the policy process, were gradually recognised as being eligible to represent the public interest through their years of service for the common good. In Germany, the institutional affiliation of participants and the balance of the interests, which were represented by the members of an expert body, were crucial when it came to earning the credibility and trust of policy-relevant knowledge.

Practices of public demonstration: This is concerned with the methods used to make "facts and things" seen to be credible "in the public eye."[95] As shown in Ezrahi's analysis, demonstration has been an essential part in legitimating policy since modern liberal democracy. In the US, socio-technical experiments and the successful results validate policy claims and reinforce technological optimism. For example, the legitimacy of agricultural biotechnology in the US was presented with the fact that US people had already consumed genetically modified food without harm and the positive expectation of biotechnology as a solution to world hunger.[96] On the other hand, the governments had been relatively less pressured for public demonstrations in the UK and Germany. The "preference for empirical proofs" in the

[95] Ibid., p.263

[96] Ibid.

UK, which originated from an empiricist and pragmatic tradition, demanded observable facts "with near absolute certainty."[97] In Germany, where political culture shared the abstract and idealist tradition with science, deliberative rationality was expected to be realised by expert bodies composed of all eligible parties.

Objectivity: This means the independence from subjective bias or particular interests. In the US, objectivity expressed in numbers was preferred, and quantitative risk assessment was considered as sufficient for regulatory decision making. In contrast, risk assessment should be supplemented by political representation in order to secure objectivity in Germany and the UK. The political representation was achieved by expert bodies which included all relevant parties in Germany, and by consultation with appropriate individuals who verified their personal integration to public value in the UK.

Expertise: To be accepted as expertise in the public sphere demands legitimacy as well as specialised knowledge. As such, "experts have to be accountable as well as knowledgeable", and the grounds of accountability differ among countries.[98] In the US, 'formal qualifications' and the 'impersonal test of intelligence' are considered as the main constituents of legitimate expertise. In the UK, expertise is tied to the personal integrity of individuals who have proved their social commitment with a record of public service. The notion of expertise like this has made it possible for a broad range of people to be recognised as experts without specific knowledge or formal qualification. In Germany where expert bodies are regarded as "the

[97] Ibid., p. 263-264

[98] Ibid., p.267

microcosm of society", to be an expert presupposes the existence of an organisation which is perceived as a proper constituent to discuss the issue and the institutional support. An individual expert represents the organisation to which they belong.[99]

Visibility of expert bodies: This is a procedural dimension of expert bodies. In the US, close scrutiny of all interested parties is the way to exclude 'bias and subjectivity' from the decision-making. The activities of expert committees are open to public and the public access is guaranteed legally. On the contrary, expert bodies in Germany are deemed as "perfect microcosms of relevant rationality."[100] They are not required to open the activities or to allow the participation of outsiders. The levels of openness when it comes to expert bodies in the UK are variable. Indeed, this depends on the rule of access crafted by the expert body according to "its own notions of how to communicate with its publics." [101]

To summarise the national patterns of civic epistemologies in the US, UK, and Germany, plural interest groups play the main role in knowledge making in the US, whilst the public accountability of knowledge claims is based on open and adversary processes such as litigation. The basis of expertise is professional skill, and quantitative risk assessment offers a basis of objectivity in the US. In the UK, public knowledge making is based on the trust in public service. The credibility of experts rests on the personal integrity of the people who participate in the policy process, whilst empirical proof is preferred as a way in which to acquire credibility. In Germany, the pre-existence of trustworthy institutions and the representation of their

[99] Ibid. p.269

[100] Jasanoff, *Designs on Nature*. p.269

[101] Ibid.

viewpoints are crucial to achieve the legitimacy of policy. While quantitative risk assessment is considered sufficient for securing objectivity in the US, quantitative risk assessment should be supplemented by "appropriate political representation" such as a privileged individual's discernment (UK) or input of all potentially interested viewpoints (Germany) in the UK and Germany.[102] Integrating the individual dimensions of each country, Jasanoff presented three types of civic epistemology: "*communitarian* (resting on shared perceptions, the UK), *consensus-seeking* (built through negotiation, Germany), and *contentious* (resolved through conflict, the US)" (Table 2).[103]

Table 2 Civic Epistemologies: A Comparative View (from Jasanoff, *Designs on Nature*, p. 259)

	US Contentious	**UK** Communitarian	**Germany** Consensus-seeking
Styles of public knowledge-making	Pluralist, interest-based	Embodied, service-based	Corporatist, institution-based
Public accountability (basis for trust)	Assumptions of distrust; Legal	Assumptions of trust; Relational	Assumptions of trust; Role-based
Demonstration (practices)	Sociotechnical experiments	Empirical science	Expert rationality
Objectivity (registers)	Formal, numerical, reasoned	Consultative, negotiated	Negotiated, reasoned
Expertise (foundations)	Professional skills	Experience	Training, skills, experience
Visibility of expert bodies	Transparent	Variable	Nontransparent

Although civic epistemology in each country is not expected to be 'rigidly fixed, uncontested, changeless over time, or evenly distributed across all sectors of society',

[102] Ibid. p. 266

[103] Ibid. p. 270

Jasanoff stated that civic epistemology in a society is made up of 'deep-seated and recurrent patterns' which cannot be broken only by 'exceptionally severe shock.'[104] Accordingly, her analysis of the three Western industrialised countries focussed more on differences among countries than internal tensions or discontinuity within national patterns. We may conjecture that the three Western countries, which have developed their political and economic systems for a long time and now have well-settled systems, are not likely to show fluid, changeable, or conflicting features of civic epistemology.

In contrast, Stöckelová focussed on the heterogeneous features of civic epistemology in the Czech Republic.[105] She argued that civic epistemologies are not always homogeneous within a society by comparing the government's science policy documents and public engagement of environmental organisations in the Czech Republic. Similarly, Amir showed different epistemologies in assessing nuclear risk between the government and civil society groups through his study of the controversy over nuclear powers plant in post-authoritarian Indonesia.[106]

Of course, as Jasanoff argued, we must be careful when calling certain heterogeneous methods of knowledge production and use within a society 'civic epistemologies.' Indeed, civic epistemology is the way in which the government achieves the legitimacy of its policy and the knowledge base of the policy is perceived as proper within a society. If divergence of civic epistemology continues,

[104] Ibid. p. 259

[105] Tereza Stöckelová, "Who Knows?," *Social Movements and Public Action: Lessons from Environmental Issues*, 2009, 101–130.

106 Sulfikar Amir, "Challenging Nuclear: Antinuclear Movements in Postauthoritarian Indonesia," *East Asian Science, Technology and Society: An International Journal* 3, no. 2 (2009): 343–366.

the political power cannot achieve the legitimacy of the policy in democracy. Nevertheless, it is possible that countries which experienced recent political, economic or cultural transformation (e.g. the Czech Republic or Indonesia) have the potential to present more changeable or conflicting features of civic epistemologies than Jasanoff's cases.

Further, it is possible that these counties will show different types of civic epistemologies from Jasanoff's. Despite the context-dependent nature of civic epistemologies, Jasanoff was resistant to the idea that there exist as many different civic epistemologies as the number of "discrete national or political communities to host them."[107] She argued that "cross-cultural variations in civic epistemologies are in fact not infinite, but can be grouped in accordance with widely the three recurring patterns." This argument carries with it the risk of over-generalisation in presenting national patterns of civic epistemologies of different countries with different historical, political, economic and cultural backgrounds from the Western industrialised democracy. Indeed, Stöckelová stated that Jasanoff's "biased experience with political cultures where citizens play a key role" might mean she missed the possibility of different versions of civic epistemology.[108]

Although limited in number, certain studies have suggested national patterns distinct from Jasanoff's three types of civic epistemology. Renn addressed differences in policy cultures and in the use of science between the more industrialised European countries and the less industrialised ones.[109] He classified

107 Jasanoff, *Designs on Nature*.

[108] Stöckelová, "Who Knows?."

[109] Ortwin Renn, "Style of Using Scientific Expertise: A Comparative Framework", *Science and*

national styles of using scientific expertise into four types: 'adversarial', 'fiduciary', 'consensual', and 'corporatist.'[110] In Renn's classification, the integration of scientific advice in the policy area in Southern Europe belonged to 'fiduciary' style which was characterized by expert selection based on prestige or personal relationships with patrons and by consultation in an arbitrary manner without public control or procedural rules. In addition, the studies of Gonçalves, and Gonçalves and Delicado pointed out that Europeanisation brought no substantive changes in authoritarian and hierarchical political tradition in Portugal, a semi-peripheral society within the EU.[111] They argued that Portuguese membership in the EU aggravated the peripheral position of Portuguese science and thus the deference of Portuguese policy makers toward foreign veterinary science was reinforced. Indeed, following their comparison of public perception regarding nanotechnology in Brazil and the UK, Macnaghten and Guivant concluded that nanotechnology was considered positive with the expectation of progress in Brazil, whereas in the UK it was treated with scepticism and concern about the long-term and unforeseen consequences.[112] They attributed the response to nanotechnology in Brazil to a lack of experience relating to public technological controversy and the low level of institutionalisation of public consultation in Brazil. In light of this, Jasanoff's claim that there are three recurrent types of civic epistemology is not sufficient to explain the different patterns

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Public Policy 22, 3 (1995): 147–156.

[110] Ibid. P. 151

[111] Maria Eduarda Gonçalves, "The Importance of Being European: The Science and Politics of BSE in Portugal", *Science, Technology & Human Values* 25, 4 (2000): 417–448.; Maria Eduarda Gonçalves and Ana Delicado, "The Politics of Risk in Contemporary Portugal: Tensions in the Consolidation of Science-policy Relations", *Science and Public Policy* 36, 3 (2009): 229–239.

[112] Phil Macnaghten and Julia S Guivant, "Converging Citizens? Nanotechnology and the Political Imaginary of Public Engagement in Brazil and the United Kingdom", *Public Understanding of Science* 20, 2 (2011): 207–220.

shown by the above studies, particularly in countries with different political, economic and cultural backgrounds from the three European countries of Jasanoff.

Civic epistemology is a useful concept with which to capture a wide variety of aspects pertaining to science-related policy-making and controversies in democracies whilst simultaneously showing the context-specific methods. I will use the concept of civic epistemology to analyse the Korean BSE controversy and to identify the characteristics of public knowledge-making and legitimacy-achieving practice in Korean society.

2.6 Conclusion

In this chapter I survey relevant literature which will develop our understanding of the complex nature of Korea's BSE controversy. The controversy includes various issues such as the role of scientific knowledge in regulatory policy-making, different constructions of risk and scientific knowledge between the public and the government, and the ways in which policy achieves legitimacy and public accountability in the contemporary knowledge society.

The first section demonstrates that science and politics are not distinguished from one another in regulatory policy making through use of the 'regulatory science' concept. Scientific knowledge in regulatory policy areas is not objective and value-free but is socially constructed. The ways in which regulatory scientific knowledge achieves legitimacy are subject to social commitment and reflect the ways in which accountability is constituted in a society. Accordingly, even the same experimental

evidence can be interpreted in different ways or lead to divergence in regulatory policy among countries, depending on the political and cultural context.

In the following two sections, I survey literature concerning the ways in which the public responds to risk and scientific knowledge. Risk does not pertain to the objective possibility of harmful events, but instead how people evaluate and respond to it. Lay people tend to perceive risk in a much broader context than experts who perceive risk by numbers, with psychological, cultural and social factors affecting it. Likewise, the public are not passive recipients of scientific knowledge provided by scientists, and several constructivist studies have shown that the public has the potential to evaluate and validate knowledge of experts, and further to contribute to knowledge production.

Discussion regarding civic epistemology is reviewed in the next section. The legitimacy and credibility of policy relies on the shared public knowledge method used in democracy, whilst each society has its own indigenous way in which credible knowledge should be shown, defended, and represented. Jasanoff's comparative study of biotechnology policy in the US, UK, and Germany showed different types of civic epistemology at work, whilst the contextual nature of civic epistemology suggested the possibility of a new type of civic epistemology in a society which has a different cultural context.

In this thesis, I will explore, using the constructivist approach, how the risk claims over BSE were constructed in Korean society and what factors were involved in the regulatory policy-making. The concept of civic epistemology will be used to identify the distinct nature of public knowledge-making and legitimacy-achieving practice in

Korean society.

Prior to the chapters regarding the Korean BSE controversy, it is necessary to paint a more detailed picture of the BSE and the BSE crisis. Literature concerned with the nature and the control of BSE and the brief story of the BSE crisis in the UK in the 1980-1990s will be presented in the next chapter. This will help to sensitise us to any factors which may potentially be considered as necessary when it comes to understanding the Korean controversy.

3 BSE and the BSE crisis

3.1 Introduction

This chapter will provide information regarding BSE and the brief story of the BSE crisis in the UK.

Bovine Spongiform Encephalopathy (BSE) struck the world with horror in the late 1980s and the early 1990s. A lack of scientific knowledge about the disease was one of the main difficulties when it came to policy-making. After the tragic events peaked with the statement of the UK government in 1996, the disease began to look controlled as the result of various risk control measures being implemented. Nevertheless, it remained somewhat of an unknown disease during the Korean controversy and claims about BSE risk and the safety of beef provided by the government and the opponents were conflicting. The first section will describe the scientific knowledge of BSE, the current conditions of BSE and vCJD, and the remaining uncertainty.

BSE cannot be explained separately from the story of the BSE crisis in the UK. BSE was first discovered in British cattle in the 1980s, and most BSE cases have been discovered there. Hundreds of thousands of British cattle were slaughtered, and 176 people died following transmission of the disease. The BSE crisis was said to be a failure of the British policy system. Moreover, during the BSE controversy in Korea, the beef safety claims of the Korean government were often compared with the UK government's reassurance that had been finally revealed as a policy failure. Dissenters took the UK case as a reference to the distrust against the government.

Indeed, the BSE crisis illuminated general and fundamental problems which can occur in science-based risk policy-making. In light of this, the BSE crisis cannot be limited to the unique experience of the UK. In the second section, the brief story of the BSE crisis in the UK and the implications will be explored mainly based on secondary sources. Understanding the various factors which framed the entire policy-making process and the interaction between science and politics will provide clues, using which we can analyse the Korean case.

3.2 BSE and vCJD

This section will summarise the scientific knowledge of BSE and vCJD, the current conditions of the diseases, and the remaining uncertainty raised during the Korean controversy.

3.2.1 BSE

Bovine Spongiform Encephalopathy (BSE) is also known by its popular name 'mad cow disease.' The recurring image of BSE sees a cow stumbling through the mud, unable to stand, swaying to and fro, and eventually falling to the ground. The main biomedical character of BSE is 'multifocal spongy transformation of brain parancyma and a degeneration of neurons in the brain stem.'[113] BSE is on of many TSEs (Transmissible Spongiform Encephalopathies); a category which includes

[113] Nicholas Addison Phillips, June Bridgeman, and Malcolm Andrew Ferguson-Smith, *The BSE Inquiry* (London: Stationery Office, 2000). Vol. 3, para 1.35

progressive degenerative diseases of the nervous system, which occur in humans and other animals. In addition to BSE, Scrapie in sheep and goats, Chronic Wasting Disease (CWD) in wild deer in North America, and Transmissible Mink Encephalopathy (TME) are also known as non-human TSEs. In addition, Creutzfeldt-Jakob Disease (CJD), Gerstmann-Sträussler Syndrome (GSS), Kuru and Fatal Familial Insomnia (FFI) are the TSEs found in humans. Particularly, Scrapie, which was an old and common disease in UK sheep with symptoms similar to those of BSE, was assumed as the source of BSE when BSE was first identified.

TSEs are invariably fatal brain diseases. There are no known methods to prevent or cure these diseases, and they also have a long incubation period. The agent of TSEs is resistant to general sterilisation methods such as heat, chemical treatment, or radiation; and as the agent does not provoke an immune response in the host, there is no proven test to detect the disease in live animals. As these characters of the TSE agent cannot be found in other pathogens such as viruses or bacteria, a number of hypotheses to identify the agent have been raised. For example, Dickinson argued that TSE agent was "a piece of nucleic acid coated with host protein" (virino), which could avoid immune response.[114] On the other hand, Prusiner argued in favour of a 'prion protein theory' in which the prion protein, a component of normal cells, changes into a pathogenic abnormal prion protein for some reason, thus resulting in TSEs.[115] However, the prion theory construed as a 'protein only theory' brought with it controversy, due to the fact that it contradicted the 'central dogma' of

[114] Kiheung Kim, "Styles of Scientific Practice and the Prion Controversy," in *Infectious Processes: Knowledge, Discourse, and the Politics of Prions*, ed. Eve Seguin (Palgrave Macmillan, 2005). p. 38

[115] The word 'Prion' is originated from "*pro*teinaceous *in*fectious particle." Ibid.

molecular biology that genetic information can only be transferred from nucleic acid to nucleic acid or protein. Nevertheless, Prusiner was awarded the Nobel prize in 1996 and the prion hypothesis is central to scientific understanding of BSE and other TSEs. However, many unexplained aspects still exist, and some researchers still argue that the TSE agent is a virus rather than a prion, and that the prion protein is merely a receptor for TSE viruses.[116]

With regard to BSE, Meat Bone Meal (MBM), recycled animal waste for animal feed, is known to act as a vector of the pathogen. Animal waste from carcasses has been incorporated into animal feed as a convenient and cheap source of nutrition, whilst the use of MBM in ruminant feed has become common practice to increase food production since the Second World War.[117] Indeed, the BSE agent spread through 'cattle-to-cattle recycling' of MBM prior to the animal protein feed ban for ruminant feed. As the epidemic did not occur until the 1980s, increases in scrapie-infected sheep waste in MBM or changes in the rendering process in the 1970s (decline in processing time and temperature, and the use of solvent) were suspected as the cause of the epidemic.[118] With this said however, the Phillips report found

[116] Laura Manuelidis et al., "Cells Infected with Scrapie and Creutzfeldt-Jakob Disease Agents Produce Intracellular 25-Nm Virus-like Particles," *Proceedings of the National Academy of Sciences of the United States of America* 104, no. 6 (February 6, 2007): 1965–1970.

[117] Phillips, Bridgeman, and Ferguson-Smith, *The BSE Inquiry*.; Lester M. Crawford, "BSE: A Veterinary History," in *Mad Cow Crisis: Health and the Public Good*, ed. Scott C. Ratzan (UCL Press, 1998).

[118] "The rendering industry processed the waste from the carcasses of cattle and other farm animals. The process involved crushing the raw material followed by the indirect application of heat. This evaporated the moisture and enabled the fat, known as 'tallow', to be separated from the high-protein solids, known as 'greaves.' In its purest form, tallow is a creamy-white substance. … The greaves were pressed, centrifuged or subjected to a process of solvent extraction to remove more tallow, before being ground into meat and bone meal (MBM). In the 1980s, both tallow and MBM had a good commercial value, although it was the tallow which was the primary product of rendering." Phillips, Bridgeman, and Ferguson-Smith, *The BSE Inquiry*., vol.13 6.1

There was a concern that infectious agents might not be removed completely because of low

that "any rendering systems and solvent extraction could or cannot destroy completely the scrapie or BSE agents, and therefore, neither the change in rendering systems nor the declined use of solvent was the origin of the BSE epidemic, or an increase in infectivity of animal feed."[119] the origins of BSE prion and how it was introduced into ruminant feed remain unknown despite a number of hypotheses.[120]

The incubation period of BSE is 4 to 6 years and most incidences of clinical disease occur in cattle with an average age of 60 months.[121] Research on sheep or mice experimentally infected with scrapie suggested that the cattle brain would be infected at approximately 30 months of age, if calves were exposed to the BSE pathogen in the first few months of life.[122] The BSE incidence in cattle under 30 months of age is approximately 0.05%.[123]

The transmissibility of BSE to humans was the most controversial issue during the whole period of the BSE controversy in the UK. The UK government initially

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temperature and omission of additional heat treatment of new rendering process. In 1979, the Royal Commission on Environmental Pollution suggested that the government should make regulation on specific temperature and minimum heating period in rendering industry, but it was not accepted. M McKee, T Lang, and J A Roberts, "Deregulating Health: Policy Lessons from the BSE Affair.," *Journal of the Royal Society of Medicine* 89, no. 8 (August 1996): 424–426.

[119] Phillips, Bridgeman, and Ferguson-Smith, *The BSE Inquiry*., vol.13, 6.47

[120] A European Commission report recorded that "many hypotheses have been suggested, including *for example* an origin from mammalian species other than cattle (a mutant form of scrapie agent from sheep, an unmodified scrapie agent from sheep, a natural TSE in *Bovidae* or *Felidae* or other wild animals whose carcasses were rendered into MBM, the existence of a form of sporadic BSE akin to sporadic CJD of humans, a spontaneous mutation of normal bovine PrP into an infectious and protease resistant TSE prion, etc)." European Commission Health & Consumer Protection Directorate-General, *Opinion on: Hypotheses on the Origin and Transmission of BSE Adopted by the Scientific Steering Committee at Its Meeting of 29-30 November 2001*, n.d.

[121] TAFS, *TAFS Position Paper on Testing of Cattle for BSE – Purpose and Effectiveness* (Berne, 2009).

[122] Ibid.

[123] European Commission/the Scientific Steering Committee, "Update on The Opinion on TSE Infectivity Distribution in Ruminant Tissues," November 2002.

thought of BSE as a cattle form of scrapie which had never been transmitted to humans, and disavowed transmissibility of BSE from cattle to humans. Moreover, an agent was not likely to cause infection and disease in different species due to the species barrier. However, the BSE agent was experimentally transmitted to a wide range of species including cats, pigs, and finally (non-experimentally) to humans, thus resulting in vCJD, which will be discussed below.

3.2.2 vCJD

The human form of BSE is called variant Creutzfeldt–Jakob disease (vCJD). Creutzfeldt–Jakob disease (CJD) is the most well-known TSE disease in humans, and was identified in the 1920s. Most cases (approximately 85%) are classed as sporadic CJD (sCJD) which occurs normally in the middle-aged and elderly people (median age is 64-67) with an incidence of 1 case per million population per year world-wide.[124] In addition, familial forms of CJD (fCJD) from gene mutation and iatrogenic CJD (iCJD) from infection through contaminated surgical equipment, injection of pituitary glands or the implantation of *dura mater* taken from CJD-infected cadavers exist.[125]

Whilst the initial official stance of the UK government was that BSE would not be transmitted to humans, UK government experts did note that if BSE were to be transmitted to humans it would be likely to resemble CJD. The new type of CJD

[124] John SP Lumley, "The Impact of Creutzfeldt–Jakob Disease on Surgical Practice", *Annals of The Royal College of Surgeons of England* 90, 2 (3. 2008): 91–94.

[125] Ibid.

cases began to be reported in the UK in the 1990s. The patients were much younger than sCJD patients (median age, 29 years) and the duration of the illness was much longer. In March 1996, the UK government admitted the causal link between this new type of CJD ('new variant CJD', nvCJD afterwards vCJD) and BSE. vCJD was believed to occur via consumption of cattle products contaminated with the BSE agent.

3.2.3 Current conditions

Decline in BSE and vCJD incidence

The BSE epidemic peaked with more than 37,000 new cases in 1992 whilst a total of 190,000 BSE cases in 25 countries (including 180,000 in the UK) were reported until 2008.[126] Indeed, a total of 18 European countries reported their indigenous cases after the first cases outside the UK in 1989, and three countries outside Europe (Canada, Japan, and Israel) reported their first indigenous BSE cases in 2001-2003.[127] The incidence of BSE has declined drastically with the implementation of regulatory measures, and only 29 new cases were reported worldwide in 2011 (Figure2).[128]

[126] OIE, "Number of cases in the United Kingdom", http://www.oie.int/animal-health-in-the-world/bse-specific-data/number-of-cases-in-the-united-kingdom/. Access on 15/07/2012

[127] The first country which reported BSE cases outside the UK was Ireland where BSE occurred in cattle imported from the UK. Countries which reported the indigenous BSE cases are: Ireland, France, Portugal, Switzerland, the Netherlands, Luxembourg, Belgium, Liechtenstein, Denmark, Spain, Germany, and Italy. From D. Heim et al., "Update on bovine spongiform encephalopathy, scrapie and chronic wasting disease." (presented at the 69th General session of the international committee, Paris, France, 27 May-1 June 2001., Office International des Épizooties, 2003), 59–105.

[128]OIE, "Number of cases in the United Kingdom

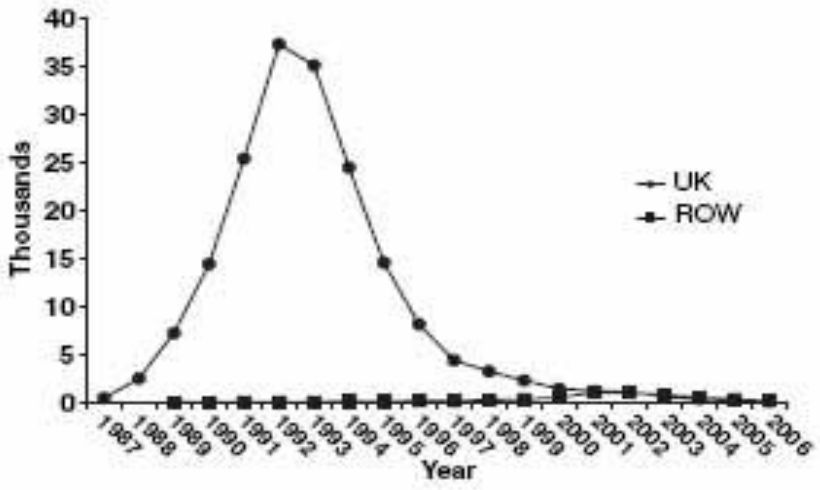

Figure 2 Comparison of the BSE epidemic in UK and the rest of the world (ROW).[129]

vCJD cases have been reported by 12 countries since 1996, with most of these identified in the UK. As of July 2012, variant CJD cases have been reported by the following countries: 176 from the United Kingdom; 27 from France; 5 from Spain; 4 from Ireland; 3 each from the US and the Netherlands; 2 each in Portugal, Italy and Canada; and one each from Japan, Saudi Arabia, and Taiwan.[130] Two of the three US cases, two of the four cases from Ireland, one of the 25 French cases, and the single cases from Canada, Japan, and Taiwan were likely to have been exposed to the BSE agent while residing in the UK. vCJD in the UK peaked with 29 incidences in 1999, but declined thereafter (see Table 3).

[129] J. I. Jorquera, "Safety Procedures of Coagulation Factors," *Haemophilia* 13 (2007): 41–46.

[130] The National Creutzfeldt-Jakob Disease Research & Surveillance Unit (NCJDRSU), "Variant Creutzfeldt-Jakob Disease Current Data (July 2012)", http://www.cjd.ed.ac.uk/vcjdworld.htm.

Table 3 **Annual cases by onset, notification, diagnosis and death in the UK**[131]

(Year	Onset	Notification	Diagnosis	Death	Median age at death
1994	8	0	0	0	-
1995	10	8	7	3	-
1996	11	9	8	10	30
1997	14	13	12	10	26
1998	17	20	17	18	25.5
1999	29	16	17	15	29
2000	24	29	27	28	25.5
2001	17	21	25	20	28
2002	14	15	16	17	29
2003	5	16	16	18*	28
2004	9	6	8	9	26
2005	6	7	6	5	34
2006	3	5	6	5*	30
2007	2	1	1	5*	24
2008	3	2	1	2	
2009	3	4	3	3	26
2010	1	2	4	3	
2011	0	2	2	5	
Total	176	176	176	176	28

*Three cases have arisen to date with the people having had a blood transfusion from earlier cases. These cases, all male, died (were diagnosed) in 2003 (2003), 2006 (2006) and 2007 (2006). These cases are included in the analyses although are likely to be part of the secondary spread.

Remaining uncertainty

Although the incidence of BSE and vCJD has decreased as a result of the surveillance and controlling measures, estimates regarding the future of the disease remains uncertain. The main uncertainties relevant to the Korean BSE controversy are considered below.

Atypical BSE: Atypical BSE cases, which are slightly different from the classical

[131] N J Andrews, "Incidence of Variant Creutzfeldt-Jakob Disease Diagnoses and Deaths in the UK January 1994 - December 2011," May 2011, http://www.cjd.ed.ac.uk/cjdq68.pdf.

BSE, have been identified with the help of the development of test methods and active surveillance (testing of healthy animals).[132] Most atypical cases were detected from old animals (e.g. 8 to 18 years in France, and 11 and 15 years in Italy), although a few cases were detected in young animal of approximately 20 months.[133] The origin of atypical BSE is not known and some hypothetical theories are discussed within the scientific community (e.g. a form of BSE in older animals; different strain of prion disease in cattle; spontaneous disease of cattle like sporadic CJD in humans; and a natural process of ageing of cows).[134] Regarding the risks of atypical BSE to humans, there is no evidence that atypical BSE transmits from animals to human naturally, nor is it known whether it will pose greater or lower risks to humans than BSE. For the moment, like BSE, atypical BSE is assumed to be prevented by the present animal feed control measures which ban Meat Bone Meal in cattle feed.[135]

vCJD susceptibility and human genotype: With regard to vCJD, there has been a concern that a second wave of the epidemic might occur. PRNP (Prion Protein gene) at codon 129, which is thought to play an important role in susceptibility to CJD, has three genotypes: methionine/methionine (M/M), methionine/valine (M/V) and valine/valine (V/V). All vCJD patients in the UK were reported as belonging to the M/M type genetic subgroup which constitutes 36.79% of the UK population.[136]

[132] Until 2007, atypical BSE cases were identified in France (12), Canada (1), Germany (2), Italy (2), Japan (2), Netherlands (4), Poland (7), Sweden (1), Switzerland (1), UK (1), and USA (2). TAFS, *Position Paper on Atypical scrapie and Atypical BSE*, May 16, 2007).

[133] Ibid.

[134] http://www.cdc.gov/ncidod/dvrd/bse/

[135] Detwiler et al., "A Position Paper on the Relaxation of the Feed Ban in Europe."

[136] Byung-Hoon Jeong et al., "Polymorphisms of the prion protein gene (PRNP) in a Korean

However, the first M/V type vCJD case by transfused blood was reported in 2004 and V/V type at Codon 129 was shown in the 2001-2004 study of the prevalence of prion protein in surgically removed tonsils and appendices.[137] The M/V type and V/V type cases raise concerns about the potential explosion of vCJD in M/V and V/V genotype subgroups which may have a longer incubation period than the MM type.[138]

Links between sCJD and vCJD: sCJD is believed to have existed before the BSE epidemic and to have developed spontaneously. The recent increase of sCJD cases has been attributed to better diagnosis. However, there are claims that it may be linked to the BSE epidemic. In Switzerland and the UK, sCJD incidence increased significantly in the same period during which the BSE epidemic was at its height.[139] Moreover, in an experiment which involved injecting BSE agent into the brains of mice, some of the mice developed a molecular type of sCJD.[140] The team leader of the experiment argued that this evidence suggested that some sCJD cases might have arisen from exposure to the BSE pathogen.

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population", *Journal of Human Genetics* 49, 6 (2004): 319–324.

[137] UK Creutzfeldt-Jakob Disease Surveillance Unit, *Scientific Report 2007/08*, 2008, http://www.cjd.ed.ac.uk/.

[138]SEAC, "SEAC Position Statement: SEAC Epidemiology Subgroup Position Statement on the vCJD Epidemic," accessed April 1, 2013, http://webarchive.nationalarchives.gov.uk/20060802114128/http:/www.seac.gov.uk/statements/state260106subgroup.htm.

Professor Higgins, chairman of the UK government's Spongiform Encephalopathy Advisory Committee, said: "Given that 160 to 170 MM individuals were infected, we would estimate the number of MV victims would be a maximum of 300 to 350, probably between 50 and 350." "Fears Raised over New vCJD Wave," *BBC*, December 17, 2008, sec. Health, http://news.bbc.co.uk/2/hi/health/7788627.stm.

[139] Emmanuel A. Asante et al., "BSE prions propagate as either variant CJD-like or sporadic CJD-like prion strains in transgenic mice expressing human prion protein", *The EMBO Journal* 21, 23 (2002): 6358–6366.

[140] Ibid.

Now, whilst it is clear that BSE is controlled effectively, there remain uncertainties surrounding the disease, meaning that the possibility of a new epidemic of vCJD cannot be excluded.

3.3 BSE crisis in the UK in the 1980-1990s

When BSE first emerged in British cattle in the 1980s, no one could have imagined its impact. The BSE crisis in the UK had a significant influence on the relationship between science and policy-making as well as on meat consumption and agricultural practices in the UK and EU. In this section, the brief story of the BSE crisis in the UK will be set out chronologically and the implications provided, mainly based on secondary sources.

3.3.1 The policy context

Traditionally, the farming industry has been supported by the UK government.[141] The volatile and unstable characteristics of the agricultural market justified the intervention of the government.[142] Since the Second World War, the UK government had sought to increase food production in order to reduce reliance on imported food and foster rural economies, while depression after the World War and joining the EC market fortified the interventionist regime.[143]

[141] Richard Packer, *The Politics of BSE*, annotated edition (Palgrave Macmillan, 2006).

[142] Ibid.

[143] The Common Agricultural Policy (CAP) of EC included agricultural subsidy for crops and land

The Ministry of Agriculture, Fisheries and Food (MAFF) was established by the merger of the Ministry of Food and the Ministry of Agriculture in 1955. It had two missions: promotion of agriculture and food industry, and regulation of food safety. However, MAFF considered its primary role to be promotion of the agricultural industry rather than regulation. The agricultural policy division and its goal, promotion of the UK farming, were dominant within MAFF. For example, Gillian Shephard (1993), the Secretary of State for Agriculture, Fisheries and Food, emphasised that the usefulness of MAFF was crucially the support of industries.[144] To promote farming, MAFF maintained a close relationship with farmers' associations and the food industries. The National Farmers Union (NFU) was given privileged access to the policy process by the Agricultural Act (1945), and the government provided farmers with guaranteed returns, funds for research and development, and grants to encourage investment in production systems.[145] In reference to the typical concept of agricultural ministries, Phillip James (2003) stated: "Their primary objective was to sustain and nurture *these poor farmers whose livelihood was desperate and on whom the nation depended*."[146] The powerful sponsorship of MAFF was the main feature of the British agriculture policy.

Contrary to the centralised authority of MAFF in the agricultural policy area, many functions of food regulation were split between MAFF, the Department of

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and guaranteed minimum prices, and production of and trade in milk and beef was within the ambit. Ibid.

[144] Address at the Guild of Agricultural Journalists cited in Patrick Van Zwanenberg and Erik Millstone, *BSE: Risk, Science, and Governance* (Oxford University Press, 2005). pp. 49-50

[145] M. Winter, "Intersecting Departmental Responsibilities, Administrative Confusion and the Role of Science in Government: The Case of BSE," *Parliamentary Affairs* 49, no. 4 (1996): 550–565.

[146] Andrew Rowell, *Don't Worry (It's Safe to Eat): The True Story of GM Food, BSE and Foot and Mouth*, First Edition (Routledge, 2003). emphasis added

Health (DOH) and local authorities. For example, MAFF handled the production and provision of milk, as well as meat and meat hygiene in slaughterhouses; local authorities were responsible for the monitoring of hygiene as well as the regulation of meat cutting and indeed the processing plant itself. DOH did not have authority over hygiene related to agriculture.

With respect to regulation associated with the food issue, public administrators depended on the opinions from industries and their 'self-regulation.'[147] This pattern has been explained as part of the tradition of economic liberalism which discouraged the government's intervention in economic affairs.[148] With this said however, the government was willing to intervene to support the producers. Consequently, the government's agriculture and food policy was often appraised as unduly driven by producers' interests rather than consumers' interests.[149] The power of producers was highlighted when the egg industry forced a junior Health Minister, Edwina Currie, to resign in December 1988.[150] She resigned after only two years in her post, following which she stated "most of the egg production in this country, sadly, is now affected with salmonella."[151] Indeed, the period following her statement saw egg sales plummet, thus sparking outrage amongst farmers and egg producers. She resigned

[147] Winter, "Intersecting Departmental Responsibilities, Administrative Confusion and the Role of Science in Government: The Case of BSE."; Michael Moran, *The British Regulatory State: High Modernism and Hyper-Innovation* (Oxford University Press, USA, 2007).

[148] Ronald Brickman, Sheila Jasanoff andThomas Ilgen, *Controlling Chemicals: The Politics of Regulation in Europe and the United States* (Cornell Univ Pr, 1985).

Moran said that "the rejection of involvement in the detailed implementation of policy" is one of the key features of the British administrative culture. (Moran, *The British Regulatory State*. , p.64)

[149] McKee, Lang, and Roberts, "Deregulating Health."

[150] Stuart Weir and David Beetham, *Political Power and Democratic Control in Britain* (Routledge, 1999).

[151] BBC, "1988: Egg industry fury over salmonella claim", *BBC On This Day 1950-2005*, December 3, 1988, http://news.bbc.co.uk/onthisday/hi/dates/stories/december/3/newsid_2519000/2519451.stm.

because the food industry threatened the government, stating that it would take legal action to recoup its losses.

This relationship between the MAFF and the agricultural and food industry was intensified under the Thatcher government.[152] Under the Thatcher administration, deregulation was a principal policy goal of all governmental ministries in order to reduce the burden of regulatory requirements on industry and commerce and to encourage the creation of firms and jobs.[153] The 'customary role of a ministry', namely that the government should promote and protect its client industry, was highlighted and as a result, the laissez faire approach took priority over consumer protection. This involved encouraging competition instead of imposing regulations. Under this political atmosphere, de-regulation became a top priority for MAFF Ministers, and specifically, food safety was recognised as an area which needed deregulation.[154]

3.3.2 Identification of new disease and epidemiology

From the end of 1984, several cows were struck down with similar changes in character and behaviour, and it was in September 1985 that the first brain from one

[152] Rob Baggot, "The BSE Crisis: Public Health and the Risk Society," in *Public Policy Disasters in Europe*, ed. Pat Gray (Psychology Press, 1998).

[153] Following the government's plan in 1985, all ministries and departments were required to set up their own 'deregulation units' and be scrutinized about new regulations and their cost and impact on business. The Deregulation and Contracting Out Act (1994) accelerated deregulation process by giving the Secretary of State for Trade and Industry permission to repeal primary legislation which regulated industry without the approval of Parliament. (Phillips, Bridgeman and Ferguson-Smith, *The BSE Inquiry*., vol. 15, paras 7.2 and 7.6; McKee, Lang and Roberts, "Deregulating health.")

[154] Phillips, Bridgeman and Ferguson-Smith, *The BSE Inquiry*., vol. 15

such cow reached the Central Veterinary Laboratory (CVL).[155] Spongy-like changes in the cattle brain were identified, although it was concluded that this probably resulted from toxicity.[156] It was at the end of 1986 that pathologists of CVL identified the possibility that cattle had developed a spongiform encephalopathy which was transmissible in the same way as scrapie in sheep.

In order to know more about the nature of the new disease, it was crucial to encourage identification and reporting of the new disease by informing private practices and the veterinary community. However, dissemination of information about the new disease was suppressed even within MAFF until the first half of 1987. There were two reasons for this. The first related to anxieties within MAFF that premature claims regarding the discovery of a new disease without sufficient scientific evidence would damage the reputation of the CVL and MAFF.[157] The second, and more important, reason was the concern about the possible negative effect on exports and trade of cattle, meat and meat products. Beef and dairy farming was the UK's largest agriculture sector in the mid 1980s. In 1986, cattle population

[155] Within MAFF, BSE issue was handled by the State Veterinary Service (SVS), the Central Veterinary Laboratory (CVL), and the Animal Health Group (AHG). The SVS provided veterinary services and advice to farmers, and was headed by the Chief Veterinary Officer (CVO), a chief adviser on veterinary policy for the whole UK. CVO was responsible for presenting and explaining government policy to the UK agricultural industry, media and the public; and represented the UK in international fora such as the World Health Organization (WHO), the Office International des Epizooties (OIE), and the European Union (EU). The CVL whose researchers firstly identified a new disease BSE, was a part of the SVS until April 1990 and thereafter became a MAFF Agency. It conducted research about animal disease and provided a diagnostic and consulting service for farm veterinarians. Rare and difficult animal health problems from all over the UK were referred to the CVL. The AHG was an administrators group in MAFF and had responsibilities for policies on animal health, welfare and breeding; meat hygiene; exports and imports of animals, meat and meat products; and the licensing, distribution and control of veterinary medicines. (Phillips, Bridgeman and Ferguson-Smith, *The BSE Inquiry*., vol. 15)

[156] Ibid., vol.1

[157] Ibid.; T. Hugh Pennington, *When Food Kills: BSE, E.coli and Disaster Science* (OUP Oxford, 2003).

was 12.5 million at 122,900 farm holdings, which consisted of almost half of the whole number of UK farms. The output of milk, and fattened cattle and calves were worth of £5,134 million (at 1990 prices), which constituted 60% of the total value of livestock products in the UK and 37.5% of the UK's total agricultural output.[158] The Head of the Pathology Department at CVL, Raymond Bradley, said in his minute to his colleagues:

> If the disease turned out to be bovine scrapie it would have severe repercussions to the export trade and possibly also for humans if for example it was discovered that humans with spongiform encephalopathies had close association with the cattle. It is for these reasons I have classified this document confidential.[159]

As the results began to raise concern within the MAFF, it was in June 1987 that details regarding BSE were eventually published through a circular letter which was sent to Senior Veterinary Investigation Officers of England and Wales. It directed that the staff not consult research institutes or universities, nor publish or discuss anything about BSE without clearance.[160] It was not until December 1987 that MAFF announced the existence of the new disease through the *Journal of the British Veterinary Association*.

When the first BSE case was identified, CVL scientists discovered the sponge-like microscopic holes and fibrils in the dead cow's brain, which were similar to scrapie-associated fibrils. Scrapie was not known to be transmitted to humans by consumption of contaminated meat due to the species barrier. The British

[158] Phillips, Bridgeman and Ferguson-Smith, *The BSE Inquiry*., vol. 12, para 1.1 and paras 2.9-2.10

[159] Ibid., vol.3, para 1.37

[160]Ibid., vol. 1, para 177

government started to investigate the wider implications for British cattle in June 1987. John Wilesmith, the Head of the Epidemiology Department at CVL, conjectured that exposure of the cattle population to the BSE agent had begun in 1981-82 and concluded that the source of infection was scrapie-infected MBM. His hypotheses were: 1) an increase in the sheep population in the UK led to greater inclusion of scrapie-contaminated materials in the rendering process and an increase in scrapie-contaminated MBM in cattle feed; and 2) the changes in rendering processes (low temperature and less use of solvents) resulted in failure to inactivate the scrapie agent in MBM. The fact that few cases of BSE were reported in the border county of northern England and in Scotland where the solvent extraction process was not abandoned was to be significant.[161] The view of Wilesmith was not challenged during the whole controversy and was used to give the public a false assurance that it was unlikely that BSE was transmissible to humans in a manner similar to scrapie was.

3.3.3 Southwood Working Party

In February 1988, MAFF officials recommended to their minister the introduction of slaughter and compensation of infected cattle to control the disease. However, the agriculture minister of MAFF and the Treasury refused to follow the recommendation because of concerns about the expense of the government and the lack of positive scientific evidence. MAFF officials asked the Chief Medical Officer

[161] Crawford, "BSE: A Veterinary History." p12

(CMO) of the DOH for advice about the implications of BSE for human health.[162] CMO and MAFF officials noted the necessity to appraise risk in order to persuade the Treasury and ministers about the cost of control measures and agreed to refer the issue to an independent expert committee. [163]

The Southwood Working Party (1988-1989) was composed of eminent senior scientists. The advisory members, including Richard Southwood, a Professor of Zoology at the University of Oxford and the Chairman of the National Radiological Protection Board, who was nominated as the chairman, were scientists of the highest standing in their field with previous service records on numerous government committees. However, they were not experts in TSE research.[164] According to the BSE Inquiry report, Southwood wanted experts who could take a broader view rather than being experts in the TSE field, because he was aware that the nature of the TSE agent was a controversial issue among the experts. Excluding acting researchers was a measure taken to avoid conflict within the advisory group.[165] In addition to external experts, John Wilesmith, epidemiologist of CVL, joined the Working Party as an adviser. Wilesmith was called "the only expert adviser" who "could not be a proper member of the committee, as his independence would have been questioned

[162] The Chief Medical Officer (CMO) in Department of Health (DOH) was responsible for advice on medical and public health matters to the Government.

[163] Erik Millstone and Patrick van Zwanenberg, "Politics of Expert Advice: Lessons from the Early History of the BSE Saga", *Science and Public Policy* 28, 2 (2001): 99–112.

[164] Other members were: Anthony Epstein, a virologist who had just retired from the headship of the Department of Pathology at Bristol University and was continuing research in the Nuffield Department of Clinical Medicine at Oxford; John Walton, a clinical neurologist and the president of the General Medical Council who had just retired from the Chair of Neurology at Newcastle; and William B Martin, a veterinarian who had just retired from the Directorship of the Moredun Research Institute in Edinburgh. (Phillips, Bridgeman and Ferguson-Smith, *The BSE Inquiry*., vol. 4, para1.11) Two of the working party members were knights. (Seguin E., "The UK BSE crisis: strengths and weaknesses of existing conceptual approaches", *Science and Public Policy* 27, 4 (2000): 293–301.)

[165] Phillips, Bridgeman and Ferguson-Smith, *The BSE Inquiry*. Vol. 4

by others."[166] As the 'Southwood Working Party' had neither staff nor a budget (like most advisory committees in the UK) its activities were therefore dependent on its secretariat and officials from MAFF and the DOH.[167] They arranged issues to be addressed by the committee members, supplied data and evidence, and drafted the final report of the committee.

The role of the Working Party was not limited to purely addressing scientific evidence about BSE, and it was also asked to make policy recommendations. After its first meeting on 20 June 1988, the Southwood Working Party recommended the destruction of the carcasses of clinically affected animals to ensure that BSE infected animals would not transmit the disease to humans or other animals. The slaughter and compensation policy was proposed by MAFF officials in 1987, but John MacGregor, the Minister of MAFF, was reluctant to introduce a compulsory slaughter and compensation scheme. He was anxious that the compensation scheme would set a precedent in terms of the government's expenditure on other animal and plant disease cases, which was not consistent with the Thatcherite austerity policy regime.[168] The Permanent Secretary of MAFF did not want the Working Party to recommend slaughter and told Southwood: "Any recommendations would not lead to an increase in public expenditure." [169] Nevertheless, the Working Party recommended that clinically infected animals should be slaughtered and destroyed. The recommendation was made by the guidance of the CMO and MAFF officials

[166] Kerstin Dressel, *BSE- the New Dimension of Uncertainty: The Cultural Politics of Science and Decision-Making* (Edition Sigma, 2002)., P.168

[167] Zwanenberg and Millstone, *BSE*.

[168] Pennington, *When Food Kills*., p. 155

[169] Southwood 1998 Statement NO 1 to BSE Inquiry cited in Zwanenberg and Millstone, *BSE*., p. 114

who proposed, despite the opposition of their minister and the Treasury, the removal of affected animals from the human food chain.[170] MAFF ministers reluctantly accepted the recommendation of the Working Party and announced a 50% compensation scheme which provided BSE-infected animals with 50% of the market-value of healthy animals. The order for the compulsory slaughter and destruction of cattle suffering from BSE was announced on 7th July 1988.

The 50% compensation scheme for slaughtering infected animals was criticised as "Whitehall penny-pinching", and there was a concern that farmers would send suspected animals to the slaughterhouse earlier rather than notifying the outbreak of disease in order to avoid losing their value.[171] Indeed, BSE-infected cattle were discovered in livestock markets in several counties. Moreover, the successful experimental transmission of BSE to mice by inoculating contaminated food suggested that eating infected cattle brains could transmit BSE to other species. The government finally announced a full compensation scheme for infected animals. Although the MAFF never conceded that some farmers sent their affected cattle to market, the reported cases of BSE increased by 69% after the full compensation scheme was introduced.[172]

In addition to the slaughter policy, the MAFF banned the use of ruminant animal protein for ruminant animal feed in 1988. The aim of the ban was to reduce animal health risk by withdrawing contaminated MBM from animal feed. MBM was fed to

[170] Ibid.

[171] James Erlichman, "BSE - A cow disease to beef out", *The Guardian*, July 11, 1988.

[172] Geoffrey Cannon, "Inside Story- British Beef: Mad cows and Englishmen", The Independent, May 20, 1990.

pigs and poultry as well as cattle, although the MAFF only banned the use of MBM for cattle feed due to the concern that the rendering industry would lose its market.[173] Although the Southwood Working Party noted the risk of pigs and poultry feed and attempted to recommend extending the ruminant feed ban to pigs and poultry, the MAFF did not want the Working Party to recommend it.[174] Recognising the concern of the MAFF, the Working Party did not recommend extending the ruminant feed ban to pigs and poultry. However, MAFF officials treated the Working Party's non-recommendation as scientifically validated grounds not to extend the ruminant feed ban to pigs and poultry feed.

The report of the Southwood Working Party, which was published after the end of the Working Party's term, provided the main scientific grounding for policy recommendations to the successive expert committees and officials. In particular, the general conclusions of the report were cited as reassuring evidence of the remoteness of BSE risk to humans: "From present evidence, it is likely that cattle will prove to be a 'dead-end host' for the disease agent and most unlikely that BSE will have any implications for human health."[175] However, as previously seen, recommendations of the Working Party were restrained by the political considerations of MAFF officials, whilst policy advice which might not be welcome by the government was evaded by experts. `To take another example, the draft of the report's 'general conclusion' by Richard Southwood, which identified the practice of feeding animal

[173] Converting animal offal into animal feed was both a profitable industry and a solution of animal waste disposal problems. Phillips, Bridgeman and Ferguson-Smith, *The BSE Inquiry*., vol.11, para 4.311

[174] Zwanenberg and Millstone, *BSE*.

[175] Phillips, Bridgeman, and Ferguson-Smith, *The BSE Inquiry*, vol. 4, para 2.35

materials to herbivores as the cause of BSE, was censored by MAFF officials who were concerned about the serious economic implications for the associated industry.[176] The paragraph was altered in the final version of the report, with a less precautionary tone.[177] Further, MAFF officials were involved more directly in writing the report. A chapter on 'the cause of BSE: the epidemiological evidence' of the report was written by John Wilesmith, an epidemiologist of the CVL, based on his epidemiological study. With hindsight, the chapter written by Wilesmith gave a false assurance that it was unlikely that BSE was transmissible to humans as scrapie was. However, the Working Party was neither requested to conduct a critical review of his conclusions nor was it provided data for review as some of the data were confidential.[178] Whilst the content of the Southwood report was represented as a firm and conclusive judgment based on objective and purely scientific assessment by successive advisory committees and government officials, it was not deserving of this description.

[176] Matthias Beck, Darinka Asenova and Gordon Dickson, "Public Administration, Science, and Risk Assessment: A Case Study of the U.K. Bovine Spongiform Encephalopathy Crisis", *Public Administration Review* 65, 4 (2005): 396–408.; Zwanenberg and Millstone, *BSE*.

[177] The paragraph Southwood drafted first was:

> This problem [BSE] has arisen as a result of the practice of feeding animal materials to herbivores … we believe *the inevitable risks* are such that *it would be prudent to change agricultural practice* so as to eliminate these novel pathways for pathogens.

However, the final version was:

> This problem [BSE] has arisen as a result of the practice of feeding ruminant materials to herbivores …. We believe *that the risks from inadequately sterilized animal products* are such that *this method of disposing animal waste should be changed* so as to eliminate these novel pathways for pathogens.

Zwanenberg and Millstone, *BSE*. p. 127

[178] Phillips, Bridgeman and Ferguson-Smith, *The BSE Inquiry*., vol. 1 and vol. 3

3.3.4 Next expert advisory committees and regulatory measures

Consultative Committee on Research (Tyrrell Committee) and Spongiform Encephalopathy Advisory Committee (SEAC)

The Consultative Committee on Research (Tyrrell Committee, 1989-1990) was set up on the recommendation of the Southwood Working Party. Its role was to provide advice about TSE research in progress and future priorities for research. David Tyrrell, Director of the Medical Research Council Common Cold Unit and a distinguished virologist, was chosen as the chairman. Other members nominated by MAFF and DOH included: William Watson, the director of CVL, John Bourne, the director of the Institute for Animal Health, Richard Kimberlin who had recently retired from the directorship of the Neuropathogenisis Unit (NPU) in Edinburgh and was then independent TSE consultant, and Robert Will, a clinical neurologist and expert in CJD. In addition, Katherine Levy also joined as a Medical Research Council observer, while Hilary Pickles of DOH and John Maslin of MAFF formed the secretariat.[179] Much like the Southwood Working Party, none of the members were actively engaged in scientific research on TSEs.[180] The Tyrrell Committee considered the research programmes which were in progress and were proposed by CVL and NPU, and considered the research areas identified in the *Southwood Report*.[181]

[179] Phillips, Bridgeman and Ferguson-Smith, *The BSE Inquiry*. vol. 11, para3.21.

[180] Ibid.

[181] The research areas listed by the Southwood Working Party were: (i) Epidemiological Studies, in particular, further the role of MBM as the source of BSE and maternal and horizontal transm ission; (ii) Transmission studies in a variety of possible host species; (iii) Transmission experi

The interim report of the Tyrrell Committee in June 1989 suggested a continuous peer review and project coordination system to minimise duplication of research on Spongiform Encephalopathies. Accordingly, the MAFF and DOH decided to establish a successor to the Tyrell Committee in late 1989. The role of the new committee was to carry out research oversight, to respond to specific questions from the government, and to provide policy advice.[182] The setting up of the Spongiform Encephalopathy Advisory Committee (SEAC, 1990- present) was announced on 3 April 1990. Including Tyrrell, the chairman, most inaugural members of SEAC had also been members of the Tyrell Committee. The members included: Will, Director of the CJD Surveillance Unit, Watson, Director of the CVL 1986-90, and Kimberlin, independent TSE consultant since 1988. In addition, Fred Brown, a virologist, former member of the Agricultural Research Council (ARC) Committee on Scrapie 1977-87, and former Scientific Deputy Director of the Animal Virus Research Institute (Pirbright) was later added.[183] The initial membership was skewed towards veterinary backgrounds over human health and the expertise of the members was challenged by Dealler.

> … the small group of people in SEAC included only a few who understood the subject fully (and even they were known to believe that BSE was a minor risk). For example, one of the members was a vet, another an expert in foot and mouth disease, another a histologist, another a retired manager of a veterinary research laboratory. Even the chairman had been an expert on the common cold. Yet the government was making it clear to the press that these were the national experts on the subject of BSE and that they

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ments using muscle and milk; (iv) Possibility of formal monitoring of pigs and domestic pets; (v) Studies on the molecular structure of BSE agent;(vi) the nature of the infectious agent;(vii) Genetic studies about disease expression in cattle; viii) The surveillance of humans at particula r risk and monitoring of CJD cases (Ibid., vol. 4, para 9.16).

[182] Phillips, Bridgeman and Ferguson-Smith, *The BSE Inquiry*., vol. 11

[183] Ibid. vol.11, paras 4.20-4.23.

were taking their advice from them.[184]

The membership of SEAC was strengthened by reinforcing clinical membership and scientists who were actively involved in TSEs research when John Pattison was appointed as the new chairman in November 1995.[185]

Risk to non-ruminant animals

In early May 1990, the first feline equivalent of BSE case was diagnosed in a domestic cat. It was the first non-ruminant case infected naturally. Pet food containing contaminated sheep meat was accused of being the transmission route. As experimental attempts to transmit scrapie to cats had not been successful, the death of the cat indicated that BSE might be more virulent than scrapie. At that point, the use of sheep protein had been banned in cattle feed but not in pigs, poultry or pet food. This upset meat manufacturers, and UKASTA (the United Kingdom Agricultural Supply Trade Association) member producers and pet food manufacturers stopped using offal in their products voluntarily. The anxiety that BSE could spread from species to species was fuelled and the demands for tighter controls on animal food increased. Despite the pressures to ban offal in all animal feed, MAFF refused to extend the ruminant-to-ruminant feed ban to non-ruminant animals, claiming that pigs and poultry were not susceptible to Transmittable Spongiform Encephalopathies (TSEs). The MAFF finally imposed an immediate ban on cattle

[184] Dealler 1996 qtd. In Jacquie Reilly and David Miller, "The Role of the Media in Food Issues," in *Food, Health, and Identity*, ed. Patricia Caplan (Routledge, 1997).: 242-243

[185] Dressel, *BSE*.

offal used in all animal food in September 1990, announcing the successful experimental infection of a pig with BSE through the injection of infected tissue into the pig's brain.

The Specified Bovine Offal ban

The Southwood Working Party did not make policy recommendations with regard to the sub-clinically infected cattle which despite being infected, were not yet showing signs of BSE. The expert members were concerned about the risk posed in brain and lymphatic tissue, but decided not to recommend the ban on the use of the tissue in human food. It was because they thought the recommendation would not be agreed by MAFF due to the cost and practicability.[186] Instead, the Working Party recommended a ban on the use of ruminant offal for baby food. However, the baby food ban raised concern about other food which was exposed to the risks born in potentially infective tissues from subclinical cattle, and provoked claims that cattle brains and nerve tissues should be removed from the human food chain.[187]

MAFF officials claimed that the baby food ban was a purely precautionary measure and that there was no scientific justification to extend the beef offal ban to all human food.[188] There was concern that any tightening of policy might undermine the credibility of the antecedent policy claims, not least that 'there is no implication of risk from BSE to human.' In fact, as noted above, the recommendation of the offal

[186] Zwanenberg and Millstone, *BSE*.

[187] Ibid.

[188] Phillips, Bridgeman and Ferguson-Smith, *The BSE Inquiry*., vol. 1, paras 575-576

ban was excluded from the Southwood Working Party's report, because the MAFF did not want it. Nevertheless, officials treated the Southwood Working Party's conclusion as scientifically validated grounds not to extend the offal ban for baby food to other human food.

The pet food industry banned offal in their products voluntarily, and bacon and meat manufacturers stopped using bovine brain, spinal cord, pancreas, thymus, spleen and intestine. Experts who were independent of the government and industry claimed that offal which was used for sausages, pasties, pates and pies, should be banned from all food chains. For example, a neuropathologist, Helen Grant, said in an interview "You and I might be incubating the disease already", arguing that infected animals were continuing to enter the food chain.[189] The MAFF, which was under pressure from the industry and the public, finally announced the ban on the use of brain, spinal cord, and spleen from cattle aged over six months for human consumption in June 1989 (Specified Bovine Offal Ban, hereafter SBO ban).[190] The rhetoric of the MAFF was that a SBO ban was the easiest way to implement Southwood's advice to manufacturers of baby food not to use bovine offal and thymus. The offal ban was later re-adjusted, and intestines and whole heads, except for cheek meat and tongue, were banned.

Another concern associated with the offal ban was Mechanically Recovered Meat (MRM) which was used for processed meat products such as sausages, burgers and pies.[191] MRM was derived mainly from the vertebral column which was likely to be

[189] Geoffrey Cannon, "Are We Mad to Eat Sausages?," *The Times*, May 19, 1989.

[190] Zwanenberg and Millstone, *BSE*.

[191] "MRM is derived from the flesh-bearing bones and carcass remnants of cattle, sheep, pigs and

contaminated by the spinal cord. It was not practical to remove the spinal cord perfectly from the central nerve system. MAFF officials noted that inevitable contamination would result from small pieces of spinal cord inadvertently remaining in the vertebral column. John Gummer, the senior MAFF Minister, referred this issue to SEAC. However, SEAC members did not have expertise in the technical aspects of slaughterhouse practices and were unaware of the concerns regarding the removal of spinal cords and the safety of MRM. Relying on the information provided by the MAFF, the SEAC drew the following conclusion: "So long as the rules were properly observed and proper supervision was maintained, there was no need to recommend further measures on grounds of food safety."[192] The MAFF treated this conclusion by the SEAC as reassurance that there was no need for further consideration of MRM; a stance which lasted until 1995.

As previously mentioned, the SBO ban was presented by the MAFF only as a precautionary step in public announcements rather than necessary regulatory measures against a serious threat to public health. The MAFF argued that the SBO ban was not based on scientific evidence. Messages from the government to industry conflicted with each other: 'offal to be removed due to risk' and 'no risk in beef.' Moreover, although removal of the brain and spinal cord from carcasses required significant change in abattoir processes, no guidance was provided and the industry

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poultry by the application of high pressure to the bones to separate any adhering meat. It is used in the manufacture of a range of processed meat products for human consumption, including frozen sausages, burgers and pies. The total UK production of beef MRM in the late 1980s was estimated about 4,000-5,000 tonnes per year."

Phillips et al. 2000, vol.6, paras 3.575 and 3.576

[192] Phillips, Bridgeman and Ferguson-Smith, *The BSE Inquiry*., vol. 6, para 4.294.

Millstone and van Zwanenberg argued that though MAFF did not need advice on this contamination in abattoirs due to its network with veterinarians and meat hygiene inspectors, it involved SEAC to shift responsibility (Zwanenberg and Millstone, *BSE).*

was presumed to be able to implement the regulation properly.[193] Inspections to enforce the implementation of the regulation were rarely carried out between 1990 and 1995 whilst no practical changes occurred in abattoir processes. It was in 1995 that SEAC was informed of the failure to remove offal from carcasses. SEAC suggested, as a precaution, to suspend the use of vertebrae from cattle aged over six months when producing MRM, until it was clear that the removal of spinal cords was being undertaken properly in all cases.[194] Despite resistance from the industry, a ban on the use of bovine vertebral columns for the production of MRM came into force in December 1995.

3.3.5 Concerns about human risk

Concerns regarding the transmissibility of BSE to humans always existed since the very initial period of the BSE controversy. When BSE was declared as a notifiable disease for the control of the epidemic in 1988, the *Guardian* referred to Dr. Tim Holt's article in the *British Medical Journal* which claimed that BSE-infected meat could cause CJD in humans and that the sale of cattle brains for human consumption should be banned.[195] The MAFF argued that there was no proof that eating BSE could cause CJD. In early May 1990, the death of a cat with the feline equivalent BSE symptoms reinforced the concern that BSE had jumped the species barrier and might be transmissible to humans. Local authorities introduced a full or partial ban on beef products in their school meals, despite the government's safety

[193] Dressel, *BSE*.

[194] Phillips, Bridgeman and Ferguson-Smith, *The BSE Inquiry*, vol.1, para 753

[195] "Brain disease feared in food", *The Guardian*, June 4, 1988.

claims. Gummer, the MAFF Minister, fed his daughter Cordelia a beef burger in front of the media, but his actions, which were intended to reassure the public, were derided and did not convince the public about the safety of beef. The *Sunday Times* reported that a quarter of British households had stopped eating the traditional lunch of roast beef due to fears about mad cow disease.[196] As many people had stopped eating beef already or were considering stopping or cutting down on eating beef, cattle and beef sales dropped, thus leading to increases in economic loss and layoffs in the meat industry.

In September 1990, the successful experimental infection of a pig with BSE by injecting infected tissue into the brain was announced; and in the December, an infant antelope in London zoo, which was born from a BSE-infected mother, was confirmed to have died from the brain disease. Helen Grant argued in favour of stopping the use of even the offal of calves under 6 months in meat products.[197] In April 1991, the assistant CVO, Kevin Taylor stated that BSE might have a different host range from scrapie. As the 'safe beef' reassurance of the government was based on the theory that BSE came from scrapie-infected sheep which could be eaten by humans without any infection, this claim was sufficient to raise doubts regarding the safety of beef. However, he asserted that any human health risk had ended with the ban on cattle brains and offal in November 1989.[198] Nevertheless, anxiety about transmission of BSE to humans was high, as evidenced by the BBC thriller 'Natural

[196] "Beef off the menu after mad cow scare", *Sunday Times*, May 20, 1990.

[197] quoted in James Erlichman, "Antelope Death Widens Mad Cow Disease Fear," *The Guardian*, December 14, 1990.

[198] James Erlichman, "'Mad cow' findings revive safety fears: Government scientist doubts BSE link to sheep disease", *The Guardian*, April 26, 1991.

Lies' aired in May 1992, which supported the notion that humans could be infected with BSE. The MAFF criticised it for prompting needless public anxiety.[199]

The number of BSE cases was still failing to decrease. Indeed, 1,000 new cases were reported per week in 1993 whilst more than 100,000 cases were confirmed cumulatively by the same year. This total was much larger than the Southwood Committee's prediction of 17,000-20,000. In March and August 1993, the deaths of two dairy farmers who died from CJD after their cattle had been struck by BSE came to light.[200] This again raised fears that BSE might have crossed the species barrier from cow to human. From late 1993, CJD-suspected cases in young people were reported to the CJD Surveillance Unit. The Southwood Working Party had noted that if BSE were to be transmitted to humans it would likely resemble CJD. The story of 16-year-old CJD patient Victoria Rimmer, which was screened on TV in January 1994, provided another example of the possible link between BSE and CJD.[201] CJD was rare among young people and she had never been treated with any growth hormone taken from the human donors with CJD, which was the cause of previous CJD cases in young people. Her mother claimed that her daughter had contracted CJD by eating contaminated meat, but the Department of Health denied a link between BSE and CJD. The CMO, Kenneth Calman blamed the TV program for broadcasting 'irresponsible scare stories.' The government was accused of hiding the truth and was criticised for not releasing information on the ages of people who died

[199] Jenny Hope, "Stupid' BBC's mad cow scare", *Daily Mail*, May 30, 1992.

[200] It was in 1997 confirmed as cases of classical CJD not new vCJD associated with BSE. Brian Wynne and Kerstin Dressel, "Cultures of Uncertainty - Transboundary Risks and BSE in Europe", in *Transboundary Risk Management*, ed Joanne Linnerooth-Bayer and Gunnar Sjostedt (Earthscan, 2001).

[201] 'Dispatches', Channel 4

from CJD, as newspapers reported that the families of CJD patients were told not to go public on the disease by doctors.[202] *The Guardian* said: "If they are young, that would be a strong indication that the disease is the human form of BSE."[203] According to a government report revealed in October, twice as many people had died from CJD in 1994 as in 1985. In November 1994, Professor Lacey, at Leeds University, published a book entitled *Mad cow disease: the history of BSE in Britain*. In it, he claimed that BSE might be dormant in tens of thousands of people and could explode from the year 2010. He had argued that all cattle from infected herds, an estimated 6 million out of a national herd of 16 million, should be slaughtered, and people under the age of 50 should stop eating beef.[204] However, his claim was regarded as an alarmist and sensational action by the government.[205]

Moreover, it was revealed that the safeguards for protecting carcasses from contamination were not observed in slaughterhouses and brain and offal entered the food chain continuously. An official veterinary surgeon at a slaughterhouse argued that brains of cattle were used repeatedly without cleaning and the certification of 'cow from BSE-free herds' was signed without sufficient evidence. In addition to this, there was also an incident in which a cattle breeder, who had used false documents to claim his animals for sale were free of BSE, was fined. Approximately 1 in 4 education authorities banned the use of beef products in school meals. In addition, the British public demanded the labelling of beef products and a ban on

[202] Luke Harding, "Mad cow meal destroyed my daughter's life", *Daily Mail*, January 25, 1994.; "Claims about infected meat are denied", *The Scotsman*, January, 1994.

[203] Colin Spencer, "P.S.: Dairy fresh madness", *The Guardian*, November 30, 1994.

[204]

[205]

brain and offal from calves under the age of six months, previously deemed to be too young to be carrying BSE.

In March 1994, Germany called for a Europe-wide ban on British beef due to a supposed link between BSE and CJD in humans. Germany stated that it would take unilateral action to stop imports of British beef if the European Union did not tighten health controls. In case that Germany would be successful in imposing a European ban on British beef exports, Britain's loss in trade was estimated to be £300 million a year, without including the damage to the beef industry's reputation in the home market. This conflict was expressed as 'the Anglo-German battle over food hygiene' or 'agricultural warfare.'[206] Germany was accused by the UK government of using health scares as a weapon with which to protect their herds. Though the MAFF was confident the European Commission would support the British case, the deal ended with a European Union-wide export ban on British beef from any animal which had been exposed to BSE within the last six years.

In October 1995, researchers at the CJD Surveillance Unit submitted an article regarding the recent CJD cases in young people to the medical journal *The Lancet*. It said: "These cases appear to represent a new variant of CJD, which may be unique to the United Kingdom. This raises the possibility that they are causally linked to BSE. Although this may be the most plausible explanation for this cluster of cases, a link with BSE cannot be confirmed on the basis of this evidence alone."[207] The government continued to deny the risk associated with eating beef. Prime minister

[206] John Carvel, "Beef Fear Blamed on Bonn," *The Guardian*, May 31, 1994.; Roger Boyes, "Please Make Sure My Steak Is Not British," *The Times*, March 11, 1994.

[207] Will et al., A new variant of Creutzfeldt-Jakob disease in the UK, Lancet 1996; 347: 921- 25 cited in Wynne and Dressel, "Cultures of Uncertainty - Transboundary Risks and BSE in Europe.", p. 134

John Major told Commons in December 1995: "There is no scientific evidence that BSE can be transmitted to humans or that eating beef causes it in humans. I am also advised that beef is a safe and wholesome product."[208]

3.3.6 The link between vCJD and BSE and the aftermath

On 20 March 1996, Stephen Dorrell, the health secretary, announced that the new strain of CJD (vCJD) found in 10 young people might have been caused by exposure to BSE before the 1989 offal ban. The government's statement on the potential link between BSE and v CJD was to upset the continuous denial of the transmissibility of BSE from cow to human and the risk of eating beef. The EC introduced the indefinite ban on the export of all British beef and beef products to anywhere in the world on 25 March 1996.[209]

Even after the announcement on March 20, the government still argued that beef was safe to eat. Stephen Dorrell told the Commons: "I see absolutely no reason for any responsible person not to buy British beef or beef products of any kind in the shops today."[210] However, many companies declared the bans on the use of British beef, ignoring the MAFF's safety claim. For example, pub chain Bass Taverns, with its 200 restaurants and 2,500 pubs, announced they would use foreign beef; hotels and airlines such as British Airways and Virgin Atlantic removed British beef from their menu, whilst fast food chains McDonald's, Burger King and Wimpy, also

[208] House of Commons, "House of Commons Debates on 7 Dec 1995", Column 489

[209] It was not until July 1999 that EC announced the end of the export ban on the UK beef.

[210] David Bradshaw and Kevin Maguire, "'It's all under hoggwash'", *Daily Mirror*, March 26, 1996.

banned British beef. Up to a million people turned vegetarian and beef sales plummeted. Farmers demanded the removal of old animals from the human food chain and the slaughter of calves in infected herds, whilst supermarket chains backed the disposal to save collapsing meat sales. Cull and removal was regarded as the only way to calm fears and to restore public confidence in beef.

Although public health concerns peaked, there were voices of opposition. [211] The *Sun*, a tabloid paper, argued that the BSE scare was politically motivated, and attacked Labour for causing public panic.[212] Health concerns were submerged soon by economic hardship by the indefinite world-wide ban on British beef products imposed by the EC.[213] Pages of newspapers were full of numbers detailing lost export revenues, the impact on GDP, and the cost to farmers.[214] Once the crisis developed into a political and economic issue between Britain and the European Union, public health concerns were eclipsed and the beef crisis became a threat to

[211] According to Bauer et al., British press showed different reactions to BSE issue by their political spectrum from the early period of the controversy. Contrary to the Guardian, Telegraph criticized the government for not taking sufficient consideration for beef farmers. Telegraph was pro-Conservative government and the Labour was traditionally supported by the Guardian and Daily Mirror.

Martin W. Bauer et al., "The BSE and CJD crisis in the press", in *Health, Hazards and Public Debate. Lessons for Risk Communication from the BSE/CJD Saga* (World Health Organization, 2006).

Michael Simmonds, "Agenda: Out of date and out of step - Britain is operating on the edge of the 21st century with a government machine still suited to the 1960's", *The Guardian*, May 15, 1989.

[212] Brookes said in his study of British tabloids' BSE/vCJD coverage that the distinguished attitude of the *Sun* was the strategy to distance itself from *Daily Mirror*, the competitor of circulation war and the support for the Labour. Rod Brookes, "Newspapers and National Identity: The BSE/CJD Crisis and the British Press", *Media, Culture & Society* 21, 2 (1999): 247–263.

[213] David Miller, "Risk, science and policy: definitional struggles, information management, the media and BSE", *Social Science & Medicine* 49, 9 (1999): 1239–1255.; Peter Washer, "Representations of mad cow disease", *Social Science & Medicine* 62, 2 (2006): 457–466.

[214] Bob Dow, "Mad cow crisis is costing us pounds 25m", *Daily Record*, May 31, 1996.; "Record view: Time to end the panic", *Daily Record*, March 27, 1996.

national identity as well as a threat to the national economy.[215]

In Britain, beef has a symbolic image bound up with national identity, and historically English people were famous for their consumption of beef. In Shakespeare's Henry VI written in 1599, the English were described as beef-eating people by the French. The French nickname for the English, 'les rosbif' also originated from 'roast beef.'[216] Claims about the safety of British beef continued, and the argument that 'British beef is the best' appeared more often. For example, Scotland's agriculture minister argued that burgers made with British beef were safer than imports and suggested a boycott of the McDonald's Big Mac which had banned British beef.[217] Many articles with the title 'Beef and Englishmen' expressed concern about the damage in British life and culture as a result of the beef crisis. Roast beef represents the typical English national dish served as Sunday lunch, whilst beef is also an important ingredient in many hearty English foods such as puddings, sausages and pies. Moreover, beef was the symbol of patriotism. In the 17th and 18th centuries, when French style cooking was vogue in England and England was at war with France, roast beef represented the plain and unaffected English taste opposing to pompous and luxurious French kitchen. Prominent writers, actors, and patrons organised 'Beefsteak Club' while 'The old England's roast beef song', written by Henry Fielding, was a great hit and was sung on patriotic occasions

[215] Bob Hodge and Robert Woog, "Beyond reason and hysteria: Towards a postmodern model of communication and control in science", *Social Semiotics* 9, 3 (1999): 375–392.; Brookes, "Newspapers and National Identity."

[216] C. Anne Wilson, *Food & Drink in Britain from the Stone Age to Recent Times* (Constable, 1973).

[217] Billy Adams, "Tory peer wants Big Mac Boycott", *Daily Record*, April 6, 1996.

until the 19th century.[218]

The government shifted the blame from itself to European countries, arguing that the countries hid their BSE occurrence and only the UK suffered damage.[219] A tabloid argued that a politically motivated scare from trivial risk was "killing an industry, messing about with the nation's diet and granting French and German farmers ecstasies of pleasure."[220]

Although the UK government succeeded in externalising blame, the confidence in its safety policy was damaged. The MAFF announced a cull of all cattle older than 30 months on 3 April 1996, with an expected of up to £160 million in 1996-2001. This was a more stringent measure than the SEAC's recommendation of deboning carcasses of cattle older than 30 months.[221] As the summit of the EC in Florence in June 1996 required the UK government to implement rigorous regulation on BSE as a prior condition to lift the ban on the UK beef products, additional regulatory policies were subsequently introduced. The feed ban was extended to all mammalian protein for all farm animal feed in order to prevent cross-contamination through MBM among different species. A cattle passport system to monitor the movements of all cattle in Britain throughout its lifetime was also introduced. A Date-Based Export Scheme for cattle born after 1st August 1996 and a cull of offspring of BSE-

[218] Ben Rogers, *Beef and Liberty: Roast Beef, John Bull and the English Patriots*, illustrated edition (Chatto & Windus, 2003).

[219] "Europhobe rhetoric" was one of the communication strategies of the UK government. Phil Harrys and Nicholas O'shaughnessy, "BSE and marketing communication myopia: Daisy and the death of the sacred cow", *Risk Decision and Policy* 2, 1 (1997): 29–39.

[220] Simon Jenkins, "Why can't we learn to live with risks?", *Evening standard*, March 22, 1996.

[221] UK Parliament, "Commons Select Committee on Public Accounts - Twenty-Fourth Report, session 1998-99", http://www.publications.parliament.uk/pa/cm199899/cmselect/cmpubacc/790/79003.htm.

infected animals were proposed in 1997. Moreover, bone, dorsal root ganglia and lung were added to the list of offal which should be banned in 1998.

The authority of the British political system was seriously injured. The Conservative party lost in the general election in 1997. The new Labour government tried to restore consumer confidence and trust by restructuring the food policy system. The responsibility for food regulation was separated from sponsorship for the promoting industry, thus leading to the establishment of the Food Safety Agency (FSA) in 1998.[222] The FSA was established as "a non-ministerial government department" which was independent from the involvement of ministers.[223] It took full responsibility for the protection of public health, and was supposed to provide unbiased and expertly-informed advice to the MAFF minister.

Moreover, there was widespread condemnation of the closed scientific advisory process. In its editorial in April 1996, *The Lancet* claimed the necessity of "a separate, independent agency which reports to the public, not to the policy makers."[224] The *Guidelines on Scientific Advice and Policy Making* produced by the Office of Science and Technology (OST) in 1997 were the first response. It stated: "Departments should not require experts to come to firm conclusions which cannot be justified by the state of scientific knowledge" and it included "consumer groups and other stakeholder bodies" in expert sources for science-related policy-making. Further, the House of Lords report in 2000 recommended that "direct dialogue with

[222] MAFF was eventually replaced by the Department for Environment, Food and Rural Affairs after the Foot-and-Mouth Disease epidemic in 2001.

[223] Zwanenberg and Millstone, *BSE*.

[224] "Less beef, more brain", *The Lancet* 347, 9006 (Apr. 6, 1996): 915.

the public should move from being an optional add-on to science-based policy-making and to the activities of research organisations and learned institutions, and should become a normal and integral part of the process."[225] Following this, new experiments of public engagement in scientific issues such as GM food and nanotechnology have been briskly carried on in the UK.

3.3.7 Appraisals of the UK BSE crisis

The BSE crisis in the UK was clearly a case of policy failure. More than 200 people died from vCJD and hundreds of thousands of cattle were culled. The economic loss for the countries which experienced incidences of domestic BSE was huge. The lack of knowledge regarding BSE, an entirely unknown disease, provided the cause of the crisis. However, many studies showed that political and cultural factors of British society more directly contributed to exacerbating the crisis. Their explanations could be categorised according to their focus by the protection of the beef industry and the institutional and cultural character of the British policy process.

Protection of the beef industry

The UK BSE crisis was often described as a policy failure caused by the MAFF's

[225] UK House of Lords, *Third Report of the House of Lords Select Committee on Science and Technology*., para. 5.48.

http://www.publications.parliament.uk/pa/ld199900/ldselect/ldsctech/38/3801.htm

producer-oriented policy.[226] According to this view, consumers' interests and public health were structurally ignored by the MAFF in order to protect the economic interests of the farming industry. As presented in the last section, the MAFF had two conflicting missions: the promotion of agriculture and food industry, and the regulation of food safety. However, the MAFF considered its primary role to be promotion of the agriculture industry rather than regulation. The MAFF was criticised for being skewed towards the interest of the livestock industry from the early period of the controversy, and blamed for being 'in the pocket of the farming lobby' by some of the British media. The early food safety issues (e.g. Salmonella outbreaks in the late 1980s, Listeria during the 1970s and 1980s, and E. coli 157 in 1996-1997) were cited as another example of the MAFF's unbalanced attitude between food industry and consumers.[227] The producer-driven policy networks in the MAFF were intensified under the political atmosphere in the Thatcher government stressing 'deregulation' and the 'customary role of a ministry.'[228] Under this political atmosphere, the MAFF was reluctant to introduce new regulation, and depended on 'self-regulation by the farming community.'[229] The failings in the animal feed ban and the SBO ban were the cases of the so called 'market knows best' approach. Inspections, enforcement, or legal penalties to back up the ruminant feed ban of 1988 rarely existed until August 1996. When the SBO ban was introduced, no

[226] McKee, Lang and Roberts, "Deregulating health."; Rowell, *Don't Worry (It's Safe to Eat)*.; Weir and Beetham, *Political Power and Democratic Control in Britain*.; Zwanenberg and Millstone, *BSE*.;

[227] David Bartlett, "Mad cows and democratic governance: BSE and the construction of a 'free market' in the UK", *Crime, Law and Social Change* 30, 3 (1998): 237–257.

[228] Bruna De Marchi and Jerome R Ravetz, "Risk management and governance:: a post-normal science approach", *Futures* 31, 7 (1999): 743–757, p.750

[229] Winter, "Intersecting Departmental Responsibilities, Administrative Confusion and the Role of Science in Government: The Case of BSE." p. 553

practical guidance regarding the removal of SBO from carcasses was provided for the process at slaughter houses. The industry was presumed as being capable of implementing the regulation properly without guidance or enforcement from the government, although this was not the case.[230] These criticisms on the predominance of farming interests in the UK government's policy-making contributed to separating the authority for consumers' interests and public health from the MAFF whilst also establishing the FSA.

The MAFF was reluctant to publish information and to tighten regulations regarding BSE.[231] The Philips report stated that the complacent policy of the UK government was shaped by the anxiety regarding 'alarmist over-reaction' in the beef market.[232] Public awareness of the disease was prevented by the officials who were concerned about the irrational response of the market, and the government continuously reassured the public about the safety of the British beef. The MAFF understated the risk posed in beef and uncertainties were filtered out from the official message of the government. Collins and Pinch stated that: in Britain, "the official response to public health risks has traditionally been paternalistic reassurance. The government judges that the danger of panic usually outweighs any real risk to its citizens."[233]

However, the UK government was not alone in taking this complacent and passive

[230] Dressel, *BSE* .

[231] Merle Jacob and Tomas Hellström, "Policy understanding of science, public trust and the BSE–CJD crisis", *Journal of Hazardous Materials* 78, 1–3 (2000): 303–317.; Baggot, "The BSE Crisis."; Harrys and O'shaughnessy, "BSE and marketing communication myopia."

[232] Phillips, Bridgeman and Ferguson-Smith, *The BSE Inquiry*. vol. 1, xviii

[233] cited in Allan, *Media, Risk and Science*. p. 174

approach. The policy approach of the European Commission (EC) was not very different from that of the UK government until March 1996.[234] Policy makers of the EC were concerned about the reduction in beef sales and the increase in demands for compensation for farmers under the Common Agricultural Policy (CAP).[235] For example, when the death of a cat from the feline equivalent of BSE was reported in 1990, the EC Agriculture Commissioner decided to stop the discussion about BSE in order to not 'provoke unfavourable market responses.' Until 1996 the EC resisted policies which would impose higher costs on the UK and European beef market, and the animal feed industry. The study of Bauer et al. (2006) showed that European governments such as those of Germany, Italy and Finland also tried to reassure the public by dismissing or understating the risk of BSE even after BSE became a problem outside of the UK.[236] This passive attitude of the EC and the European countries in dealing with the BSE issue showed that considerations of the industrial interests over uncertain health risk could not be taken as the unique feature of the UK policy-making.

Interactions between science and politics in policy area

The BSE crisis gave rise to questions about the relationship between science and politics, as well as the role played by scientific knowledge in the policy area. During

[234] Zwanenberg and Millstone, *BSE*.

[235] Jacob and Hellström, "Policy understanding of science, public trust and the BSE–CJD crisis."; Baggot, "The BSE Crisis."

[236] Martin W. Bauer et al., "The BSE and CJD crisis in the press", in *Health, Hazards and Public Debate. Lessons for Risk Communication from the BSE/CJD Saga* (World Health Organization, 2006).

the BSE crisis, policy decisions were apparently made entirely by independent and purely scientific bodies and based on robust scientific evidence. Policy-makers said, "We are just doing what our expert advisors tell us should be done."[237]

Advisory committees were (and are) an inherent part of British political culture with the assumption that policy decisions on scientific matters should be grounded in sound science.[238] The government established expert committees for selected issues and recruited external experts who were eminent and considered to be independent of the government. The role of the expert committees was often to provide particular policy recommendation beyond identifying scientific evidence. To seek experts' advice was a significant way in which to secure the appropriateness and the legitimacy of policy, especially when introducing regulations which might have a negative impact on business.[239]

The UK advisory committees were criticised for their lack of transparency and accountability. There were no recognized principles which ruled the process of the advisory committees, for example, with respect to the process for the selection of the members or a mechanism for guaranteeing the openness and the accountability of the advisory bodies.[240] Advisory members were often criticised for representing the industry which was the subject of the regulatory policy under discussion. Data and evidence examined in the committees were not disclosed to the public, and the

[237] Zwanenberg and Millstone, *BSE*., p. 18

[238] Weir and Beetham, *Political Power and Democratic Control in Britain*.; Philip Gummett, *Scientists in Whitehall* (Manchester University Press ND, 1980).

[239] Phillips, Bridgeman and Ferguson-Smith, *The BSE Inquiry*., vol. 15

[240] Weir and Beetham, *Political Power and Democratic Control in Britain*.

discussions were kept secret.[241] It was often unlawful under the legislation that the general public, or independent analysts and scholars knew how regulatory decisions were made.[242] The relationship between advisory committees and the departments was formed through 'great confidentiality and informality.'[243] This closed culture of advisory committee was highlighted as the cause of the BSE crisis in the UK in the 1980-90s, and led to the establishment of the Food Safety Agency in 1998 by the Labour government.

A study by Zwanenberg & Millstone focussed on the procedural and structural arrangement surrounding the scientific advisory bodies in the policy process, and showed how the scientific advisory process was influenced by non-scientific considerations in the policy process.[244] While asymmetries of resources and information between the advisory scientists and civil servants existed, scientists were requested to provide policy recommendations as well as appreciation of scientific evidence. The advisory scientists were directly or indirectly pressured to make acceptable and 'do-able' policy recommendations for the ministers, whilst the assessment of scientific evidence was mixed with political considerations. For example, the recommendations of the Southwood Working Party were limited by the condition that any recommendations would not lead to an increase in public expenditure, which was imposed by the Permanent Secretary of the MAFF. The government's policy decisions were represented as being made on purely scientific grounds, although expert advisory bodies were actually used to support policy

[241] Ibid.

[242] Zwanenberg and Millstone, *BSE*.

[243] Dressel, *BSE*. p.171

[244] Zwanenberg and Millstone, *BSE*.

preference framed by civil servants on political and commercial grounds, and they provided a shield behind which officials could hide.

Some commentators have focussed more on the particularity of the British political culture. Jasanoff, in particular, argued that the British political culture assumed 'greater trust in expertise' which was embodied in trustworthy people.[245] The trustworthy advisory members were chosen among the 'great and good' people who had proven their standing to define the public good through their years' experience of public service.[246] She argued that since the personal integrity and civic virtue of individual advisory members were preferred over specified expertise or the rationality of their views, their knowledge claims did not need to be justified by formal legitimation such as a quantitative risk assessment like in the US and were not subjected to scrutiny.[247] According to her, this reliance on experts did not change after the BSE crisis, which rocked the credibility of the political institutions. Although the UK government tried to establish new institutional forms after the BSE scandal, which were more pluralistic in composition and were more open to many public inputs such as the GM debate. she stated that the new system still relied on trustworthy persons who demonstrated 'personal commitment to public issues.'[248]

Dressel showed the character of reasoning in the British political culture by contrasting it with that of Germany.[249] Following her comparative study of BSE

[245] Sheila Jasanoff, "Civilization and Madness: The Great BSE Scare of 1996," *Public Understanding of Science* 6, no. 3 (January 7, 1997): 221–232.

[246] Ibid.

[247] Ibid.

[248] Jasanoff, *Designs on Nature*.

[249] Dressel, *BSE*.

controversies in the UK and Germany, she concluded that a policy decision had to be based on sound science reasoning in the UK political culture, whereas scientific knowledge was just a starting point for a broader negotiation process on a policy level in the German federal system. Similarly, Frewer and Salter argued that the regulatory policy regime in the British policy culture was biased toward 'the hard science' which required empirical evidence.[250] The cultural approach showed the particularity of the British way, in contrast with other countries.

3.4 Conclusion

This chapter provides scientific knowledge of BSE and a brief history of the BSE crisis in the UK.

The first section summarises the nature of BSE and the current situation of the disease. BSE is a progressive degenerative disease which affects the nervous systems of bovine cattle, and is known to be caused by an abnormal prion protein. It is believed that cattle were infected by BSE-contaminated animal protein feed, and that the human equivalent form, vCJD, was transmitted to humans by BSE-infected beef products. BSE incidence, which peaked in the mid-1990s, decreased significantly as risk control measures and surveillance were put in place, although unknown areas still remain.

The BSE crisis in the UK started with the discovery of BSE-infected cattle in the

[250] Lynn Frewer and Brian Salter, "Public Attitudes, Scientific Advice and the Politics of Regulatory Policy: The Case of BSE", *Science and Public Policy* 29, 2 (2002): 137–145, P. 139

early 1980s, and peaked in 1996 when the UK government admitted the association between vCJD and BSE. For more than ten years, the UK government understated the potential human health risk posed by beef, and it was always represented as purely scientific-evidence based. However, the scientific advisors' assessment of risk was affected by political considerations on beef and related industry concerns, whilst the institutional and structural arrangement of the policy process, as well as British political culture, affected the crisis.

4 Broader context of the Korean BSE controversy

4.1 Introduction

The story of the BSE crisis in the UK showed that the policy process regarding BSE in the UK government was shaped by various factors such as political and economic interests and the political culture, in addition to scientific evidence. Following the overview of the British BSE controversy in the previous chapter, I will explore the relations between science and politics in Korea and the policy structures related to the BSE policy. Indeed, recent decades have seen Korea achieve economic modernisation and political democratisation. The development process under the authoritarian regime was guided by the aim of catching up with the advanced West. This chapter will help to place the Korean BSE controversy in a particular context. In the first section, I will describe the features of the political and scientific culture in Korea, whilst the second section will provide the policy structure associated with BSE regulation.

4.2 Political and scientific culture in Korea

In this section, I will describe the political and scientific culture in Korea, with a particular focus on the relations between science and politics. Firstly, the authoritarian character of the Korean political culture, which was established during the compressed modernisation process, will be given. Following this, the scientific

system which has been developed by the government's mobilisation for economic growth will be described. Before exploring the Korean political and scientific culture, I will provide a brief explanation of the politics in Korea, which will be helpful in understanding the controversy.

Summary of politics in Korea and the relationship with the US

Korea has a presidential system based on separation of powers: legislation, administration, and jurisdiction. Therefore, unlike the UK, the executive branch does not depend on the legislature regarding its existence, and the cabinet members do not need to be linked with the legislature. The president, who is elected to one five-year term, directs all cabinet members, military, and executive officers in the government as the head of state and the head of the executive branch. The authority and responsibilities of state affairs in Korea are centralised, and fall to Korea's president.

Maintaining the US-Korea alliance has always been one of the most important tasks for the Korean government. Since 1945 when Korea was liberated from Japan's colonial rule, the US supported the establishment and development of the Republic of Korea. Since the Korean War in the 1950s, the US played a role in repressing wars in the Korean peninsula under the ROK-US Mutual Defense Agreement and the ROK-US Agreement on Status of Forces (SOFA) in Korea. Moreover, economic support from the US contributed to Korea's economic development. Indeed, the US remains the biggest market and supplier of direct investment of Korea. The US has influenced many aspects in Korean society, from military alliance and economic

support, to academic tradition and popular culture.

However, simultaneously, many Korean people are concerned about Korea's economic, political, and cultural subordination to the US. Anti-Americanism has been present particularly in anti-military government groups in the 1970s and 1980s.[251] This still remains with regard to specific issues such as crimes by US forces in South Korea and perceived intrusion of Korean sovereignty by the US.[252] For example, the deaths of two schoolgirls hit by a US military vehicle in 2002 led to massive anti-US demonstrations.

[251] "The democracy movement of the 1970s and 1980s is critical to our understanding of South Korean civil society. It was at the height of authoritarianism in which civil society came of age. Many of the modern ideas, political beliefs, social networks, and movement tactics of civil societal leaders were shaped during this period. One of the legacies of the democracy movement, which would later have a bearing on U.S-ROK relations, was the growth of different leftist ideologies. Although the tendency is to jump the South Korean left into one category, different factions still exist based on ideological divisions arising out of the 1980s. The two most important ideological strands were the National Liberation (NL) and People's democracy (PD). The NL believed in North Korea's brand of self-reliance and rallied against American imperialism. This strand gained momentum following the Gwangju uprising with activists linking the United States as an accomplice to the brutal crackdown. Meanwhile, the PD faction, which drew its inspiration from Marxist-Leninist ideology, emphasized class warfare and the empowerment of workers." Andrew Yeo, *South Korean Civil Society: Implications for the U.S.-ROK Alliance - Council on Foreign Relations* (New York: Council on Foreign Relations, June 2013), p.2

[252] The US Congress report classified "critics of the United States" "into three broad groups: 1) radical leftists, many of whom ideologically reject the U.S.- ROK alliance and some of whom support North Korea; 2) nationalists, who resent perceived intrusions into South Korea's sovereignty by the United States (most prominently, the U.S.-South Korea status of forces agreement) but who do not necessarily oppose the alliance *per se*; and 3) individuals who support the alliance but oppose U.S. policy on specific issues, such as alleged crimes committed by U.S. servicemen." Mark E. Manyin, South Korean Politics and Rising "Anti-Americanism": Implications for U.S. Policy Toward North Korea, May 6, 2003, Report for Congress.

4.2.1 Authoritarian political culture and powerful bureaucrats

Developmental state and "decide-announce-defend (DAD)"

In 1953, after 40 years of a colonial period under Japan and the Korean War (1950-1953), Korea was one of the poorest agrarian countries in the world with 1.3 billion US dollars of GDP. Excessive growth of bureaucratic institutions under the colonial rule of Japan, continuing military tensions with North Korea, and the immature private sector are said to have contributed to the creation and maintenance of the authoritarian political power in Korea.[253] The authoritarian political power in Korea was established by the military coup in 1961 and the repressive rule continued until 1987.[254]

The military government advocated the 'modernization of the nation' and the 'self-reliant economy' as the priorities of the state affairs. The mobilisation process of national resources for economic growth was promoted by the government. The 'growth at all costs' policy overwhelmed the whole Korean society. Regulation

[253] Sung Deuk Hahm and L. Christopher Plein, *After Development: The Transformation of the Korean Presidency and Bureaucracy* (Georgetown University Press, 1997).; Hyug-Baeg Im, *The Market, the State, and the Democracy: Korean Democratic Transition and Theories of Political Economy* (Seoul: NANAM Publishing House, 1994). ; Chung-Kil Chung et al., *Public Policy Making* (Daemyung Publishing House, 2003).

[254] The coup was organized and carried out by Chung-hee Park, a major general, and his allies on 16 May 1981. They seized legislative, judiciary and administrative power, forming the Military Revolutionary Committee. The causes of the coup they presented were 1) to strengthen national defense system, 2) to devote nation's power to rebuild national economy and 3) to build up national power to front out with communism for the nation's unification. With the support of the US government, they established military administration. Initially, they promised that they would yield power to civilian government after three years. However, they broke the promise and justified their power by winning the election in 1963. Though the coup contributed to lay the foundation for the industrialization and economic growth, its legacy is controversial due to the suppression of democracy and civil liberties. The May 16 coup was the starting point of the successive military regimes which lasted until 1993.

issues associated with technological development such as environment or health, which could not directly contribute to economic growth, were often sidelined, because limited resources had to be invested selectively in the fields of national strategic priority.[255] Still, while Korea is considered to have world-class technology in mobile communication and electronics, technology regarding air pollution or waste problems is estimated to be 60-70% of the advanced countries.[256] This 'rush to development' is said to be the main feature of 'developmental state', which is defined as a state which "attempts to accelerate economic growth as quickly as possible, by mobilizing all types of available resources to obtain objectives such as the increase of per capita GNP and exports."[257] The Korean economy grew at an average rate of 8.9% annually from 1962 to 1987, and finally developed to become one of the world's top ten economies with strengths in the car, electronics, shipbuilding, and iron industries.[258]

Leftwich identified the components of developmental state as: "(1) a determined developmental elite; (2) relative autonomy of the state; (3) a powerful, component, insulated economic bureaucracy; (4) a weak and subordinate civil society; (5) effective management of non-economic interests; and (6) repression is common and

[255] Cho, "A study on Science and Technology in Korea: Searching for New Policy Ideas."; Sung-Soo Song, "A Study on the Characteristics of Science and Technology Policy in Korea," *Journal of Science and Technology Studies* 2, no. 1 (2002): 63–83.; Yi-Jong Suh, "The Characteristic of Science and Social Controversy in Korea," *Korea Sociology Association Conference Papers Collection*, December 2004, 351–363.

[256] Ministry of Environment, *White Paper on Environment*, 2011.; Ministry of Knowledge Economy, "Press Release," January 21, 2009.

[257] Sang-Jin Han, "The Korean Path to Modernization and Risk Society," *Korea Journal* 38, no. 1 (1998): 5–27.

[258] Charmers Johnson, "The Democratization of South Korea: What Role Does Economic Development Play?," *The Copenhagen Journal of Asian Studies* 4, no. 1 (May 15, 2008): 63.

political legitimacy is determined by economic performance."[259] As identified by Leftwich, the rapid industrialisation process in Korea cannot be explained without the powerful bureaucracy. [260] Bureaucrats in Korea were given extensive discretionary power, and had much pride in the fact that they were leading the nation's development. Though the military dictatorship ended in the late 1980s, the traces of powerful bureaucracy remain: centralisation of power towards upper reaches, closed policy processes, and exclusion of the public from policy-making processes.[261]

The political culture in Korean bureaucracy is characterised as vertical relations of command and obedience rather than horizontal relations of guidance and assistance. The formal decision-making process within the government is hierarchical. The initiator of policy is usually a division head in ministries or lower bureaucrats. They offer proposals to their superiors in the ministry and the subsequent hierarchical examination and modification process continue until the final decision-maker signs it. However, the actual process is more complex, and is often reversed due to the intervention of various interests and powers, and in particular, centralised power within the government is likely to promote such reverses.[262] Indeed, Lee stated that: "The most important [p]remise for policy formulation is what is ordered by

[259] Quoted in: Jin W. Cyhn, *Technology Transfer and International Production: The Development of the Electronics Industry in Korea* (Edward Elgar Publishing, 2002)., p. 153

[260] Chalmers Johnson, "Political Institutions and Economic Performance: The Government Business Relationship in Japan, South Korea and Taiwan," in *Asian Economic Development-Present and Future*, ed. Robert A Scalapino, Seizaburo Sato, and Jusuf Wanandi (Berkeley: Institute of East Asian Studies, University of California, 1985).

[261] Chung-Kil Chung, *New Public Administration* (Seoul: Daemyung Publishing House, 2000).; Chan Dong Kim, "Politico-administration relation and culture of administrative responsibility," *Korean Society and Public Administration* 16, no. 2 (2005): 1–24.

[262] Chung-Kil Chung, "Presidential Decisionmaking and Bureaucratic Expertise in Korea," *Governance* 2, no. 3 (1989): 267–292.

hierarchical superior. This premise cannot be revised significantly. Consequently, the facts gathered and the analysis undertaken are governed by the need for the rationalization of the premise."[263] The centralisation of power influences the relationship with the public as well. The decision-making process was often governed by secrecy in order to avoid criticism from the media, critics, or the oppositional political party. Conflicts in the policy process were exactly what should be avoided for rapid and efficient policy implementation.[264] Wide participation and consensus-building in policy-making were rarely considered, while public hearings or deliberation processes, if any, were ceremonial and a place for mobilisation rather than consensus building.

The conflict over a radioactive waste disposal facility, discussed below, was a case which illustrates the bureaucratic and unilateral policy-making in Korea. Cho argued that the process of selecting the site for a radioactive waste disposal facility by the Korean government depended on a "decide-announce-defend (DAD)" model which focusses on efficiency in the policy process.[265] According to her, in the DAD model which often appears while selecting locations for environmentally obnoxious facilities (Locally Unwanted Land Use, LULU), the government makes decisions without involving local people, announces the decision, and defends it, facing the resistance or opposition of local people.

The Korean government made several attempts to select a site on which to build a

[263] Hyung U Lee, "Characteristics of Korean Bureaucracy," *Social Science Research* 14, no. 1 (2007): 185–202.

[264] Ibid.

[265] Sung-kyung Cho, *Looking at Nuclear Waste Disposal Plant Another Way: Risk on DOMA (Defend Only My Area)* (Samsung Economics Research Institute, 2005): 34.

radioactive waste disposal facility for 19 years from 1986 to 2005, but failed as many times.[266] The main reason for the failure was the resistance of local people. The government faced opposition from the local people in three proposed sites in 1986. In 1990, the government chose Anmyeon island to build the second nuclear energy research institute, although it was revealed by newspapers that the new nuclear energy research institute planned by the government was in fact a radioactive waste facility. The government withdrew the plan, confronting fierce outcry from the local people.

Political democratisation in the late 1980s and the growth of anti-nuclear movement groups made the government recognise that policy-making using closed and repressive methods was impossible.[267] The government established 'the Act for the Promotion of Radioactive Waste Management and Support of the Areas Adjacent to the Facilities' in 1993, and prepared legal grounds for prior consultation with residents and economic support for the adjacent areas. The government proposed three sites, but failed to select one due to opposition from the local assemblies. In 1994 the government chose Gullup island , after considering ten sites which had been proposed in the past. Democratic attempts, such as open forums, explanatory meetings, and joint conferences between experts and local representatives, were made by the government, which recognised the importance of local people's receptivity. Although the government's attempt, based on public relations and

[266] This summary of the radioactive waste controversy depended on: Ibid; Young-Hee Lee, "A Comparative Study of Nuclear Waste Management System: Technocratic Paradigm vs. STS Paradigm," *Economy and Society*, no. 39 (2012): 67–92.

[267] Taeseok Jeong, "The politics of expertise and the cracks of the scientific and technological safety discourse in site selection process of radioactive waste repository," *Economy and Society* 39 (2012): 72–102.

persuasion, was a step forward for democracy, the operation was unilateral and formal.[268] The safety of the nuclear waste facility was presumed and the government attributed the resistance of local people to ignorance or their irrational response.[269] The government failed to obtain the consent of local people. Moreover, as it was revealed that the island was unsuitable for the radioactive waste disposal facility due to geological instability (symptom of active fault which was likely to have earthquakes in the future), the plan was withdrawn. The government could not avoid criticism that it chose the island where a small number of residents lived for the expediency in the policy process.

In 2003, the government introduced a competition-based selection process which combined voluntary applications from local governments with the huge carrot of economic support for the area. Local governments were invited to the entry to host radioactive waste facility in their region, and the government would select a place after evaluating the applications under some guidelines. In one particular city, Buan, where the governor submitted the entry, a serious row broke out. The conflict in Buan was ended by a civil vote with an overwhelming majority of the residents opposing the radioactive waste disposal facility. Although the civil vote did not have legal binding force, the government retracted the application submitted by the governor. Following the Buan row, the government made a civil vote a compulsory step which should precede the local government's application. In addition, the government promised not to store high-level radioactive waste (spent fuel) in the facility and to increase economic compensation and support for the hosting region.

[268] Cho, *Looking at Nuclear Waste Disposal Plant Another Way*.

[269] Jeong, "The politics of expertise."

Competition between local governments was serious, and finally, a city, Gyeongju, which showed the highest support rate in the civil vote was chosen as the site for the low and intermediate-level radioactive waste facility in 2005. With regard to this, some commentators criticised the government for alledgedly mobilising local people by promising regional development and economic compensation rather than by encouraging deliberation based on in-depth scientific investigation and open information.[270] Moreover, doubts regarding the geological safety of the selected site were raised. An investigation report on the safety of the site, which was publicised at the request of environmental organisations, showed that the geological features of the site were not stable, and disputes between the government and environmental organisations have continued since then. The government argued that the geological defect could be compensated through engineering, while environmental organisations claimed that the whole building plan should be discarded.

Though the long conflict surrounding the nuclear waste facility was resolved, it seems that Korea's democratic process left room for improvement before being settled. The government stated in December 2004 that it would formulate the policy for high-level radioactive waste based on public deliberation. The government set up a task-force-team composed of representatives of civil organisations as well as experts and representatives of the industry. The task-force-team prepared policy recommendations for the public deliberation process regarding spent fuel management. However, the government suddenly announced an indefinite

[270] Eun Kyung Lee, *Co-Evolution of Public Acceptance of Technological Risk and Risk Management: Case Study of Selection of the Location of the Nuclear Waste Dumpsite* (Science and Technology Policy Institute, 2009).; Jeong, "The politics of expertise"; Lee, "A Comparative Study of Nuclear Waste Management System."

postponement of the public deliberation plan in 2009, stating that spent fuel management was a technical issue which needed scientific approach and that the engagement of lay public might cause unnecessary conflicts. Instead, the government decided to make research contract with scientists. Lee stated that the regression of the government to a technocratic approach showed the government's inherent negative attitude about direct public participation in policy-making.[271]

The controversy surrounding the radioactive waste disposal facility illustrated that though the Korean government's policy process introduced a democratic process, it was still dependent on unilateral promotion rather than democratic deliberation. Cho's survey of the radioactive waste policy showed the gap between the notion of the government and the public in recognising the effect of democratic mechanisms in the policy process. In her survey, to the question of whether policy-decision was made open and with public consensus, while 85% of the government officials answered 'yes', 88.8% of local people and 91.5% of the general public said 'no.'[272]

Expert committees dominated by bureaucrats

Powerful bureaucracy in Korea affected the way in which expert committees were operated within the policy process. A 'committee system (operated with various names: e.g. council, commission, or board etc.)' comprising experts outside government, is used in order to respond to technical, complex or contentious policy

[271] Lee, "A Comparative Study of Nuclear Waste Management System."

[272] Cho, *Looking at Nuclear Waste Disposal Plant Another Way*.

issues.[273] The Ministry of Public Administration and Safety (MOPAS), which is in charge of operation of the government, recognises that the committee system contributes to improving "professionalism, democracy, transparency, and fairness' in policy process" by using the expertise of external experts and gathering various opinions.[274] The number of expert committees within the Korean government has increased. The number of committees within the government was 319 in 1999, 530 in 2008, and 499 in 2011.[275]Most of the governmental committees in Korea are advisory committees which help ministers' decision-making without legal authorities (93% of 499 committees in 2011).[276] Advisory committees in Korea generally have no budget and no staff, while the committee members are expected to carry on with their existing duties.

Jeong defined the governmental committee system in Korea as 'bureaucracy-dominant model' which is contrasted with 'expert-dominant model' (US) and 'trade association -dominant model' (Japan).[277] He pointed out that the participation rate of the government officials was excessively high, while that of interest groups was limited. In a survey conducted in 1990, more than 50% of committee members were from the related ministries and government sector (e.g. quangos), while senior government officials normally chaired committees.[278] The proportion of the

[273] Ministry of Public Administration and Safety, "Explanation and Related Guidelines of the 'Act on Establishment and Operation of Committees under Administrative Organizations,'" July 2009.

[274] Ibid.

[275] Ibid.

[276] "Little More Than Name, Government Committees," *Yeonhap News*, November 7, 2011.

[277] Sang Ho Jeong, "A Comparative Study of Roles and Functions of the Korean and Japanese Governmental Committee System," *The Korean Political Science Association Journal* 37, no. 5 (2003): 289–310.

[278] Ibid.

participants from the government sector in the governmental committees is decreasing. Instead, an increasing number of academic experts are now invited.[279] Nevertheless, the operation of the governmental committees continues to rely primarily on bureaucrats. Committees within the government are generally operated as follows: government officials set an agenda for discussion, and occasionally, solutions are even provided to experts by the officials; experts and civil servants deliberate in the committee meeting chaired by a civil servant, and conclusions preferred by the government are confirmed as the conclusion of the committee meeting. Kim stated that experts' participation in the Korean policy process looks active, but actually depends on bureaucrats. [280] As such, experts' contribution to the policy process is just procedural rather than practical, and expert committees are likely to be used as a tool for legitimation of policy rather than as a bilateral communication channel.

Lack of transparency and public access is another problem with the Korean committee system. Activities of the governmental committees are rarely open to the public. According to a survey by a civil organisation in 2004, 45% of committees did not open minutes and 15.4% did not even make minutes.[281] Only a summary of discussion or the conclusion of meeting was offered to the public without details of who said what. The survey showed that only 17 of 87 committees, which were

[279] According to a report of the Civil Service Commission in 2004, nearly 40% of advisory members were from academy, and government sector decreased to around 10%. Cited in Moohyun Choi and Changhyon Jo, "The Influence of Personal Traits on the Policy Effectiveness of Government Committees: The Perception of Public Officials of Representativeness and Professionalism," *Korea Journal of Public Administration* 46, no. 2 (2008): 25–51.

[280] Sung-Soo Kim, "Comparative Analysis on the Role of Bureaucrats and Experts in Science and Technology Policy Making," *Journal of Korea Public Management* 24, no. 2 (2010): 1–25.

[281] "'Poor' Minutes of Government Committees," *People's Solidarity for Participatory Democracy*, June 4, 2004, http://www.peoplepower21.org/Government/551579.

attended by high echelons of the government beyond vice minister level, were required to make a compulsory stenographic record or sound recording of the meetings.[282] The government said that this was intended to encourage free discussion among committee members and to prevent confusion which may be caused by the publication of ongoing issues.[283]

In 2009, the Korean government established 'the Act on Establishment and Operation of Committees under Administrative organizations', and let ministries make and publish information regarding the activities of the committees under their discretion. However, this rule does not apply to the matters which belong to non-disclosure categories in the 'Act on Disclosure of Information by Public Agencies.'[284] The act states that the government can reject the request for disclosure of information pertaining to the matters of protection of privacy and diplomatic relations, and on-going matters in internal review processes, which are feared to undermine national interests when disclosed, or which carry the possibility of impeding the appropriate process.[285] Civil organisations argue that the non-disclosure categories are too broad and the judgment regarding whether or not a particular issue belongs to the categories depends entirely on the government officials.

Indeed, the government has recently promoted participation of the civil sector in the governmental committees. However, participation of civic groups in the

[282] People's Solidarity for Participatory Democracy, "Press Release," March 28, 2006.

[283] "Compulsory Stenographic Record Only for 17 Government Committee," *People's Solidarity for Participatory Democracy*, March 28, 2006, http://www.peoplepower21.org/Government/553870.

[284] Ministry of Public Administration and Safety, "Explanation and Related Guidelines."

[285] *The Act on Disclosure of Information by Public Agencies, Article 9.*

governmental committees is not active. A report from a civil organisation stated that bureaucrats tended to think that committee members outside the government lacked the capability of making policy alternatives, and were likely to be non-objective and biased to narrow interests, compared to bureaucrats.[286] Moreover, as the NGO sector in Korea, which grew based on the tradition of pro-democracy movement under the authoritarian regime of the military governments in the 1970-80s, is "mainly characterized by its anti-government and anti-corporate position", the government tends to avoid them and the government's invitation is likely to be limited to nonpolitical organizations.[287]

To summarize, expert advisory committees are widely used in the policy-making process in Korea, but their operation is at the discretion of bureaucrats and the activities of expert bodies were generally not transparent.

4.2.2 Relationship between Science and Politics

Science as a tool for economic development

Science and technology has been at the center of the economic growth policy. Due to the historical experience of failed modernisation in the 1900s and the following colonial rule of Japan, the development of science and technology was considered as

[286] Anti-Corruption Network, Investigation Report of Governmental Committees, 2001 cited in Byung-sub Kim and Chul Kim. The Reformation of Governmental Committees .

[287] Hyuk-Rae Kim, "The State and Civil Society in Transition: The Role of Non-Governmental Organizations in South Korea," *The Pacific Review* 13, no. 4 (2000): 595–613. ; Byung-sub Kim and Chul Kim, "The Reformation of Governmental Committees: Repetitive Answers and Lost Questions," *The Korean Association for Public Administration 2002 Autumn Conference (I)*, 2002, 79–96.

a significant issue on which the survival of the nation relied.[288] The instrumentalism of science and technology was maximised through the rapid modernisation process in Korea.[289] A 'science and technology development plan' became a part of the 'National long-term economic development plan' from 1962. The government chose the heavy and chemical industry as the strategic focus, and founded Government Research Institutes (GRIs) in order to provide a foundation for industrial take off within a short period of time. GRIs, which were founded in pursuit of technological self-reliance in the late 1960s and the 1970s, did not only assist firms by introducing technology from industrialised Western countries, but also contributed to securing highly qualified human capital by recruiting many Korean scientists and engineers abroad.[290] The slogan 'Establish State with Science and Technology' was also put forth during this period, and the goal of science and technology policy to lead and support the nation's economic development remains still active.[291] Generally speaking, funding for science and technology is unanimously supported in the Korean political arena.[292] Science and technology was a primary tool for the

[288] Yi-Jong Suh, *Science and Social Controversy and Korean Society* (Jipmundang, 2005).

Similarly, Jasanoff and Kim said in their study of the public imaginary of nuclear power in the U.S and Korea that the expectation of nuclear power which would bring the nation wealth and power and "the risk of failing to develop" overwhelmed the concern about the risks of nuclear power. Sheila Jasanoff and Sang-Hyun Kim, "Containing the Atom: Sociotechnical Imaginaries and Nuclear Power in the United States and South Korea", *Minerva* 47, 2 (2009): 119–146. p.142

[289] Suh, *Science and Social Controversy and Korean Society*.; Young-sik Kim, "The Characteristics and Reflection of Science and Technology in Korea," in *Science in Modern Society*, ed. Young-sik Kim and Geun-bae Kim (Changbee, 1998).Sung-Dae Park, *Scientific Mind of Korean People* (Pyungminsa, 1993).

[290] Cyhn, *Technology Transfer and International Production*.

[291] Hyun-Suk Cho, "A Study on Science and Technology in Korea: Searching for New Policy Ideas," *Journal of Science and Technology Studies* 2, no. 1 (2002): 85–105.

[292] Ibid.

The Korean government has increased investment to science and technology, and it invests about 30 billion (USD), 3% of GDP to R&D annually. The government's plan is to increase R&D investment up to 5% of GDP. (source: Korean government, 'Science and Technology Development Plan' for

foremost national goal, economic growth, and how to rapidly catch up with advanced countries was the most important task of science in Korea.[293]

Under the atmosphere, scientists were only expected to seek professional knowledge and not agonise over social values other than economic growth. [294] Despite the end of the authoritarian political power in the late 1980s, this notion still remains.[295] According to a study regarding the norms of the Korean scientists, scientists believe that economic application is more valued than pure scientific value when selecting a research theme, and scientists who perform research for national development can receive more recognition than those who carry out research for purely scientific interests.[296]

Although the private sector now makes up 70% of the national R&D investment, the government is still recognised as having a great influence on science and technology policy as formulated by scientists. In a survey, scientists chose bureaucrats (39.7%), politicians (37.7%), and the president (12.8%) as the most influential groups in science and technology policy, and pointed out scientists (73.6%) as the group which *should* have more influence on science and technology

National Science and Technology Council on 12 August 2008)

[293] Sang-yong Song, Popularization of science and the role of academic society, *Science and Technology* (The Korean Federation of Science and Technology Societies: July 2001), qtd. in Suh, *Science and Social Controversy and Korean Society*.

[294] Hwan suk Kim, "The Cause and Social Meaning of Hwang's Fraud," *Economy and Society* 715 (2006).; Song, "A Study on the Characteristics of Science and Technology Policy in Korea."; Suh, *Science and Social Controversy and Korean Society*.

[295] Ibid.

[296] Heeje Bak, "Perceptions and Evaluation of Norms of Science among Korean Scientific Community," in *Scientific Society in Korea*, by Hwan suk Kim et al. (Kungree, 2010).

policy in the future.[297]

Stem cell fraud of Hwang Woo Suk in 2005 marked a case which illustrated the static and subordinate feature of the scientific culture in Korea.[298] Hwang gained his celebrity status after success in cloning cattle in 1999, which came with media spotlight and the support of high-ranking politicians. Then, a number of doubts were raise regarding his success, but the scientific peer review process did not work properly.[299] The Korean government, which chose biotechnology as one of the next generation growth-engine industries after the IT industry, rendered unsparing support for Hwang's research. A huge research grant was offered to his team, and politicians presented themselves as Hwang's patrons.

Cloning research was emerging with great expectation of medical and economic promise, while the institutional ground to deal with the ethical issue was not fulfilled. The government created the Korean Bioethics Advisory Commission (KBAC) in 2000 for advice on human cloning and stem cell research. The draft of the Bioethics law by KBAC prohibited reproductive and therapeutic cloning.[300] However, it was not welcomed by the government, and particularly the Ministry of Science and Technology which was in charge of promoting biotechnology. The draft formulated

[297] quoted in Song, "A Study on the Characteristics of Science and Technology Policy in Korea."

[298] Sin-ik Kang, "Diagnosis of the Scientific Culture in Korea through Hwang's Scandal," *History Criticism* 74 (2006): 115–143.; Choon Chekar and Jenny Kitzinger, "Science, patriotism and discourses of nation and culture: reflections on the South Korean stem cell breakthroughs and scandals", *New Genetics and Society* 26, 3 (2007): 289–307.; Myung-Koo Kang, "Patriotic Passion and 'Sublime' Science: Un-Searching for Journalistic Truths," *He Korean Society for Journalism & Communication Studies* 51, no. 1 (2007): 59–90.;

[299] The grounds of doubt were: there was no academic paper about the cloned calf published and the mother animal was slaughtered.

[300] Sang-Yong Song, "The Hwang Woo-Suk Scandal Hasn't Ended" (The Atlas of Ideas Final Conference, January 17, 2007).

by KBAC was not submitted to the National Assembly. Instead, the "Bioethics and Biosafety Act" which finally passed the National Assembly at the end of 2003, permitted human embryonic cloning with approval by the National Bioethics Committee. As the act did not come into effect until July 2005, Hwang's team carried out their research after obtaining the approval of the Institutional Review Board (IRB) of Hanyang University and of Seoul National University. However, with hindsight, discussions at the IRBs were no more than a formality. The members of the IRBs did not recognise their role and obligation, whilst the IRBs which had to examine the ethics of his research were used to legitimate it.[301]

Hwang announced in 2004 that he had succeeded in establishing a stem cell line by cloning somatic cells, and the result was published in *Science*. In the following year, he announced that he had succeeded in creating the world's first patient-tailored stem cell. His success in 2004 and 2005 was recognised not only as a major scientific breakthrough but also as the nation's achievement which would bring enormous economic wealth to Korea.[302] Hwang was granted the title of 'supreme scientist' with special support from the government, and the government set up a committee for promoting his Nobel Prize award.

In November 2005, a TV program in Korea, *PD Notebook*, raised doubts about the ethical misconduct of Hwang's team in securing eggs. The allegation regarding this

[301] "SNU IRB in Hwang's Hand," *Yeonhab News*, February 6, 2006.

[302] "The country's investors were sent into a frenzy for biotech after the publication of Hwang's 2005 *Science* paper, with Korean biotech stocks rising threefold. During May 2005, the daily trading volume of Macrogen, Korea's genomics pioneer and an investor in MgenBio, was above 80 billion won ($81 million) per day on average, around half of the volume for Korea's largest company, Samsung Electronics (Seoul), a company with a market value almost 500 times larger than Macrogen's." Herbert Gottweis and Robert Triendl, "South Korean Policy Failure and the Hwang Debacle", *Nature Biotechnology* 24, 2 (2006): 141–143.

ethical misconduct, which had been first raised by *Nature* in 2004, stated that his team used many more eggs than presented in their papers, that the egg donors had been paid, and that two of the donors were junior researchers in his team.[303] Although Hwang admitted the allegation and apologised for the misconduct, *PD Notebook* was blamed by the public for impeding Hwang's research and harming national interests.

However, the controversy did not end and was expanded to include disputes regarding the authenticity of the stem cells which his team announced they had established. *PD Notebook* wished to verify the results of Hwang's team by reenacting the experiments or examining DNA fingerprints of the stem cells. Hwang rejected the suggestion and said that the authenticity would be verified through follow-up research by the scientific community. While elder scientists' groups supported Hwang, younger groups did not. Politicians, including the president, appealed to the public to stop wasteful disputes and to wait for his follow-up research. Further, the government stated that it would continue to support his research. The Korean government and the elder scientists groups argued that it was not right for media, non-experts, to raise issues about science, which should be dealt with by scientists. However, evidence of forged data was presented by anonymous scientists' discussions on an internet discussion board and via *PD Notebook*. Finally, the investigation committee of Seoul National University concluded in January 2006 that the stem cells did not exist and that the scientific data were forged. After the

[303] 2,221 eggs were collected from 119 women from November 2002 to December 2005, and 66 women were paid. (Herbert Gottweis and Byoungsoo Kim, "Explaining Hwang-Gate: South Korean Identity Politics Between Bionationalism and Globalization", *Science, Technology & Human Values* 35, 4 (2010): 501–524.

Hwang allegation proved true, however, many Korean people still believed that he should have another chance, because he was an excellent scientist in stem cell research, a potentially lucrative field for the nation.[304]

During the Hwang scandal, stem cell technology was considered as the source of future national wealth, and ethical issues associated with cloning and egg donation were regarded as an obstacle which should be controlled so as not to impede his research.[305] With the government's overwhelming support, the self-regulating mechanisms of the scientific community, such as peer review or IRB, were powerless and a mere formality.

Knowledge dependence on the West

As previously mentioned, the main strategy for compressed modernisation of Korea as a latecomer was to 'catch up' with industrialised Western countries by importing and imitating their success. Korean social scientist Suh argued that though Korea was elevated "from periphery to semi-periphery in scientific knowledge production", the dependent character still remained and had been consolidated, to some extent, by vertical international networks. Examples included obtaining doctoral degrees in Western advanced countries, forging supervisor-student relationships with academicians there, and by publishing papers in Western

[304] Ibid.

[305] President Roh's speak at the opening ceremony of World Stem Cell Hub on 19 Oct. 2005

journals.[306] Suh wrote that as significant research results were published in journals of advanced countries and discussions were held there, the views of foreign scientists and the literature of foreign countries were likely to win more authority and credibility than domestic ones. Dependent knowledge production, he said, also caused importation of reflectivity and criticism of the imported knowledge itself. As a result, science-related social controversies in Korea tend to be raised by the imported issues from the West rather than being based on indigenous context and discussions within the Korean community.[307] The fluoridation controversy in the 1990s was presented as a case of imported controversy by Suh.[308] The summary of the controversy below is based on his study.

The fluoridation policy related to public water was introduced in Korea by the government to prevent tooth decay in the late 1970s. Fluoridation, which the US first started in 1945, was recognised by the WHO as an economical programme for public health in 1957. Although there were disputes surrounding the effectiveness of fluoridation in the 1960s, the WHO propagated fluoridation, dismissing claims about the side effects.[309] In the late 1970s, and with the incidence rate of tooth decay high and the cost of dental health increasing, the Korean government started to examine fluoridation. The government established the Code for the Fluoridation of public water in 1979 and implemented pilot projects in 1982 and 1984. The

[306] Suh, *Science and Social Controversy and Korean Society*., pp59-97

[307] Yi-Jong Suh, "The characteristic of Science-Society Controversies in Korea", presented at conference of Korean Social Association, 2004

[308] Yi-Jong Suh, "Korean Science-Society Controversies and the Transplanted Character: Focused on Fluoridation of Tab Water Controversy," *Eco Society* 6, no. 0 (2004): 39–72.

[309] More than 60 countries including US, Canada, and Australia implement fluoridation, but most European countries and Japan do not.

government expanded the range of fluoridation and made it a compulsory programme in 1998.[310] In addition, as the Dentists' group for Healthy Society accepted fluoridation as its agenda, fluoridation became a civil movement for public health.

It was in 1998 that fluoridation became a controversial issue in Korea, when an editor of an ecology magazine, *Green Review* (*Noksaek Pyeongron*) introduced an article from an American magazine (Joel Griffiths and Chris Bryson, 'Fluoride, Teeth, and the Atomic Bomb', *Earth Island Journal*, 1997-1998). The article stated that fluoridation in the US had been promoted as a part of the atomic bomb program. *Green Review* subsequently raised actively opposing claims to fluoridation, focussing on the negative effect from fluoride on human health and the environment. This was mainly achieved by introducing anti-claims against fluoridation which had been first made in other countries. The main points of dispute between the supporting group and the opposing group of fluoridation related to the effectiveness of fluoride in reducing tooth decay, alleged health risks (e.g. skeletal fluorosis and increasing cancer risk) and environmental effect, as well as individuals' freedom of choice (e.g. whether fluoridation should be forced, although tooth decay is not highly contagious). Supporting and opposing groups mobilised scientific evidence from the studies which had been carried out in other countries. With a lack of contextualised knowledge in Korean society with regards to issues such as fluorine exposure in its natural state through soil, air, water and so on, and the optimum level for Korean people. The fluoridation controversy was a "proxy war" between conflicting claims

[310] Fluoridation is left as in the local governments' discretion now by the amendment of the related law in 2000.

which had already been raised in other countries.[311] Indeed, the controversy has not been resolved and is still ongoing.

Dependence on foreign knowledge is also applied when introducing institutions to reflectivity and public deliberation. Seong et al. argued that although Korea seemed to be well equipped with institutions for public deliberation such as participatory technology assessment and consensus conference, the institutions for public deliberations were often managed in superficial forms.[312] This is because the institutions were imported from the Western advanced countries by the government's 'catch up' strategy rather than being driven by in-depth consideration of the actual concerns which the Korean people may have about technological development or controversial research.[313] Due to this 'catch up' strategy Seong et al. argued that, even in reflection, the operation of the imported institutions is likely to be formal and ceremonial rather than to contribute as a substantial mechanism to solve technological problems or to keep the government from abusing its power.

4.3 Policy structure for BSE and Beef policy

The last section provided a description of the general political culture and the

[311] Suh, "Korean Science-Society Controversies and the Transplanted Character."

[312] Jie-un Seong, Wichin Song, and Byung-Kul Jung, *Technology Risk Management in the Post catch-up stage* (Science and Technology Policy Institute, 2007).

[313] Similarly, Holden and Demeritt in their study of Singapore's biomedical policy said that in the developmental political culture in Singapore, "the practice of ethical review was not driven by much consideration for the ethical concerns that the Singaporean people may have about biomedical research. Rather, it was largely about complying with international bureaucratic standards and procedures so that the resulting data could be used in drug licensing applications in the major markets of the US and Europe" Kerry Holden and David Demeritt, "Democratising science? The politics of promoting biomedicine in Singapore's developmental state", *Environment and Planning D: Society and Space* 26, 1 (2008): 68–86. p. 80

relationship between science and politics in Korea. Korea conducted its modernisation projects successfully under the developmental regime, and the concentration of political power and the tradition of elite bureaucracy established during the compressed development process reinforced the technocratic approach in policy processes. Science and technology has been used as a main instrument for the economic growth while importation of knowledge from the West has been a principal strategy for the rapid economic growth. The dependent knowledge production structure made it difficult to raise and solve indigenous problems of the Korean society.

This section will describe the policy structure surrounding the Korean BSE controversy. Firstly, there will be a summary of the domestic authority regarding BSE and beef policy in Korea, the Ministry for Food, Agriculture, Forestry and Fisheries (MIFAFF) and its policy regarding BSE and food safety. Secondly, the World Organization for Animal Health (OIE), which provides guidelines for the control and surveillance of BSE risk regarding the trade of beef products, will be described. Lastly, regulatory policy measures for BSE risk implemented in several countries including Korea will be shown. There will also be a demonstration of how BSE risk is understood and the risk is managed in different countries.

4.3.1 MIFAFF, NVRQS, and the policy

Ministry for Food, Agriculture, Forestry and Fisheries (MIFAFF)

The Ministry of Food, Agriculture, Forestry and Fisheries (MIFAFF) was

established in 1948, and has experienced a few changes in its name.[314] However, its main missions and policy visions have been maintained without significant change: to ensure the food supply; to increase farmers' welfare and income; to promote the agriculture and food industry; to develop the agricultural sector; and to secure the safety of agricultural products. The MIFAFF is said to "function in an advocacy role for the nation's farmers, promoting the goal of self-sufficiency, stressing the need for protectionism, and generally resisting agricultural imports."[315]

Beef related jobs within the MIFAFF have belonged to the Livestock Policy Bureau. The bureau oversees: livestock and dairy production; animal feed policy; protection and control of livestock epidemics; sanitation of meat and dairy products; quarantine and inspection for trade; and regulation regarding import of livestock, feed, and meat. The MIFAFF also has inside veterinarians, amongst whom is the Chief Veterinarian Officer (CVO), representing the government in international quarantine issues. One of the division heads in the Livestock Policy bureau is normally designated as the CVO. Although the CVO is the highest veterinary position within the MIFAFF, he/she is just working-level under the commands of the Director General of Livestock Bureau who is normally a general administrator with

[314] Change of the name of the Ministry was: the Ministry of Agriculture (1948. Nov.) → the Ministry of Agriculture and Fisheries (1973. Mar.) → the Ministry of Agriculture, Forestry and Fisheries (1986. Dec.) → the Ministry of Agriculture (1996. Aug.) → the Ministry for Food, Agriculture, Forestry and Fisheries (2008. Feb.) → the Ministry for Agriculture, Food and Rural Affairs (Feb. 2013). The change in 2013 was not related to the BSE controversy in 2008. In this thesis, the acronym MIFAFF will be used regardless of the period of time.

[315] Yong S. Lee, Don F. Hadwiger and Chong-Bum Lee, "Agricultural policy making under international pressures: The case of South Korea, a newly industrialized country", *Food Policy* 15, 5 (1990): 418–433. P.420

an economic or political academic background.[316]

National Veterinary Research and Quarantine Service (NVRQS) [317]

The National Veterinary Research and Quarantine Service (NVRQS) was under the command of MIFAFF. While the MIFAFF made policy decisions, the NVRQS implemented them and undertook research in the veterinary field. The NVRQS was created by merging the National Animal Quarantine Service (1909) and National Veterinary Research (1911) in 1998. The NVRQS's missions were: the "import/export quarantine and inspection of animal/animal product, prevention and control of animal diseases, sanitary management and inspection of livestock products, research and development in veterinary sciences, quality control of veterinary drug, and animal protection and welfare."[318] The NVRQS is composed of veterinary researchers, veterinary officers (for quarantine), and administrative officers. Interchange of veterinary officers at the MIFAFF and NVRQS is common.

The Department of Livestock Product Safety & Inspection in the NVRQS was in

[316] The high ranking posts within the Korean Public Administration have been composed by general administrators with economic or political academic background, and the authority and status of specialist public servants are weaker than general administrators. Handerson (1968) attributed the weaker authority and status of specialists in the Korean government to the influence of the traditional Confucianism which "defined specialist as a lower class job." With declining morale of scientists since the financial crisis in 1997, the government has promoted increasing the number and the influence of bureaucrats with natural science and engineering background as a part of policy to elevate morale of scientists. Gregory Henderson, *Korea, the Politics of the Vortex* (Harvard University Press, 1968)., p. 195

[317] NVRQS was changed into the 'Animal, Plant and Fisheries Quarantine and Inspection Agency' merged with National Plant Quarantine Service and National Fisheries Products Quality Inspection Service in 2011, and changed into the 'Animal and Plant Quarantine Agency' in 2013 by restructuring of the Korean government. I used NVRQS in this thesis.

[318] http:// www.nvqrs.go.kr

charge of the sanitary and safety management of animal products, inspection of exported/imported animal products and animal feed, as well as cooperation with international organisations and trading countries. The Import Risk Assessment Division performs import risk assessment and provides the result to the MIFAFF Minister. Indeed, this is a crucial process in terms of the government's decisions to permit (or not) the import of meat from other countries. Research about BSE was performed at the Foreign Animal Disease Division in the Department of Veterinary Research.

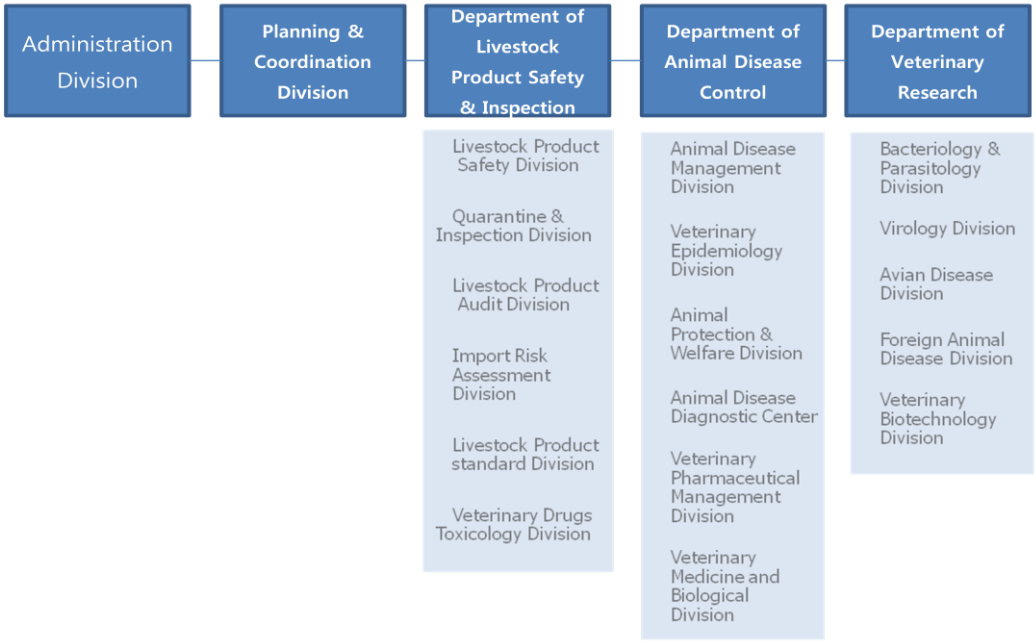

Figure 3 The organization of NVRQS

Research and development policy regarding BSE

Scientific research on BSE and CJD in Korea was mainly supported by the

MIFAFF and has not been buoyant.[319] The Korean government's R&D investment in BSE-related research in 2007 constituted approximately 0.01% of the government's total R&D investment.[320] This is largely because the R&D investment in animal diseases is itself small. From 2006 to 2010 R&D investment from the MIFAFF in animal disease represented just one twentieth of the budget for R&D in food production and the system (e.g. machine, equipment, seed, fertiliser, agricultural chemicals).[321] Seo stated that the production-oriented livestock policy resulted in a relatively small R&D investment for livestock diseases while a temporary expedient without a national strategy for animal disease R&D made long term basic research difficult.[322] Moreover, BSE is not a disease with national priority in Korea.[323] The government set up a special committee for zoonoses R&D in 2007 and whilst Brucella, Avian Influenza, and rabies were chosen as priority

[319] < The Korean government's investment to BSE related research (2006-2007) >

(million KRW/ 1,100 KRW ≒ 1 USD)

year		MOST*	**MIFAFF**	RDA**	KFDA***	Total
2006	BSE	0	238	0	80	318
	CJD	8	0	0	0	8
	Prion	293	672	0	0	965
2007	BSE	0	163	50	0	213
	CJD	8	0	0	0	8
	Prion	170	664	0	0	834
Total		479	**1,737**	50	80	2,346

*Ministry of Science and Technology **Rural Development Administration ***Korea Food and Drug Administration

Ministry of Education, Science and Technology, "Status of the BSE Related National R&D," September 18, 2008.

[320] Ibid.

[321] From 2006 to 2010, MIFAFF invested 47.3 billion KRW for animal disease R&D, 401 billion KRW for food production and processing, and 424.9 billion KRW for production system (e.g. machine, equipment, seed, fertilizer, agricultural chemicals). Ji-Young Seo, Scientific and Technological Countermeasure against Infectious Animal Dieases, Science and Technology Policy Institute, 2011

[322] Ibid.

[323] Ministry of Science and Technology, et al., "National R&D Investment Plan for Zoonoses, proceeding for Science related ministers' meeting," March 15, 2007.

diseases for investment, BSE was neglected.[324]

BSE has never been officially reported in Korea, and as a result, the BSE research group in Korea is small. A small number of researchers are involved in BSE research and only a few research institutes have laboratory facilities of Biosafety level 3, which are essential to deal with infectious pathogens. Approximately 50% of the research fund for BSE, CJD and prion research in Korea is used by the NVRQS.[325] The Prion Diseases Laboratory within the Foreign Contagious Diseases Research Division at NVRQS is the only reference laboratory in Korea recognised by the OIE. BSE research of NVRQS focusses on research for surveillance of cattle rather than basic research, and the main research partners of NVRQS in BSE research are foreign research teams such as UK Veterinary Laboratories Agency (VLA) rather than Korean research groups, due to the lack of research fundamental for BSE in Korea.[326]

Food safety policy

Indeed, prior to 2008, there was no integrated legislation regarding the food safety of every food item. Even though the Framework Act on Food Safety was established in 2008, individual acts which regulate specific food items still exist, and administrative authorities are dispersed across several ministries and agencies such as the MIFAFF, Ministry of Health and Welfare, Korea Food and Drug

[324] Ibid.

[325] Ministry of Education, Science and Technology, "Status of the BSE Related National R&D."
[326] interview with a civil scientists at NVRQS

Administration (KFDA), NVRQS, Rural Development Administration (RDA), and National Fisheries Research and Development Institute (NFRDI).[327] For example, agricultural products including livestock products were regulated by the MIFAFF, food and its distribution and processing by the Ministry of Health and Welfare, and liquor by the National Tax Agency, while each regulation is based on different acts.

Moreover, the authority of regulation generally belong to ministries or agencies which are also in charge of food production, distribution, and promotion of the industry. Accordingly, food risks tend to be interpreted as obstacles to the industry by the government officials.[328] In many cases, food risk information is not fully open to the public, and bureaucrats do not want food risk issues to be raised.[329] For example, when BSE spread throughout Europe in the 1990s, the MIFAFF hesitated to publicise the information about BSE and did not promote active prevention measures, due to concern about the effect on the beef industry. Therefore, there are voices to call for establishing independent institutions in order to secure objectivity and transparency in food risk assessment.[330]

The anxiety of Korean people regarding general food safety is high. Only 22.4% of respondents answered that bills and regulations about food safety were properly enforced. This was in stark contrast with the EU, where 73.6% of respondents

[327] KFDA is under the control of Ministry of Health and Welfare, and NVRQS, RDA, and NFRDI are under Ministry of Agriculture.

[328] Seong, Song, and Jung, *Technology Risk Management in the Post catch-up stage*. pp. 129-134;

[329] Yang-kee Lee, "Legal Analysis of Korea-US Beef Import Negotiations and Developing Advanced Korea SPS Regulations," *Journal of Korea Trade* 33, no. 5 (November 2008): 405–428.

[330] Gye-Im Lee et al., "Analysis on Food Related Law System in Korea," *Agriculture Economy* 32, no. 3 (2009): 1–21.; Lee, "Legal Analysis."; Yun-Jae Hwang and Byung-Joon Woo, *A Study on the Socio-Economic Influence of Consumers' Safety Concerns on Animal Products* (Korea Rural Economic Institute, Ministry of Food, Agriculture, Fisheries, and Forestry, 2010).

showed trust in their food regulation policy. Likewise, the anxiety level of the Korean people in various food safety issues is much higher than the average of EU countries (Table 4).[331]

table 4 the level of concern about food safety in Korea and EU[332]

	Korea	EU
BSE	3.07	0.73
GM Food	2.98	0.84
Food Addictives	3.32	0.83
Residual pesticide (Fruit, Vegetables)	3.31	0.92
Antibiotics, Hormone (meat)	3.32	0.96
Food Virus (e.g. AI)	3.28	0.90
Unhygienic control of food, restaurants, and food factories	3.56	0.37

With regard to the cause of Korean people's sensitivity to food safety, a lack of trust in the government is often cited. In terms of food safety issues, trust of the Korean public in their government is low. Indeed, a survey conducted in 2001 revealed that only 44% of respondents answered that they trust the government's announcement about food safety.[333] When US beef was banned in 2003 due to the BSE case, 48% of respondents answered that 'consumers' organization' was the most

[331] A Public Survey on Risk and Safety in 2008 done by the Institute for Social Development and Policy Research at Seoul National University, and Euobarometer 2007 cited in Duk-Jin Chang, "Politicization of Risk Appeared in Candlelight Vigil in 2008," in *Risk Society, Risk Politics*, by Chin-Sung Chung et al. (SNU Press, 2010). p171

[332] Source: A Public Survey on Risk and Safety in 2008 done by the Institute for Social Development and Policy Research at Seoul National University, and Euobarometer 2007 cited in Duk-Jin Chang, Politicization of Risk Appeared in Candlelight Vigil in 2008, in (ed.) Chin-Sung Chung et al. *Risk Society, risk Politics*, SNU Press, p171

[333] quoted in Ji-Hyun Choi and Gye-Im Lee, "Facts and Vision of Food safety system," in *Agriculture Outlook 2005(1)*, ed. Se-Ik Oh (Korea Rural Economic Institute, 2005), 267–290.

trusted information source, and only 15% of respondents said that they had trust in 'the government's announcement.'[334] Following this, domestic beef consumption in Korea dropped significantly with 37% in January, 29% in February, and 17% in March 2004, despite assurances about beef safety from the government.[335] Regarding this tendency, the Korean government officials often criticised the public for being excessively sensitive to food issues.[336]

4.3.2 World Organization for Animal Health (OIE)

Regulatory policies regarding BSE and beef are not confined to domestic politics. Instead, the policy area should be considered in international terms. In this section, the World Organization for Animal Health (Office International des Epizooties, OIE), which provides guidelines for the control and surveillance of BSE risk regarding the trade of beef products, must be described.

The structure of the OIE and the Terrestrial Animal Health Code

The World Organization for Animal Health (Office International des Epizooties, OIE) was established in 1924 with the purpose of addressing the legitimate

[334] Ibid.

[335] Ibid.

[336] Young-soon Lee, *Development Plan for Control of Specified Risk Materials and Test of Slaughtered Animals* (Ministry of Agriculture and Forestry, 2005).; Tae-Yung Kim, "Risk Analysis and Efficient Control Measures on Bovine Spongiform Encephalopathy in the Republic of Korea" (PhD Thesis, Seoul National University, 2005).

protection from animal diseases and zoonoses.[337] The outbreak of rinderpest in 1920 was said to provide momentum to establish an international body to coordinate disease control efforts and to regulate international trade in animals and animal products.[338] The Paris-based international organisation had 173 member countries by 2009.[339] It is comprised of the World Assembly (the supreme body), geographically representative Specialist Commissions (elected every three years), and supporting organisations such as laboratories and working groups (Figure 4). The OIE's main objectives are: to collect and disseminate information on the global animal disease situation, and to offer veterinary scientific information and technical support to member countries for animal disease control and the promotion of national veterinary services; it is also charged with safeguarding international trade.[340] To achieve these missions, the OIE has established standards, guidelines, codes and manuals on animal disease control to be used as reference documents by the member countries; it also keeps lists of transmissible diseases considered to be of importance in public health and the international trade of animals and animal products. The documents and recommendations are established by consensus of the member countries' senior veterinary authorities at the World Assembly.

[337] The original name was the 'Office International des Epizooties.' It was renamed as 'World Organization for Animal Health' in 2003, but the acronym remains considering its history.

[338] C. Zepeda, M. Salman and R. Ruppanner, "International trade, animal health and veterinary epidemiology: challenges and opportunities", *Preventive Veterinary Medicine* 48, 4 (2001): 261–271.

[339] Korea joined the OIE in 1953.

[340] "Our missions: OIE - World Organisation for Animal Health", http://www.oie.int/about-us/our-missions/.

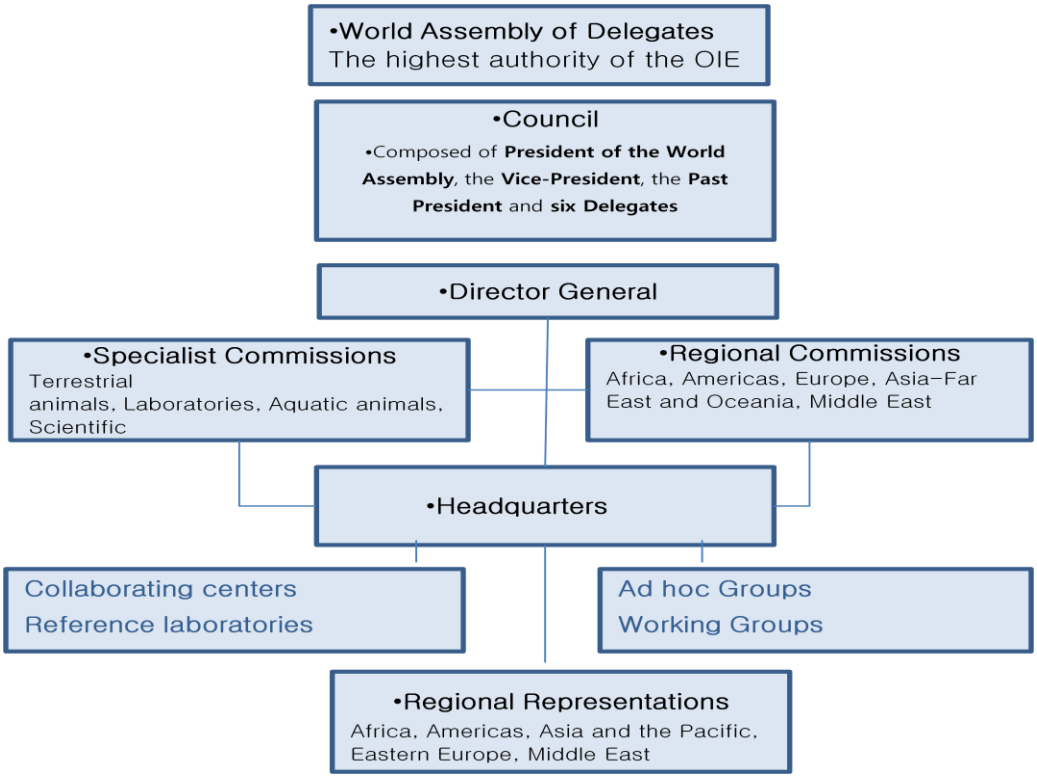

Figure 4 OIE Organization (http://www.oie.int/about-us/wo/)

The OIE standards, which are commonly referred to as international references for animal health and zoonotic diseases, are the *Terrestrial Animal Health Code (the Terrestrial Code)*, the *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals (the Terrestrial Manual)*, the *Aquatic Animal Health Code (the Aquatic Code)*, and the *Manual of Diagnostic Tests for Aquatic Animals (the Aquatic Manual)*.[341] The *Terrestrial Code* and the *Aquatic Code* contain recommendations for safe international trade and preventing animal diseases (including zoonoses) via animals and animal products (i.e. disease reporting, prevention and control, and sanitary measures). The *Terrestrial Manual* and the *Aquatic Manual*, for example, contain "international standards on quality management in testing laboratories,

[341] OIE Terrestrial Animal Health Standards Commission, "Procedures used by the OIE to set Standards and Recommendations for International Trade, with a Focus on the Terrestrial and Aquatic Animal Health Codes" (September, 2011).

principles of validation and quality control of diagnostic assays, and diagnostic testing methods for specific diseases including official tests listed in the *Codes*.[342]

Recommendations on new standards and on significant revisions of existing standards are developed by small groups of independent experts (Ad hoc Groups or Working Groups in Figure 3). All draft texts are reviewed by member countries and the relevant Specialist Commission, whose members are elected by member countries; they are then approved at the World Assembly General Session which is held annually. It normally takes two years for new texts to be adopted in the *Codes*.[343] Standards are adopted by consensus of member countries at the General Session, and in incidences when the session fails to achieve consensus, voting and a two-thirds majority are needed for the standard to be adopted.[344]

The *Terrestrial Animal Health Code* (2011) includes recommendations for 73 animal diseases, among which is Bovine Spongiform Encephalopathy (BSE). The BSE chapter in the Code includes: definitions of 'commodities that can be/should not be traded'; criteria with which to determine 'BSE risk status' of a country or zone; and guidelines for surveillance and risk assessment. Among them, the definition of safe commodities and BSE risk status are important guidelines for the international trade of beef products. Whether or not a certain beef commodity can be traded relies on the BSE risk status of the exporting country.

OIE now has three categories with which to assess the BSE risk of countries:

[342] Ibid.

[343] It was used as the evidence that the OIE standard could not reflect updated scientific research results during the Korean BSE controversy.

[344] OIE Terrestrial Animal Health Standards Commission, "Procedures Used by the OIE."

'Negligible BSE risk', 'Controlled BSE risk', and 'Undetermined BSE risk.'[345] In addition, trade regulations are more stringent when it comes to cattle and commodities originating from 'Undetermined BSE risk' states, and less for those from 'Negligible BSE risk' states. For example, brains, eyes, spinal cords, skulls and vertebral columns from cattle above 12 months of age, which were produced in 'Undetermined BSE Risk' states, are banned from being traded 'for the preparation of food, feed, fertilisers, cosmetics, pharmaceuticals.'[346] On the contrary, with cattle originating from 'Controlled BSE Risk' states, only brains, eyes, spinal cords, skulls and vertebral columns from animals over 30 months of age should not be traded. Although the OIE recommendation does not have a compulsory legal effect, as the BSE risk status affects the trade of beef products and cattle, countries make efforts to be recognised as having as good a status as possible.

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[345] "Negligible BSE risk" state is a country which has conducted a risk assessment and demonstrated that appropriate generic measures and surveillance taken in accordance with the OIE standard; there has been no case or imported (and completely destroyed) case of BSE, or "every indigenous case was born more than 11 years ago"; the OIE criteria (e.g. the compulsory notification and investigation of all cattle showing clinical signs, the examination in an approved laboratory of brain or other tissues …) have been complied with for at least 7 years; and it has been demonstrated "neither meat-and-bone meal nor greaves derived from ruminants has been fed to ruminants" for at least 8 years. (OIE, *Terrestrial Animal Health Code 2010*, Article 11.5.3)

"Controlled BSE risk" state is a country which has conducted a risk assessment and not demonstrated that appropriate measures have been taken 'for the relevant period of time'; surveillance has been carried out in accordance with the OIE Terrestrial Code; and there has been no case or imported (and completely destroyed) case of BSE and it has not been demonstrated that the OIE criteria have been complied for 7 years and "neither meat-and-bone meal nor greaves derived from ruminants has been fed to ruminants" for 8 years. In case there has been indigenous case of BSE, the OIE criteria are complied with, and "it can be demonstrated … that neither *meat-and-bone meal* nor *greaves* derived from ruminants has been fed to ruminants; and all BSE *cases*, as well as: all cattle which, during their first year of life, were reared with the BSE *cases* during their first year of life, and which investigation showed consumed the same potentially contaminated feed during that period." (OIE, *Terrestrial Animal Health Code 2010*., Article 11.5.4.)

Most European countries which experienced BSE belong to this category. US was identified as 'Controlled risk state' in 2007 in spite of discovery of BSE infected animal in 2003.

"Undetermined BSE risk" state is a country which cannot demonstrate that it meets the requirements of the aforementioned category. (OIE, *Terrestrial Animal Health Code 2010*., Article 11.5.5.)

Korea belonged to this category until 2010 though there is no BSE case reported.

[346] OIE, *Terrestrial Animal Health Code 2010*., Article 11.5.14

International trade and regulation

The OIE standards do not legally bind member countries. The General Remarks of OIE *Terrestrial Animal Health Code* recognise the member countries' authority to set their own safety regulations.[347] However, the General Remarks also state: "This must be based on a scientific risk analysis and done in accordance with the country's obligations under the SPS agreement."[348] It is related to the relationship between OIE and the World Trade Organization (WTO).

The WTO includes the General Agreement on Tariffs and Trade as amended (GATT 1994) and the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS).[349] The General Agreement for Tariffs and Trade (GATT) was established to promote free trade in the 1940s, and since then, it has reduced and eliminated tariffs and subsidies in trade. With declines in tariff barriers, the concerns that food safety and sanitary standards would be used as non-tariff barriers came to the fore.[350] Accordingly, the SPS Agreement was made "to facilitate unhindered international trade in animals, plants and their products without endangering human, animal or plant life."[351] However, as WTO does not have scientific expertise in sanitary and phytosanitary measures, it made agreements with some international

[347] "An importing country is always free to authorize the importation of animals or animal products into its territory under conditions either more or less stringent than those recommended by the *Code*" OIE, "Terrestrial Code, Users' Guide," 2010., A. General remarks

[348] Ibid.

[349] "Understanding the WTO Agreement on Sanitary and Phytosanitary Measures," May 1998, http://www.wto.org/english/tratop_e/sps_e/spsund_e.htm.

[350] M.B. Nelson, *International Rules, Food Safety and the Poor Developing Country Livestock Producer* (Rome, Italy: Pro-Poor Livestock Policy Initiative, Food and Agriculture Organization, 2005).

[351] G K Brückner, "Working towards Compliance with International Standards," *Revue Scientifique et Technique (International Office of Epizootics)* 23, no. 1 (April 2004): 95–107; discussion 391–401.

reference organisations, and recognised the sanitary standards set out by the reference organisations as science-based recommendations for international trade.[352] The OIE was mandated as the international reference organisation for international standards in animal health by the WTO in 1994. The purpose of the mandate was to avoid "the introduction of pathogens via international trade in animals and animal products, while at the same time *preventing countries from setting up unjustified sanitary barriers to inhibit trade*."[353]

While the WTO and the SPS do not impose particular regulations on their members, they do require countries to justify their standards scientifically in case they are stricter than international standards.[354] Accordingly, countries have two options in setting their health and sanitary measures: whether to base the measures on international standards or to adopt stricter measures than international standards through scientific justification. The following paragraph shows this clearly:

> The first option, and the one strongly encouraged by the SPS Agreement, is for Members to base their health measures on OIE international standards such as the *Terrestrial Code*. The second option applies in the absence of a relevant standard or when a Member chooses to adopt a higher level of protection than that provided by the OIE standard. This option necessitates the use of scientific risk analysis to determine whether importation of a particular commodity poses a significant risk to human or animal health and, if so, what health measures could be applied to reduce that risk to a level acceptable to the importing country.[355]

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[352] WTO relies on three standard-setting organizations: CODEX Alimentarius for public health and food safety, International Plant Protection Convention (IPCC) for plant health, and the OIE for animal health.

[353] G K Brückner, "The Role of the World Organisation for Animal Health (OIE) to Facilitate the International Trade in Animals and Animal Products," *Onderstepoort Journal of Veterinary Research* 76 (2009): 141–146. P.141 *(my emphacis)*

[354] Nelson, *International Rules*.

[355] OIE, "Devising Import Health Measures for Animal Commodities," 2010.

According to the above, while sanitary measures which conform to the OIE standards are not required to provide any additional justification, countries should justify their measures scientifically to choose a higher level of protection for their sanitary measures than the OIE standards. The legitimacy of international standards is the scientific excellence of those standards. The OIE's recommendation is regarded as "an optimal level of animal health security, incorporating the latest scientific findings and available techniques."[356] The OIE Director General said:

> In term of the SPS Agreement, countries are allowed to apply sanitary measures stricter than those recommended in the international standards of the OIE provided that such stricter sanitary measures are scientifically justified.
> Nonetheless, *as OIE standards are elaborated with the support of internationally renowned scientists, it is difficult to justify scientifically national measures that differ those of the OIE*.[357]

Although OIE standards relied on the consensual adoption of member countries, they became less voluntary when combined with the WTO's enforcement mechanism.[358] The enhancing authority of international standards, which impose the burden to justify their sanitary regulations with scientific evidence on importing countries, is likely to narrow states' policy discretion.[359]

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[356] OIE, *Terrestrial Animal Health Code 2010*., A. General remarks

[357] It was the answer of the OIE Director General to the statement of Japan delegate that Japan would not "regard the official recognition of free status [by the OIE] as a substitute for sanitary measures" which were in its own regulatory discretion. OIE, *Final Report of the 75th General Session* (Paris, May 2007).

[358] Nelson, *International Rules*.

[359] Waarden, "Taste, Traditions, and Transactions."

4.3.3 Regulatory policies on BSE in Europe, Japan, and US

Although the OIE provides general guidelines regarding the control and surveillance of BSE risk, regulatory policies in each country show national disparities. In this section, the BSE regulatory policies in Europe, Japan, and the US, which were mainly compared with those of Korea during the Korean BSE controversy, will be outlined.

Animal Feed Ban

The primary route of transmission of BSE is believed to be contaminated animal feed. The EU introduced a ban on the use of ruminant protein for ruminant animal feed in 1994 and prohibited the use of animal protein for all farm animals in 2000.[360] Moreover, Japan also issued a ban on the use of ruminant-derived MBM for ruminant feed in April 1996, and banned the use of all mammals-derived proteins in animal feed when a BSE-positive animal was confirmed in September 2001.[361] The US banned the use of animal proteins for ruminant feed in 1997 with the exceptions of blood products, gelatin, plate waste, milk products, and animal protein from porcine or equine sources. In April 2008, the US Food and Drug Agency (FDA) announced new rules to expand the scope of prohibited cattle-derived risk materials for all animal feed.[362] Compared to Japan and European countries, the US has a

[360] Detwiler et al., "A Position Paper on the Relaxation of the Feed Ban in Europe."

[361] Ban on the use of pig-derived proteins for pigs and chickens were lifted in April 2005. Ibid.

[362] Cattle Material Prohibited in Animal Feed (CMPAF) by the new rule is: "the entire carcass of

much lower level of animal feed regulation (Table 5). The US takes the view that as BSE occurrence in the US is much less than in Europe and the contamination source is small, strict regulation like in Europe is not necessary.[363]

Table 5 Comparison of Animal Feed Ban among countries (UK, EU, US, and Japan)

Animal Feed Ban	UK	EU	US	Japan
ban on ruminant protein for ruminant animal feed	1988-1990	1994	1997.8	1996
ban on SRMs for farm animal feed	1990-1996	-	ban on brain and spinal cord from animals over 30 month age for all farm animals (2009)	-
ban on animal protein for farm animal feed	1996	2001	-	2001

Removal of Specified Risk Materials (SRMs)

Whereas the animal feed ban was primarily designed to prevent BSE in cattle, most important when it comes to protecting human health is the removal of cuts called Specified Risk Materials (SRMs) and a ban on their use in human food. SRMs are known to contain about 99% of BSE infectivity in infected animals, and

BSE-positive cattle; the brains and spinal cords from cattle 30 months or age and older; the entire carcass of cattle not inspected and passed for human consumption that are 30 months of age or older from which brain and spinal cords were not removed; tallow that is derived from BSE-positive cattle; tallow that is derived from other materials prohibited by this rule that contain more than 0.15 percent insoluble impurities; and mechanically separated beef that is derived from the materials prohibited by this rule."

"Bovine Spongiform Encephalopathy - Feed Ban Enhancement: Implementation Questions and Answers", WebContent, *U.S. Food and Drug Administration*, June 5, 2009, http://www.fda.gov/AnimalVeterinary/GuidanceComplianceEnforcement/ComplianceEnforcement/BovineSpongiformEncephalopathy/ucm114453.htm.

[363] *Final Report by Japan-United States BSE Working Group*, July 22, 2004, http:// www.mofa.go.jp/region/n-america/us/economy/beef.html.

removing SRMs from human consumption is considered to reduce BSE risk substantially.[364] However, the possibility remains that tissues which have not been considered as SRMs will show BSE infectivity with the help of development in testing methods.[365]

With regards to which cuts are defined as SRMs, there is a shared definition in principle by relative infectivity in bovine tissues. However, specifically, definitions of SRMs differ slightly across countries (Table 6). Generally speaking, the EU and Japan have more stringent regulations than the US and the OIE. For example, the US bans only brain and spinal cord from cattle older than 30 months, while the EU bans those from cattle older than 12 months and Japan bans those from cattle of all ages. In addition, the US only bans distal ileum, although the EU bans whole intestine for human food. The difference in definitions of SRMs among the countries is the result of considering various factors other than BSE infectivity in bovine tissues. While the EU considered BSE incidence cases in young cattle, the US took the position that as BSE in cattle of young age presumes excessive exposure to a contamination source while the animals were calves, it is unlikely that BSE will occur in animals younger than 30 months in the US. This conclusion can also be attributed to the fact that the BSE incidence rate is much lower in the US than in European countries.[366]

[364] Percentage of total infective load per bovine is: Brain 64.1%, Spinal cord 25.6%, Trigeminal ganglia 2.6%, Dorsal root ganglia 3.8%, Ileum 3.3%, Spleen 0.3%, Eyes 0.04%. "Joint WHO/FAO/OIE Technical Consultation on BSE: Public Health, Animal Health and Trade" (OIE Headquarters, Paris, June 11, 2001).

[365] TAFS, *TAFS Position Paper on Specified Risk Materials* (Berne, February 2009).

[366] *Final Report by Japan-United States BSE Working Group*, 22, July, 2004, http:// www.mofa.go.jp/region/n-america/us/economy/beef.html.

Table 6 Comparison of definitions of SRMs

OIE	US	EU	Japan
(i) cattle of any age originating from Controlled-risk state and Undetermined-risk state: tonsils and distal ileum (ii) cattle over 30 months of age originating from Controlled-risk state: brains, eyes, spinal cord, skull and vertebral column. (iii) cattle over 12 months of age originating from undetermined-risk state: brains, eyes, spinal cord, skull and vertebral column. (OIE, Terrestrial Code 11.5.14, commodities that should not be traded)	(i) Cattle 30 months of Age and Older: Brain, Skull, Eyes, Trigeminal ganglia (nerve tissue), Spinal cord, Dorsal root ganglia (nerve tissue), Vertebral column (excluding the tail, transverse processes of the thoracic and lumbar vertebrae and the wings of the sacrum). (ii) All Cattle: Tonsils, distal ileum. (Federal Register - 69FR 42255 July 14, 2004)	(i) the skull excluding the mandible and including the brain and eyes, and the spinal cord of animals aged over 12 months; (ii) the vertebral column excluding the vertebrae of the tail, the spinous and transverse processes of the cervical, thoracic and lumbar vertebrae and the median sacral crest and wings of the sacrum, but including the dorsal root ganglia of animals aged over 24 months; and (iii) the tonsils, the intestines from the duodenum to the rectum and the mesentery of animals of all ages." Commission Regulation (EC) No 722/2007 of 25 June 2007	bovine heads (except for tongues and cheek meat), spinal cords, distal ileum, vertebral column from cattle of all ages. Japan Food Safety Commission, Measures against Bovine Spongiform Encephalopathy (BSE) in Japan, September 2004 , http://www.mhlw.go.jp/english/topics/foodsafety/bse/)

Moreover, some cuts are defined as SRMs in the EU because of their close association with other SRMs, although they have not demonstrated inherent BSE infectivity.[367] Skull and vertebral column are designated as SRMs due to possible contamination from brain and spinal cord respectively. Moreover, although the

[367] TAFS, *TAFS Position Paper on Specified Risk Materials*.

infectivity in parts of intestines other than the distal ileum is not yet confirmed, whole intestines are prohibited "on a simple practical basis" by the EC Scientific Steering Committee (SSC) which was concerned about slaughterhouse contamination.[368] In contrast, the US does not ban whole intestines but forces at least 2-metres from the end of the ileum to be cut and removed.[369] Japan, which has indigenous BSE cases and generally operates strict regulations on BSE, opposed the proposal to designate the entire intestine from cattle of all ages as SRMs at the OIE meeting, for the reason that intestine is used for traditional dishes.[370]

Testing and screening

Testing the brain tissue of cattle after death is the only way in which to establish whether or not an animal is infected with BSE. The objectives of testing are, according to EC regulation:

1) "Surveillance": to identify the existence of BSE in a country and the likely numbers of infected cattle, and to monitor the effectiveness of BSE prevention and control measures; and

2) "Additional protection of health": to eliminate infected cattle from the food chain for the safety of meat.[371]

[368] Scientific Steering Committee, *Listing of Specified Risk Materials: a scheme for assessing relative risks to man*, Re-edited version adopted by the Scientific Steering Committee during its Third Plenary Session of 22-23 January 1998, p.8, para. 3.6

[369] The narrowed ban on intestines was suspected of considering the economic interests of US beef industry.

[370] Kim, "Risk Analysis and Efficient Control Measures on Bovine Spongiform Encephalopathy in the Republic of Korea."

[371] EC, *Frequently Asked Questions about BSE-Tests*, n.d., http://ec.europa.eu/food/fs/bse/bse21_en.html.

With regard to testing, countries again have different foci. While the US tends to consider testing as a tool of surveillance only, Japan and the EU also recognise 'protection of public health' effect of testing.[372] The US carries out only sample tests to estimate the distribution of BSE in cattle and does not require all cattle above a certain age to be tested. On the contrary, the EU and Japan carry out a monitoring program for all cattle over a certain age. The EU introduced rapid post-mortem tests on animals above 30 months of age for human consumption in 2001, and carried out a monitoring program for all bovine animals above 24 months of age which were "sent for emergency slaughter or with observations at ante mortem inspections" and "not slaughtered for human consumption, which have died or been killed on the farm, during transport or in an abattoir (fallen stock)."[373] Japan introduced a blanket test for all slaughtered cattle in 2001, but has carried out testing only for cattle above 21 months of age since 2005.[374]

The position of the US is that the complete BSE test for all cattle older than a particular age is not necessary, because most of cattle in the US are slaughtered before the age at which BSE infection can be detected (almost of all cattle are normally slaughtered at between 20 to 30 months of age in the US).[375] The incubation period of BSE is 4 to 6 years and detecting the infection in the brain through diagnostic testing is possible shortly before the clinical symptoms appear.[376]

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[372] The confront views about testing between Japan and US are shown in the *Final Report by Japan-United States BSE Working Group*.

[373] *Regulation (EC) No 999/2001*.

[374] MIFAFF, "Answers on Proposal on Complete BSE Test of Slaughtered Cattle," August 2008.

[375] U.S. International Trade Commission, *Global Beef Trade: Effects of Animal Health, Sanitary, Food Safety, and Other Measures on U.S. Beef Exports*, September 2008.

[376] TAFS, *TAFS Position Paper on Testing of Cattle for BSE – Purpose and Effectiveness*.

As previously mentioned, the incidence of clinical disease occurrence in cattle younger than 30 months of age is approximately 0.05%.[377] Similarly, the OIE does not recommend a complete test for all slaughtered cattle. Testing a small number of high-risk animals (e.g. clinically suspected animals) can earn higher marks in the OIE's assessment than testing a large number of normal cattle. Therefore, the complete test of the EU and Japan was said to be just for "restoring consumer confidence" rather than offering a substantial increase in safety.[378]

4.3.4 Regulatory policies on BSE in Korea

There has been no BSE case reported in Korea. Although a complete test of all cattle has never been carried out, the Korean government has stated that there is, indeed, no risk of BSE in Korea. The grounds for this statement are: there has been no scrapie in Korea; no BSE-suspected cases have been detected despite testing a larger number of cattle in accordance with the OIE guideline; and there are no vCJD-suspected cases despite the consumption preference of the Korean people (including the eating of intestines). Accordingly, the policy priority has been on preventing the introduction of BSE pathogens from foreign countries rather than domestic regulation. The Korean government banned the importation of beef related commodities from 34 countries including European countries which experienced domestic BSE incidence in 1996.

[377] European Commission/the Scientific Steering Committee, "Update on The Opinion on TSE Infectivity Distribution in Ruminant Tissues."

[378] Heim et al., "Update on Bovine Spongiform Encephalopathy, Scrapie and Chronic Wasting Disease."

The use of animal protein and food waste for ruminant animal feed was banned in Korea in 2000, although this feed ban offers a lower level of protection than that of the UK, EU and Japan (see Table 7). The Korean government says that the current level of animal feed ban is sufficient to prevent BSE, because there is no need to worry about cross-contamination in Korea where BSE did not occur.

Table 7 Comparison of Animal Feed Ban in Korea and other countries

Animal Feed Ban	Korea	UK	EU	US	Japan
ban on ruminant protein for ruminant animal feed	ban on animal protein for ruminant animal feed (2000)	1988 -1990	1994	1997.8	1996
ban on SRMs for farm animal feed	-	1990 -1996	-	ban on brain and spinal cord from animals over 30 month age for all farm animals (2009)	-
ban on animal protein for farm animal feed	-	1996	2001	-	2001

With regard to SRMs, Korea had no guideline or regulation in place until 2006. The government says that this is not problematic due to the fact that there is no BSE in Korea and the government has banned importation of cattle and beef products from countries where BSE occurred. Before the “Import Sanitary Requirements on US beef and beef products”, which was agreed with the US in 2006 to resume beef import from the US where the BSE-infected animal had been discovered in 2003,

there was no definition nor regulations on SRMs. In terms of beef products imported from BSE-free countries such as Australia and New Zealand, and slaughtered in Korea, the Korean government does not impose regulations regarding SRMs. Accordingly, there were no rules about the process of removal and disposal of SRMs, nor were there relevant facilities for animals produced and slaughtered in Korea for domestic consumption. The government started to build facilities to remove SRMs in 2007, although removal and disposal are still not compulsory.

Korean people enjoy so many different cuts of cattle for food that it has been said that 'they eat every part except for horn and hoof.' Cattle have long represented the most treasured possession for Korean farming households up to a comparatively recent date. When agricultural machines did not develop, the ox, which ploughed fields and carried things for humans, became indespensible for farming. Accordingly, oxen was slaughtered on special days such as weddings or feasts, and thus it was a very rare event for most poor farmers to eat beef, and byproducts such as intestines and bones in addition to muscle meat were consumed for food. [379] In 2003, Korea's per capita beef consumption was 8.1kg, less than one fourth that of Australia (36.9kg) and one fifth that of the US (42kg).[380] However, by-products including SRMs are largely consumed in Korea. For example, a survey by the MIFAFF in 2003 showed that more than 50,000 restaurants served dishes cooked with bovine byproducts such as intestines, blood, or vertebral column.[381] Therefore, it is not a simple issue for the

[379] Kyeong-eun Kim, *Dining in Korea, China, and Japan (Han Jung Il Bapsang Munhwa)* (Igaseo, 2012); Kyo-ik Hwang, *Korean Food Culture (Hankook Eumsik Munhwa Bakmulgi)* (Tabi, 2011).

[380] Tae-Yung Kim et al., "Risk Analysis of Bovine Spongiform Encephalopathy in Korea," *Journal of Veterinary Medical Science* 67, no. 8 (2005): 743–752.

[381] The survey was conducted by Korea Restaurant Association by the request of the MAFF in 2003 September, in Ibid.

Korean government to regulate SRMs, even though many cuts enjoyed by Korean people are defined as SRMs in other countries. For example, intestines, which are designated as SRMs and banned from consumption as human food in the EU, are one of the preferred cuts among Korean people. The position of the government is that compulsory removal and disposal of SRMs will be considered if and when a BSE case is discovered in Korea.

The position held by the Korean government with regard to testing is closer to that of the US than those of the EU and Japan. The Korean government had tested 3,043 normal cattle in 1996 – 2000 (the result came out negative) and has carried out a sample test for high-risk animals like downer cattle since 2007. The association of twelve farmers' organisations and the Korean Beef Association suggested a complete test for all slaughtered Korean beef to confirm the safety and to request that the US government conduct the same level of screening on 21 July 2008. Some civil movement groups supported this move. In response, the MIFAFF stated that testing all slaughtered cattle has no substantial effect on consumers' safety, because the diagnostic test cannot detect infectivity in cattle until 4-6 month before clinical onset.[382] In addition, MIFAFF officials were concerned that testing all cattle may mislead the public to question the fact that there is no BSE in Korean cattle.

In sum, domestic regulatory policies on BSE in Korea are based on the notion of 'not being affected by BSE in the home country' and these impede the pursuit of further efforts to implement regulatory measures. The government takes the stance that the current level of regulation is sufficient to prevent BSE and protect

[382] MIFAFF, "Answers on Proposal on Complete BSE Test of Slaughtered Cattle."

consumers' health and more stringent regulations should be enforced only if BSE actually occurs.

4.4 Conclusion

This chapter has outlined the context surrounding the Korean BSE controversy. The first section described the political and scientific culture in Korea. Korea performed its modernisation projects successfully under a developmental regime. In addition, the concentration of political power and elite bureaucratic tradition established during the compressed development process reinforced the technocratic approach to decision making. Despite political democratisation in the 1980s, there does not seem to have been a fundamental change in the technocratic approach of the government,

Science and technology have been used as the main instrument for economic growth. The scientific community internalised developmentalism and statism. With a lack of resources and knowledge base, the importation of knowledge from the West has been not only promoted as a main strategy for rapid economic growth by the government but also applied to the reflections and criticisms of the imported knowledge. Dependence on foreign knowledge and the 'catch up' approach have made it difficult to raise and solve indigenous problems of the Korean society, while democratic deliberation mechanisms were often used solely for formality purposes.

The second section provided the policy structure surrounding beef and the BSE issue. The MIFAFF's policy is production-oriented and thus, food safety policy tends

to be sidelined. The NVRQS under MIFAFF is comprised of the largest chunk of BSE-related research, although BSE research does not have much importance within the whole government. Trust in food safety of the Korean people is not high, but their concerns are often regarded as an excessively sensitive response by bureaucrats and scientists.

The government's discretion in creating BSE regulation policy is constrained by the international trade environment. The OIE demands scientific justification of regulation policy stricter than the recommendations provided by the OIE, in order to prevent sanitary measures from being used for protectionism. The enhancing authority of the international organisation combined with the WTO's enforcement mechanism is likely to impose constraints on the state's autonomy.

The EU, the US, Japan, and Korea all have different BSE regulation policies based on various factors such as their historical experience, different interpretations of scientific studies, and considerations of their regulatory environment such as convenience in implementing regulations, dietary habit of nations, or the cost, as well as scientific evidence affecting the regulatory policies. Accordingly, with the same purpose of removing risk materials from the human food-chain or of eradicating the disease in cattle herds, each country has adopted different regulatory policies. The Korean government's BSE regulation policy is based on the notion of 'not being affected by BSE in its own country.'

In the next two chapters, the detailed story of the Korean BSE controversy will be provided.

5 The Chronology of BSE controversy in Korea (1): policy-making on beef

5.1 Introduction

In the spring of 2008, an enraged public took to the streets of Seoul to protest against the newly created regulations on US beef. The new beef regulations allowed for the importation of beef from cattle older than 30 months of age and some beef offal, which had been previously banned. Massive public protest against the government's decision was sparked by a TV program showing the potential risk of a BSE epidemic from imported US beef. Public protests lasted more than two months and ended when the government suspended the import of beef from animals older than 30 months until such time as the concern of Korean people was eased.[383] Despite accumulated knowledge of BSE through the experience of the UK and many European countries in the 1990s, BSE was still uncertain and controversial. People were confused by contradictory claims about BSE from the government and dissenters, while scientific discussions organised by scientists failed to calm the controversy.

The Korean BSE controversy looked similar to that of the UK on the surface. It seemed that the Korean government had decided to import risky beef from the US while hiding the risk, and the beef safety claims of the government often overlapped with the UK government's reassurance that had been finally revealed as policy

[383] According to the National Police Agency, 2,398 assemblies were held, and about one million people participated in demonstrations from 2 May to 15 August 2008. Seoul Central District Prosecutors' office, *White Paper on Illegal Violent Demonstrations Objecting US Beef Import*.

failure. In particular, the government's abrupt policy-shift on US beef in 2008 was mainly accused of causing the controversy. However, what should be considered in the Korean BSE controversy is that beef was a long pending issue which entangled political and economic interests between Korea and the US; it was not just a food issue. As such, the BSE controversy in 2008 cannot be reduced to the events of 2008, but must be understood from within a broader policy context which includes the question of the relationship between Korea and the US, tracing back to the period prior to 2008.

The BSE controversy story in Korea will be presented in the next two chapters. Firstly, this chapter, the first part of the Korean BSE controversy, will focus on the regulatory policy-making process for US beef within the Korean government. As one of the largest beef exporting countries, the US has been trying to increase beef export to Korea since the 1980s, although export of this beef to Korea was stopped due to a BSE case in the US in 2003. Although the Korean beef market was open to the US in 2006, the export did not go on smoothly. By following the ban and resumption process chronologically, I will show how and why the Korean government chose the policy on beef which would be imported from the US and what role the scientific advisors played in the policy-making process. Through this, I will show how the Korean government's regulatory policy on US beef was formulated amidst complex political and economic relations between Korea and the US, and how scientific expertise was used in the policy process.

The first section of this chapter summarises the BSE process, from the US beef ban in 2003 to the partial lifting in 2006. The second section will focus specifically

on the process whereby the beef requirements agreed in 2006 were relaxed and new beef conditions were implemented in 2008.

5.2 Korea and US beef before 2007

This section presents the BSE process, from the US beef ban in 2003 to the partial lifting of the ban on boneless muscle meat in 2006. First, I will provide the background necessary to understand the relationship between Korea and the US regarding beef, before dealing with the BSE controversy itself. Beef has been an issue of conflict for the US since the 1980s. Korea became one of the largest beef markets for the US, after sustained American pressure, although BSE in the US in 2003 led to a ban on US beef by the Korean government. Korea resumed the import of boneless muscle meat from cattle under 30 months of age in 2006. In the second part of this section, I will describe the policy process which led to the Korean government's decision to lift the ban on boneless muscle meat, with a focus on the Korean MIFAFF's advisory body, the National Livestock Health Control Council (NLHCC). In the last part of this section, I will describe the disputes between the government and civil activists over the newly made beef import requirements which allowed for the import of boneless muscle meat.

5.2.1 Korean beef market and BSE in the US

Beef conflict between Korea and the US

Korea and the US have a long history of beef conflicts. Korea started to import beef in 1976 as the domestic demand of beef increased. The increase in beef import forced cattle prices in Korea down, and the Korean government stopped importing foreign beef from 1985 to 1987 to protect the livestock industry. Following this, the US, Australia, and New Zealand took this ban to the GATT Dispute Panel, and the Korean government, which lost the GATT decision, resumed beef import in 1988.[384] The Korean beef market was open in earnest with the Uruguay Round (UR) agriculture agreement which was concluded in December 1993, and as of 1995, the WTO (World Trade Organization) regime has been increasing pressure with regard to the opening of the agricultural market.[385] The Korean government agreed to increase its beef import quota (obligatory importing of a certain quantity of beef) and to fully open its beef market by 2000. The importation of beef increased rapidly, and as a result, the US became one of the main beef exporting countries to Korea, with its market share increasing from 44% in 1993 to 61% in 1999.[386]

However, as Korea suffered depreciation and economic downturn due to the Asian financial crisis in 1997, beef import decreased seriously. In 1999, the US and Australia filed a complaint with the WTO against Korea, arguing that the separation policy of the Korean government between stores which could sell only Korean beef and stores which could sell only imported beef separately, discriminated against

[384] Duk Hur et al., 2000, *Liberalization of Beef Import and Development Plan for Han Woo (Korean Beef) Industry*, Korea Rural Economic Institute, cited in Ji Hyun Park, *Changes in the Beef Market after Import Liberalization: Analysis and Implication* (Korean Institute for International Economic Policy (KIEP), 2004).

[385] The Uruguay Round was the 8th round of international trade negotiations under the framework of the GATT and it created the WTO regime.

[386] Junsok Yang and Hong-Youl Kim, *Main Trade Issues Pending between Korea and the US, and Policy Tasks* (Korean Institute for International Economic Policy (KIEP), 2000).

imported beef. Korea has fundamental constraints when it comes to the development of beef farming, such as small scale cattle farming, shortage of pastures, and dependence on imported animal feed. Indeed, the self-support rate of beef in Korea is normally 50-60%. As Korean people generally prefer Korean beef (Hanwoo) to imported beef, Korean beef is normally two or three times more expensive than imported beef. As a result, fraud is commonplace, with immoral retailers fabricating the origin of imported food as domestic and selling it at a higher price. The Korean government argued that the separation policy of beef selling stores was a kind of labelling system to prevent beef origin fraud and to protect consumers' rights to know the origin of beef; however, Korea lost the suit.

As a result of pressure to open the beef market from the US since the 1980s, US beef became a symbol of economic invasion of Western imperialism which would impoverish Korean agriculture. Generally speaking, Korean agricultural products are not competitive in terms of price against foreign ones produced in large quantities. With rice, the opening of the Korean beef market has been a principal issue on the agenda of all international trade meetings. As mentioned earlier in this chapter, cattle have long been regarded as the most precious property by farming households in Korea. Stories of parents who sold oxen to pay the university fees of their children were common in the 1970s-80s. Moreover, as the livestock industry has grown to be the second largest part of Korean agriculture (31.5% of total agricultural products in 2007), it looked evident that increasing beef import would ruin Korea's entire domestic livestock industry. It was a common sight in the 1980s-90s to see angry farmers taking to the streets with their calves, protesting against the opening up of the agriculture market, whenever important trade negotiations were held.

BSE in the US in 2003

Korea was the third largest overseas market of US beef in 2003 with the import of 200,000 tons of beef (850 million USD), before a BSE-infected 6 years and 6 months old Holstein dairy cow was discovered in Washington State on December 24, 2003.[387] The Korean government immediately imposed a ban on beef products from the US (on 27 December 2003). The Korean government's policy was to ban importation of ruminant-originating commodities from the countries with BSE incidence or suspected risk since 1996, and the immediate ban on US beef products was based on this rule. In addition to Korea, more than twenty countries imposed a ban on US beef products.[388]

The US government announced that the BSE-infected animal in Washington State was imported from Canada when it had been a calf. After the announcement, the US government requested that its main beef market countries resume beef import from the US. The US Department of Agriculture (USDA) said that the OIE did not recommend banning skeletal muscle meat which was considered to be safe to consume, and claimed that many countries' bans on US beef were not in compliance with the OIE standards.[389] Meanwhile, a new BSE-infected cow was detected in

[387] Korea Meat Trade Association

[388] The countries from which importation of beef products was prohibited were:

Countries where BSE occurred: Austria, Belgium, Canada, Czech Rep., Denmark, Finland, France, Germany, Greece, Ireland, Israel, Italy, Japan, Liechtenstein, Luxembourg, Netherland, Poland, Portugal, Slovakia, Slovenia, Spain, Switzerland, United Kingdom.

Countries where BSE risk was suspected: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Hungary, Norway, Rumania, Former Yugoslav Rep. of Macedonia, Sweden, Federal Rep. of Yugoslavia

Korean National Veterinary Research and Quarantine Services, *Annual Report*, 2005.

[389] *Pressian*, Korea refused demand of resumption [of beef] from the US, 31 December 2003

Texas on November 19, 2004. After an investigation, the US government stated that it was a 12-year-old cow which had been born before the animal feed ban (ban on the use of ruminant protein for ruminant animal feed) introduced in April 1998 and that it was an atypical BSE case. As mentioned in Chapter 3, atypical BSE is a type of BSE which differs from the typical case which occurred in the UK due to the infection by contaminated animal feed. Moreover, neither the infectivity of atypical BSE to humans nor the risks have yet been proven. The US government pressured the main US beef importing countries such as Japan and Korea to resume beef import, arguing that there were no problems in US cattle. The US was blamed by the Korean media for threatening beef importing countries with possible trade conflict all in the name of economic profit.[390] *Seoul Economic Daily* stated in its editorial:

> … the [Korean] government should not submit to any type of pressure to ease the beef ban which will threaten the nation's life, until the safety of US beef from BSE is confirmed by the enforced measurement of the US government. …

Although the Korean government prohibited importation of US beef, it allowed distribution of boneless muscle meat which had been imported from the US before the beef ban in December 2003 and stored in cold warehouses.[391] This was due to expectations of a serious beef supply shortage and a rise in beef prices in the domestic market. Even though Korea imported beef from Australia, New Zealand,

[390] "Food Safety Should Not Be Bargained for Trade Pressure," *Seoul Economic Daily*, December 29, 2003, sec. editorial. (my translation);"BSE Contaminated Beef' Is Not Subject of Negotiation," *Dong-A Daily*, December 30, 2003, sec. editorial.

[391] The Ministry of Agriculture announced that 273,253 tons of beef had been imported in 2003 and it included 44,387 tons of bone and offal which included Specified Risk Materials such as vertebral column and intestine. Ministry of Agriculture, "Questions & Answers on BSE," December 28, 2003.

and Mexico, in addition to the US, they could not substitute US beef which had accounted for more than 40% of the Korean beef market share before the ban. The grounds of the decision to allow the distribution of US beef was that whereas the BSE-infected animal discovered in the US was a cow older than four years, US beef which had been imported to Korea was generally from cattle aged under two years. The minister said that it was unlikely that people would be contaminated with BSE by eating beef except for Specified Risk Materials (SRMs) which were known to have high infectivity.[392] However, domestic beef consumption dropped significantly (37% in January, 29% in February, and 17% in March 2004), despite assurances about beef safety from the government.[393]

5.2.2 Decision to resume US beef import: National Livestock Health Control Council (NLHCC)

"US made the re-opening of the Korean beef market a top priority" and officially requested that the Korean government enter into discussions on the beef issue.[394] Both countries started steps to re-open the Korean beef market to the US from April 2005. In this section, the way in which the Korean government made the decision to resume US beef import will be described, with a focus on the role of the National Livestock Health Control Council (NLHCC).

[392] Cited in "Beef, Concern about Recurrence of Trade Conflict," *Hankook Economic Newspaper*, December 26, 2003.

[393] Choi and Lee, "Facts and Vision of Food safety system."

[394] USTR, *2005 National Trade Estimate Report on Foreign Trade Barriers*, March 30, 2005, http://www.ustr.gov/archive/assets/Document_Library/Reports_Publications/2005/2005_NTE_Report/asset_upload_file182_7481.pdf.

The National Livestock Health Control Council (NLHCC)

The National Livestock Health Control Council (NLHCC) is the highest level of an advisory committee which is set and operated in accordance with the Act on the Prevention of Contagious Animal Diseases. The mission of the NLHCC is to provide policy advice to the minister of the MIFAFF on livestock quarantine issues, for example, the prevention of epidemics, inspection of animals for export/import, and improvement of the national quarantine system.[395] It is also the council's mission to consult on import risk assessment performed by the NVRQS which is crucial to decisions regarding whether or not to allow importation of meat products from foreign countries. However, the minister is not legally bound to follow the advice of the NLHCC.

The NLHCC consists of experts in livestock farming and veterinary fields. The Act on the Prevention of Contagious Animal Diseases defines the qualification of the members as "persons who have expertise in livestock farming or veterinary medicine."[396] There are no other restrictions on the council's composition except that one representative of civil organisations and one female member should be included; the council should also be comprised of less than sixty members. The chair of the NLHCC is the Deputy Minister of MIFAFF, and the Director General of Livestock Policy Bureau is the vice chair. One of the division-heads at the MIFAFF takes charge of the secretary of the NLHCC (and therefore, the secretary of the NLHCC changes as meeting issues change). Like most advisory committees within

[395] The Ministry of Agriculture changed the name as the Ministry of Food, Agriculture, Forestry, and Fisheries (MIFAFF) in 2008

[396] *The Act on the Prevention of Contagious Animal Diseases*, Article 4(2)

the government, there are no secretariat personnel with full responsibility for the council.

The members of the NLHCC are chosen by MIFAFF civil servants on the basis of their professional knowledge, reputation and experience, or institutional affiliation of individuals. Officials at the NVRQS and CDC (Center for Diseases Control under the Ministry of Health and Welfare) are usually invited as advisory members. Representatives of the livestock industry and consumers' organisations are also included. The biggest group is academic scientists. For example, the NLHCC had 59 members as of December 2009: 12 were general administrators of the MIFAFF, and civil scientists of governmental agencies (NVRQS and CDC) and national/ local institutes; 23 were scientists mainly in the veterinary field with a few in medicine; 8 were representatives of livestock producers' associations; 6 were from civil organisations; 6 from industry, and 2 from the government-associated agency. The term of advisory members is two years and members can be reappointed after the end of the term.

The NLHCC is not a standing committee and the committee meeting is convened by the MIFAFF when needs arise. The plenary meeting in which all 60 NLHCC members attend is scarcely held. Instead, the NLHCC has 5 sub-committees (Foot and Mouth Disease, BSE, Cattle diseases, Pig disease, and Fowl diseases) while the sub-committees are practical units which are convened as the NLHCC meeting by the government. Sub-committees generally consist of civil servants from MIFAFF and NVRQS (general administrators and civil scientists), producers' and consumers' representatives, personnel from MIFAFF-associated quangos, and scientists from

academia. The number of scientists from academia is 5 - 7 out of nearly 20 members of each sub-committee. Members from the government and the government associated organiwations usually constitute nearly 30% of the membership.

The members of the BSE sub-committee meeting included: 5 civil servants (3 from the MIFAFF and NVRQS, and two from the CDC); 1 from the Livestock Health Control Association (an executive-QANGO of MIFAFF); 4 from producers' organisations (the Korean Beef Association, the Korea Dairy and Beef Association, the Korea Feed Ingredients Association, and the Korea Feed Association); 1 or 2 from consumers' organisations (the Citizens group for Consumers' issue), and scientists in academia.[397] The scientists were: Joong-bok Lee (professor at Konkuk University, veterinary epidemiology), Min-chul Lee (professor at Chonnam National University, neuropathology), Yoon-jae Choi (professor at Seoul National University, animal cell engineering), Su-hwan Ahn (visiting professor at Kyungpook National University, later Livestock Health Control Association, veterinary epidemiology), and Yong-sun Kim (professor at Hallym University, virology). Later, Sun-il Park (professor at Kangwon National University, veterinary clinical pathology and epidemiology), Han-sang Yoo (professor at Seoul National University, veterinary microbiology) replaced Min-chul Lee and Yoon-je Choi. Hee-jong Woo (professor at Seoul National University, veterinary immunology), and Yong-soon Lee (professor at Seoul National University, former director of Korea Food and Drug Agency, veterinary pathology) also joined. Some scientists were former MIFAFF/NVRQS

[397] I constructed this list based on the attendance list of the meetings and recollection of interviewees. The perfect list of BSE sub-committee in 2005-2008 could not be found from the data that has been made public. and MIFAFF did not leave attendance list of every meeting in its press release. It is likely that there were additional 2 or 3 members.

officials or concurrent researchers at the NVRQS, or had a personal relationship with MIFAFF and NVRQS officials as academic advisors. As the NVRQS is the oldest and the biggest research institution in Korea's veterinary field, and interchange of veterinary civil servants between MIFAFF and NVRQS is frequent, veterinary scientists are likely to have either formal or informal network connections with the MIFAFF and NVRQS in some way.

Scientists were chosen by civil servants under considerations of various factors such as discipline, expertise, and institution. Scientist members of NLHCC were not the 'great and good' in the British sense, where expert committees were visible even to ordinary people and advisory members were recognised by their service to public issues.[398] Of course, some scientists are more often invited to governmental committees due to their experience, but this does not have such an impact or honour in their public life. The scientist members of the NLHCC were leading scientists in their fields, although most of them were not active researchers in TSE. (The lack of research base for BSE and vCJD in Korea has already been presented in the previous chapter.) As such, it was not strange to see scientists in the BSE sub-committee involved in research on other animal disease issues such as Foot and Mouth Disease or Avian Influenza. Nevertheless, scientists such as Joong-bok Lee, Yong-sun Kim, and Yong-soon Lee were often invited by the MIFAFF as advisors for BSE issues regardless of their NLHCC membership, since the beginning of the 2000s when BSE spread throughout Europe. In particular, Yong-sun Kim was a generally-admitted expert in prion disease research and had the only CJD diagnosis and autopsy centre

[398] Dressel, *BSE*.

in Korea.

Decision to resume US beef import

On 29th November 2005, the MIFAFF held an NLHCC meeting (actually the BSE sub-committee, chaired by MIFAFF Deputy Minister) to discuss whether to start the process to resume beef imports with the US. The government had already formed a tentative conclusion that beef importation from the US would not increase BSE risk in Korea and resuming US beef import was unavoidable. The grounding was that the US had already implemented regulation policies in accordance with the OIE guidelines. Once it was agreed at the NLHCC, the official negotiation process between the two countries would start. To start the negotiation meant that importation of US beef would be resumed at any rate, although the scope and conditions would be established through negotiations between the two countries.

At the meeting, the MIFAFF argued that BSE incidence in the US was very low and the risk was controlled properly in accordance with the OIE guideline. In addition, it was presented that the OIE defined muscle meat from carcasses of animals under 30 months as a safe commodity which could be traded regardless of exporting countries' BSE incidence. According to the press release by MIFAFF, scientists agreed with the government in that BSE-risk in US beef was very low and beef from animals under 30 months was recognised as safe to eat.[399] Nevertheless, they also pointed out that the science of BSE was not perfectly known and SRMs

[399] MIFAFF, "Press Release," December 1, 2005.

were still used for non-ruminant animal feed in the US. The NLHCC meeting on 29th November did not reach an agreement about whether to start the process for resuming the import of US beef. The *Farmers' Newspaper* reported that the head of the Han woo (Korean beef) Association asked scientists to consider beef farmers.[400] According to the report, MIFAFF officials tried to coax beef producers with policy measures to support livestock farmers, but failed.

With regard to the NLHCC meeting on 29th November which ended without conclusion, the Director General of the Livestock Policy Bureau at MIFAFF said, "The government will try to get support from NLHCC members until mid December" and "the economic damage of domestic livestock farmers cannot be an excuse to postpone resuming US beef any longer.[401] Another official stated, "As the safety of US beef was scientifically confirmed, the government would induce the members to agree to resume beef import." He added "Even if the NLHCC meeting will not be able to bring a conclusion, the authority to make the decision whether to resume beef import is on the minister."[402] This meant that the government would press ahead with the resumption process even without the agreement of the NLHCC.

The 2nd NLHCC meeting (chaired by MIFAFF Deputy Minister) was held on 14th December 2005. Scientists generally agreed that there was no concern about BSE risk in US beef as long as appropriate restrictions were imposed. However, there were claims that as the surveillance system in the US was not sufficient enough to

[400] "Heavy Burden, Decision of US Beef Safety," *Farmers' Newspaper*, December 7, 2005.

[401] Hyun-Chul Park, cited in "NLHCC Deferred Decision About Resuming US Beef," *Korean Farmers and Fishermen Newspaper*, December 1, 2005.

[402] Anonymous official of the Ministry of Agriculture, cited in "US Beef Will Be Imported without Bone… on the 14th NLHCC," *Busan Daily*, December 13, 2005.

guarantee the beef safety. The producers' and consumers' representatives requested that the government not start negotiation with the US, arguing that the Korean consumers still did not trust US beef. NLHCC members again failed to reach an agreement this time. However, an MIFAFF official said that there was no justification to postpone resuming US beef as long as scientists agreed about the safety of US beef and the final decision authority about whether to start the negotiation belonged to the MIFAFF Minister.[403] Finally, the MIFAFF announced the start of beef negotiation with the US.

5.2.3 Import Health Requirements for US beef (2006)

Disputes over the import sanitary requirements for US beef

In January 2006 the Korean government agreed to resume import of US beef which had been banned since 2003, thus leading to the establishment of the 'Import Health Requirements for US Beef and Beef products' (hereafter 'beef import requirements 2006') in June 2006. The summary of the requirements was:

> 1) Korea imports only deboned skeletal muscle meat from carcasses under 30 months. (SRM, diaphragm, trimmings, tongue, cheek meat, ground meat, mechanically recovered / separated meat and products from advanced meat recovery, offal, and processed meat products cannot be imported.);
>
> 2) SRMs (Specified Risk Materials) are brain, eye, spinal cord, skull, vertebral column, tonsil, distal ileum and protein products produced from these.;

[403] "US Beef Resumption Is Practically Confirmed," *Kookmin Daily*, December 14, 2005.

3) The Korean government has the right to impose a unilateral ban on US beef in case that this requirement was not observed by the US, BSE-risk in the US was judged to be exacerbated, or BSE occurred in cattle born after the feed ban in April 1998.

The MIFAFF minister explained that deboned skeletal muscle meat from animals younger than 30 months was safe, and the BSE surveillance program and animal feed policy in the US satisfied international requirements.[404] In 2005, the OIE defined deboned skeletal muscle meat from animals younger than 30 months when slaughtered as a safe commodity which could be traded regardless of beef exporting countries' BSE risk statuses.

Civil activists (Sang-pyo Park of the 'Veterinarians' Association for Public Health' and Seok-kyun Woo of the 'Korean Federation of Medical Groups for Health Rights') raised opposition to the government's decision to resume US beef import.[405] While they held the positions of veterinary surgeon and medical doctor respectively, they were not trained scientists. They argued that the BSE pathogen was discovered even in animals under 30 months and skeletal muscle meat was not perfectly safe to eat. As for the evidence, they referred to the experiments which detected abnormal prions in muscle tissue of sCJD patients and which detected scrapie agent in skeletal muscles of scrapie-infected mice (The latter study was carried out by the research

[404] MIFAFF, "Press Release," October 29, 2006.

[405] 'Korean Federation of Medical Groups for Health Rights' was established in 2001 as an alliance of five progressive civil organizations in the field of health and medicine (pharmacists, dentists, physicians, physicians of Korean medicine, and labor health) for democracy in health and medical problems.

'Veterinarians' Association for Public Health' was established in 2005 in order to ban use of antibiotics for animals without veterinarian's prescription.

The two organizations are politicized organizations not organizations for professional representation, and assumed a critical attitude to the government.

group of Stanley Prusiner who won the Nobel prize with his prion theory).[406] In addition, they claimed that as the animal feed ban in the US was not sufficient to prevent cross contamination in poultry and pigs which had eaten cattle-originating animals, protein feed was used for cattle feed again, and only less than 1% of slaughtered cattle were inspected in the US.[407] They argued that violations of BSE regulation in farmhouses and abattoirs were frequent in the US, quoting US civil organisations' reports.[408]

The MIFAFF refuted the claims of civil organisations. With regard to the activists' claim of the risk of muscle meat, the ministry said that the detection of the BSE pathogen in muscle tissue had taken place in an experimental condition and that the BSE pathogen was never detected in meat for human consumption, referring to the European Commission (EC) Scientific Steering Committee.[409] EC considered the risk of exposure to BSE infectivity via muscle tissue negligible, given the limited conditions of experiments (such as use of transgenic mice or intracerebral infection which is much more efficient than oral consumption route), the different species barrier, and risk reduction measures which were in place.[410] The MIFAFF stated that

[406] Markus Glatzel et al., "Extraneural Pathologic Prion Protein in Sporadic Creutzfeldt–Jakob Disease", *New England Journal of Medicine* 349, 19 (2003): 1812–1820.; Patrick J. Bosque et al., "Prions in Skeletal Muscle," *Proceedings of the National Academy of Sciences* 99, no. 6 (March 19, 2002): 3812–3817.

[407] Sang-pyo (Policy director at the Veterinarians' Association for Public Health) Park, "The Safety of US Beef – from a Veterinarian's Viewpoint" (at the conference organized by Ki-gab Kang (assemblyman) in National Assembly, April 28, 2006). (my translation and summary)

[408] The reports of US civil organizations which were quoted by the Korean civil activists were: Michael Hansen,"Statement of Consumers Union on USDA OIG Audit Report, Bovine Spongiform Encephalopathy Surveillance Program", 2.2, 2006.; Public Citizen, "BSE Noncompliance Record Analysis", 2005.

[409] Chang-sub Kim (Head of the Animal Disease Control Division at the MIFAFF), "Public Health Concern Is the First in Resuming US Beef" (contribution to Korea policy portal, September 18, 2006).

[410] European Commission Health & Consumer Protection Directorate-General, "Prions in Muscle

BSE cases in cattle under 30 months were 'atypical' BSE cases which are considered to be caused by different routes from the traditional BSE which was transmitted by contaminated animal feed, and that the infectivity to humans of atypical BSE has not been confirmed.[411] (Regarding atypical BSE, see Chapter 3.2)

With respect to activists' claim about the animal feed policy in the US, the MIFAFF said that there was no case of BSE infection from feeding non-ruminant animal protein to cattle and almost 99% of animal feed factories in the US separated establishments which dealt with only one animal protein feed material (ruminant or non-ruminant) to prevent cross contamination. Regarding the low inspection rate which was less than 1%, the MIFAFF said that it was more effective to inspect higher-risk animals (such as non-ambulatory animals or animals with clinical symptoms) than a large number of normal ones in order to detect BSE cases, and that the US had already satisfied conditions specified by the OIE. Most of all, the MIFAFF argued that as Korea had the right to ban importing US beef as a last resort, the beef safety would be guaranteed.[412]

> …, for the greater safety, the new beef requirements invests the Korean government with the right to stop importing US beef in case that new BSE cases occur from animals born after 1998 animal feed regulation policy, BSE risk within the US is exacerbated (such as violation of the animal feed ban, failure in removing SRMs in slaughterhouses), or additional BSE risk is identified with the development of new technology (e.g. international recognition of BSE infectivity in muscle meat).[413]

Statement Adopted by the Scientific Steering Committee at Its Meeting of 4-5 April 2002," n.d.

[411] Chang-sub Kim. "Public health concern is the first in resuming US beef"

[412] MIFAFF, "The Government's Opinion about the Resumption of US Beef, Conference Documents Presented by THE MIFAFF at the Conference Organized by Ki-Gab Kang (assemblyman) in National Assembly on 28 April 2006," n.d. (my translation and summary)

[413] Ibid.

Safety of muscle meat

The main point of the 'Import Health Requirements for US Beef and Beef products' (2006) was to allow deboned skeletal muscle meat from animals younger than 30 months to be imported. Indeed, this was based on the OIE's decision in 2005 to designate boneless skeletal muscle meat from animals under 30 months of age as a safe commodity for trade. The Korean government dismissed claims from civil organisations that muscle meat from animals under 30 months might not be safe from BSE as unscientific.[414] However, the position of the Korean government regarding the safety of skeletal muscle meat at the OIE meeting in July 2005 did not differ considerably from that of the Korean civil activists in 2006.

At the 73rd General Session of the OIE meeting (22-27 May 2005, Paris), countries discussed the proposal of the Terrestrial Code Commission of the OIE to place deboned skeletal muscle meat in the list of safe commodities which could be traded without any restriction regardless of the BSE status of the exporting country. Following this, the safe commodities by the OIE *Terrestrial Code* were: 1) milk and milk products; 2) semen and *in vivo* derived cattle embryos; 3) protein-free tallow and derivatives made from this tallow; 4) dicalcium phosphate; 5) hides and skins; and 6) gelatin and collagen prepared exclusively from hides and skins.[415] Fresh meat (bone-in or deboned) could be traded with increasing restrictions according to the five risk-levels of exporting country status (free, provisionally free, minimal risk,

[414] Hyun-Chul Park (Director-General of the Livestock Policy Bureau at the MIFAFF), "[counterargument against Sang-Pyo Park's Contribution on 25 August 2006] Mad Cow Disease, Concerns about the Deliberately-Made Risk" (Kyunghyang Newspaper, September 3, 2006).; Moon-il Kang (Director of NVRQS), "Exaggerated News Reports Encourage Distrust to Imported Beef" (contribution to Korea policy portal, November 7, 2006).

[415] OIE, *International Animal Health Code (Eleventh Edition)*, 2002. Article 2.3.13.8

moderate risk and high risk).[416] For example, in order for a 'BSE provisionally free' country to export fresh meat, it was required to present evidence that an ante-mortem inspection of "all cattle from which the meat or meat products destined for export originate" had been carried out.[417] On the contrary, a 'BSE high risk' country was required to present much more evidence to export fresh meat such as non-contamination by SRMs, operation of identification and trace-back system, a ban on ruminant-derived MBM for ruminant and its effective enforcement, ante-mortem inspection for all bovines, and so on.[418]

According to the report written by the MIFAFF after the OIE 73rd General Session, the delegates of Korea, Taiwan, and Japan had a previous meeting before the General Session and agreed to oppose the proposal of the Terrestrial Code Commission which included boneless skeletal muscle meat in the list of safe commodities. They argued that BSE-infectivity might exist in muscle tissue, referring to research results which showed that prions existed in the muscle of experimentally infected hamsters.[419] Following this, the delegate of the US opposed the claims of Korea, Taiwan, and Japan, arguing that it was too excessively cautious to refer to the results of research using genetically modified animals for practical regulation.[420] While Japan, Taiwan, Korea, and Singapore expressed concerns about the certainty of the safety of muscle meat, the US, Canada, New Zealand, and Luxemburg (on behalf of

[416] The five categories were changed into the current three categories (Undetermined, Controlled, and Negligible risk) in 2005.

[417] OIE, *International Animal Health Code (Eleventh Edition)*., Article 2.3.13.14

[418] To know the full conditions for BSE high risk country to export fresh meat, see Ibid., Article 2.3.13.17

[419] OIE, *Final Report on the 73rd General Session* (Paris, May 22, 2005)., Article 347

[420] Ibid.

the EU) supported the proposal to designate muscle meat as a safe commodity for trade. Finally, a revised proposal was made by adding the condition "*from cattle 30 months of age or less*", and the proposal was passed despite objections from 8 members, including one from Korea.[421] 'Deboned skeletal muscle meat from animals under 30 months of age became a safe commodity which could be traded regardless of the BSE risk status of exporting countries.

However, in the domestic disputes over the 'Import Health Requirements for US Beef and Beef products' (2006), the Korean government discounted civil organisations' claims that muscle meat might not be safe from BSE risk, despite the government itself havingraised similar claims at the OIE meeting in 2005. Presented again later, the Korean government raised the uncertainty of BSE knowledge in the international situation such as beef negotiation with the US or the OIE meetings. It may be no coincidence that Korea, Japan, and Taiwan, which opposed the proposal to designate muscle meat as a safe commodity at the OIE meeting, were "former top markets in Asia" of US beef and were pressured by the US to resume US beef import which had been at a standstill since the BSE case in 2003.[422] The Korean government dismissed the uncertainty raised by the civil activists on the basis that their claims were unscientific. The dilemma was caused by the situation that the

[421] The full condition added was: "*from cattle 30 months of age or less* which were not subjected to a stunning process, prior to slaughter, with a device injecting compressed air or gas into the cranial cavity, or to a pithing process, and which were subject to ante- and post-mortem inspection and were not suspect or confirmed BSE cases; and which has been prepared in a manner to avoid contamination with tissues listed in Article 13 [of the Terrestrial Animal Health Code]" OIE, *Final Report on the 73rd General Session*, p.172

c.f. 'pith' means "pierce or sever the spinal cord of (an animal) so as to kill or immobilize it." (The New Oxford American Dictionary)

[422] USTR, "Bush Administration Submits Annual Trade Report to Congress," March 2008, http://www.ustr.gov/bush-administration-submits-annual-trade-report-congress.

government should protect the domestic beef market against the US, and at the same time, should reassure the consumers about the safety of beef in the market.

The dual attitude to boning expressed by the government was another example. The Korean government was criticised by dissenters for alledgedly permitting US beef import with less favourable conditions than those of Japan which had made an agreement with the US to import only beef from cattle under the age of 20 months. Indeed, it was said that the Korean government had wanted to allow boneless beef from animals under 20 months like Japan, but failed to achieve it.[423] However, the government claimed that the Korean condition focussed more on safety than that of Japan:

> Japan agreed to import bone-in beef from cattle under 20 months, but Korea focussed on the removal of bone rather than the age of slaughtered animals, considering safety.
>
> Japan allowed importation of bone and intestines, but Korea still bans them. It is for consumers' safety.

In addition, allowing only deboned muscle meat had economic implications for the Korean government. Although MIFAFF put safety concerns at the forefront of banning bone, the economic implications could not be neglected. The government said:

> Considering that half of US beef importation was short ribs (including bone) before the beef ban in 2003, the decision to ban import of bone will make a positive effect on stabilizing profit of domestic livestock

[423] Mark E. Manyin, *South Korea-U.S. Economic Relations: Cooperation, Friction, and Prospects for a Free Trade Agreement (FTA) Updated February 9, 2006*, CRS Report for Congress, n.d.

farmers.[424]

Short ribs, one of the favourite cuts for Korean people, consisted of about 60% of beef imports from the US in 2003 (132,568 tons out of 199,443 tons). Dong-suk Min, Deputy Minister of the MIFAFF and the head negotiator of the beef deal with the US in 2008, said that although bone was presented as a safety issue, the actual goal of the ban on bone-in beef was to decrease the importation of short ribs.[425]

> It was actual tasks to protect domestic livestock farmers from US beef importation. It was because US beef was more competitive in price than Korean beef even with 40% of customs. Therefore, the Korean government limited importation of US beef by controlling beef sanitary requirements. For example, the ban on bone-in beef was to ban on short ribs.

In fact, bone is generally known not to have BSE infectivity. According to the WHO, there was a single case where infectivity was detected in the bone marrow of experimentally infected cattle, but the finding was never duplicated.[426] Although skulls and vertebral columns from old cattle are defined as Specified Risk Materials (SRMs), as seen in Chapter 4.3.3, this was because of the proximity to the central nervous system (brain and spinal cord), not because of the inherent infectivity. However, bone became recognised as risky material while the government

[424] MIFAFF, "Press Release," January 17, 2006.

[425] Dong-suk Min, *To Live as Public Servant in Korea* (Nanam, 2010). pp. 233-234, my translation

He was a chief negotiator of the 2008 beef negotiation with the US, which caused the massive public protest. During the controversy, he was seriously blamed as betrayer who sold nation's health to the US. He resigned and sued producers of *PD Notebook* charging defamation. He wrote this book in order to justify the beef condition he involved and to explain he was unfairly treated by *PD notebook*.

[426] World Health Organization, *WHO Guidelines on Tissue Infectivity Distribution in Transmissible Spongiform Encephalopathies*, 2006.

legitimated its regulations on US beef, and the risk concern about bone was consolidated through ‘bone fragments conflict’ which will be presented in the next section.

5.3 Policy process to amend the beef import requirements

The last section described the background of the relationship between Korea and the US regarding beef, as well as the process from the total ban on US beef by the Korean government in 2003, to the partial lifting in 2006.

The Korean government, which imposed a ban on US beef in 2003, lifted the ban on boneless muscle meat from cattle under 30 months age in 2006. However, the exportation did not go smoothly, and in the meantime, the beef issue became a deal breaker of the Korea-US Free Trade Agreement, the foremost task of the Korean government for the economic development. The Korean government promoted amending the beef requirements made in 2006 in order to resolve the conflict with the US, and it became the direct cause of serious public protests in 2008. This section will discuss the process by which the beef import sanitary requirements made in 2006 were amended.

5.3.1 Conflicts over *bone fragments* and the Free Trade Agreement (FTA)

Bone fragments in beef boxes

Before the 'Import Health Requirements for US Beef and Beef products' took effect, a third BSE case was confirmed in the US in March 2006. According to the beef import requirements, if the BSE-infected animal had been born after the feed ban introduced in April 1998, beef import could be stopped again, as this could represent evidence that the animal feed ban was not implemented efficiently enough to control BSE risk in the US. The US government announced that the animal was a 10 year-old cow which had been born before 1998, and the Korean government accepted the US government's investigation result. However, there was no evidence to verify the animal's age, except for dentition (examination of teeth).[427] Some civil organisations argued that dentition was never scientifically credible to confirm the BSE-infected animal's age. They criticised the Korean government for enforcing the previously settled position to resume beef import from the US. However, the MIFAFF said dentition was a statistically credible way in which to estimate the age of cattle.

The Korean government declared resumption of US beef imports in September 2006, which had been delayed by the third BSE case. However, the first three

[427] The affected animal was buried before investigation completed and there was no tool to identify the BSE-infected animal's age and origin with no identifying brands or tags. Moreover, the US government failed to trace the animals in the same cattle shed with the third BSE-infected animal. Jim Rogers, USDA; Rae Jones, FDA; and Christy Rhodes, Alabama,, "Statement by USDA Chief Veterinary Officer John Clifford Regarding the Conclusion of the Epidemiological Investigation Into a Bovine Spongiform Encephalopathy (BSE)-Positive Cow Found in Alabama, USDA News Release," May 2, 2006, (http://www.aphis.usda.gov/newsroom/content/2006/05/alepi.shtml).

shipments of US beef (30th October, 23rd November, and 1st December) were rejected, due to the fact that tiny bone fragments were found during the inspection process by the Korean quarantine authority. The Korean National Veterinary Research and Quarantine Service (NVRQS) announced that the bone fragments did not seem to be SRMs, but it was a violation of the beef import requirements which prohibited bone. Out of 1,615 boxes and 22.3 tons of beef, 10 bone fragments were discovered in 6 boxes, with the size of the fragments as small as 1~2cm wide. The beef requirements did not define the detailed conditions of banned items such as permissible size of bone. All beef boxes, not only the boxes which included bone chips, were sent back to the US.

Bone fragments were detected by x-ray detectors which had been newly introduced to inspect US beef. The introduction of X-ray detectors was controversial, because the only way to confirm BSE-infection is to take a brain sample from animals and inspect it, and X-ray detectors cannot detect SRMs such as brain, spinal cord or intestines. Civil activists (Sang-pyo Park and Seok-kyun Woo) argued that inspection processes using an X-ray detector could not guarantee the safety of US beef from BSE risk and that the government was simply pretending to remove BSE risk in order to reassure the public. Even MIFAFF officials were sceptical when bone detection using X-ray detectors was first suggested by some assembly members. MIFAFF officials said that no countries used X-ray detectors to detect bone and it was physically impossible to investigate whole shipments with X-ray detectors.[428] The background of the decision to introduce X-ray detectors, despite the initial

[428] Tthe Committee for Agriculture, Marine, Fisheries and Forestry at Korean National Assembly, *Appendix of the Stenographic Record*, October 13, 2006.

opposition, is not known, although it seems that the MIFAFF, which was pressured into reinforcing the quarantine process for US beef from the National Assembly made the decision to respond to the pressure.[429]

Due to the friction over bone fragments, no beef was imported from the US in 2006, and this strict attitude of the Korean quarantine authority against bone fragments faced a backlash from the US. The US government claimed that the Korean government imposed an 'unscientific and non-tolerable' ban on US beef and that this would have a negative effect on the Free Trade Agreement (FTA) which was in the process of negotiation between the two countries. Sanitary requirements for US beef became a more complicated issue after being linked with the FTA, the biggest issue facing the two countries.

Beef and the Free Trade Agreement

The Korean government has promoted Free Trade Agreements (FTAs) with the countries of major export markets since 2003.[430] The FTA is a kind of regional economic integration by reciprocal exclusive trade preference. As trade constitutes more than 70% of Korea's GDP, the Korean government recognised that the FTA was crucial to maintain the competitiveness in exportation and to secure the foreign market. In particular, the FTA with the US was regarded as the most important one.

[429] The Korean government, *Report of the Requirement for Correction from the 2006 Parliamentary Inspection of the Government (for MIFAFF)*, February 2007.

[430] By 2008, the Korean government made FTA with Chile, Singapore, EFTA (Iceland, Lichtenstein, Norway, and Switzerland), and ASEAN. ("Http://www.fta.go.kr," n.d.

The FTA with the US, the biggest market of Korea, was expected to be helpful in advancing the whole national system of Korea and in strengthening the economic fundamentals. However, the FTA with the US, the world's largest agriculture products exporting country, was a controversial issue in domestic politics, and was criticised for sacrificing agriculture for a few manufacture industries such as car and electronics. Fears about economic subordination to the US existed in Korea.

Due to the conflict with the US over bone fragments, the MIFAFF was under attack from other ministries for interfering with the FTA negotiation. Deputy Prime Minister for Economy O-kyu Kwon blamed the inflexible manner with which the MIFAFF dealt with bone fragments in beef boxes from the US. The MOFE (Ministry of Finance and Economy) Assistant Minister for International Business, Sung-jin Kim said: "Public health is important, but rational and cool judgment is needed to deal with US beef issue" and "it is not appropriate to use *policy measures which cannot be accepted internationally* by reason of public health."[431] He also said, "Though we [Korea] need to protect our livestock farmers, our beef price is 5-10 times more expensive than in other countries" and "48 million Korean people have right to consume beef with a reasonable price."[432] Jong-hoon Kim, the Minister for Trade, emphasised that it was wrong to create obstacles like quarantine and to refuse the demands of friends [US].[433] Economic and trade officials felt that the MIFAFF had a narrow-minded view of nationalism to protect domestic beef farmers.

[431] cited in "[Appraise Korea-US FTA 171] MOFE Argues 'Returning US Beef with Bone Chips Is Not Understandable,'" *Pressian*, December 22, 2006. (my translation)

[432] cited in "Ministry of Finance and Economy, Beef Quarantine Requirement Is Irrational.," *Farmer's Newspaper*, December 27, 2006. (my translation)

[433] "[Appraise Korea-US FTA 224] Is Minister Kim on US Side? 'Obstacle to Beef Should Be Removed,'" *Pressian*, February 7, 2007.

> We, the country whose 70% of GDP depends on trade, cannot live closing door to protect ourselves. …. We *should follow global standards*.[434]

Hung-soo Park, the MIFAFF Minister, expressed his dissatisfaction that the economic officials viewed beef as trade issue rather than a food safety issue. Beef is the second largest agricultural product (30%) next to rice in terms of production volume in Korea, but the contribution of the whole agricultural production to Korean GDP was only 2.9% in 2005.[435] Differences in views regarding the domestic beef industry between the MIFAFF and the other economy-related ministries were evident. The MIFAFF was criticised for not considering national interests but only following the public emotion.[436] *Chosun Daily* said:

> Korea is in the black annually about 10 billion dollars in trade with the US. The amount of export of cars is more than 8 billion dollars and Korea sells more than 6 billion dollars of mobile phones. On the contrary, import of US beef was 850 million in 2003 before we [Korea] banned it. The beef issue is important, but we [Korea] must not lose sight of the much bigger and more important issue by being obstinate against global standards. (10 February 2007, opinion, my translation)

Quarantine and sanitary conditions on beef were not included on the agenda of the Korea-US FTA, although the US government openly pressured the Korean

[434] Myung-hwan Yu (MOFAT minister), statement, *stenographic report of the Committee for Unification and Foreign Affairs and Trade for the inquiry of the Korea – US FTA* (Korean National Assembly, April 29, 2008)., p.14 (my translation and emphasis)

[435] Jeong-Bin Im and Hae-Ryeon Chung, "Agricultural Policy," in *Korean Agricultural Economics Society, Korean Agricultural Economics 50 Years' Retrospect and Prospect*, ed. Korean Agricultural Economics Society (Farmers Newspaper, 2009).

[436] Min, *To Live as Public Servant in Korea*, pp. 80-82 and p. 91

government to ease the beef ban for the FTA.[437] According to the Korean government's report leaked to the press on 12th September 2005, opening the Korean beef market was one of the conditions which the US requested should be settled beforehand to conclude the FTA. Pressures from the US government became intensified as FTA negotiation between the two countries progressed. Officially, the Korean government denied the co-relation of beef import conditions and the FTA, and argued that beef import would be treated entirely based on scientific and technical consideration for safety.

As the US demanded access to the Korean beef market in return for the FTA, the safety of US beef became the target of Anti-FTA groups in Korea aiming to oppose the FTA itself and their opposition was always connected with Mad Cow Disease. 'US beef with full BSE risk' was cast by the Anti-FTA group as a symbol of industrialised agriculture which was driven by commercial force of the globalised livestock industry and which threatened the safety of the Korean nation's health. Compared with other abstract agenda related to the FTA, beef with BSE risk was a practical and concrete issue which could attract public attention.[438] Civil organisations which opposed the FTA with the US argued against the trade in US beef as well, and equated the FTA and importation of US beef with the influx of BSE into Korea.[439] Sang-pyo Park and Seok-kyun Woo, core members of the 'Veterinarians' Solidarity for Public Health' and the 'Korean Federation of Medical

[437] Instead, tariff on US beef was discussed during the FTA negotiation. Tariff on US beef was finally agreed to decline to zero from the 40% with 2.7% annual reductions for 15 years.

[438] Interview with a journalist

[439] Suk-Kyun Woo, "Who Lies?," *Pressian*, March 27, 2007.; "Any Problems in Resuming US Beef?," *Yeonhab News*, January 13, 2006.; "Mad Cow Will Rush in," brochure of National Anti-FTA Movement, 2006.

Groups for Health Rights', who had raised claims about BSE risk in US beef since 2006 (mentioned in the last section), also belonged to the anti-FTA group.[440]

BSE risk in Korean beef was rarely spoken of. The activists did not want to make public the Korean beef safety issue, despite having noted that the regulatory measures on Korean beef were insufficient to reach the safety level they requested of US beef. *Chosun Daily,* a conservative newspaper, said: "motivation of the group which is claiming BSE risk in US beef is suspicious whether it is originated from true concern about public health."[441] Scientists holding positions as MIFAFF advisory members (Professor Yong-sun Kim at Hallym University, and Su-hwan Ahn at Kyungpook University) stated that exaggerating the level of BSE risk in US beef could also lead to a huge reduction in consumption of Korean beef as a result of deepening public anxiety regarding the safety of all beef products.[442]

5.3.2 The 'Controlled BSE risk' state, US

In order to resolve conflicts over bone fragments, Korea and the US governments started a discussion to amend the 'Import Health Requirements for US Beef and Beef products' agreed in 2006. At the meetings in February and March 2007, the US government requested that the Korean government amend the beef import

[440] Kim, "Construction of Oppositional Knowledge."

[441] "US Beef, Imported (first Time) in Three and Half Years (after the Ban in 2003)," *Chosun Daily*, April 24, 2007.

[442] Discussion at public hearing organized by the "Assembly members' research group for the revitalization of Agriculture" and the "Committee of Livestock Industry Organizations" on 28 April 2006 cited in "Public Hearing - Is Resumption of US Beef Still Good?," *The Livestock Economic News*, May 4, 2006.

requirements so that any bone chips would no longer hinder beef importation from the US. Furthermore, the US government argued that the US would be able to export 'beef in all cuts and all ages' immediately after the OIE classified the US as a 'Controlled BSE risk' state in upcoming May.[443]

The reason that the US stuck to the 'import of beef in all cuts and all ages' was that beef products produced in a Controlled BSE risk state, according to the OIE guideline, could be traded, with the exceptions of tonsils and distal ilea from cattle of any age and brains, eyes, spinal cords, skulls and vertebral columns from cattle over 30 months.[444] In fact, to the US, the recovered beef market following the resumption of deboned skeletal muscle meat in 2006 was just 50%, compared with beef export of the US to Korea in 2003. This was due to the fact that Korea was "a preferred market for certain cuts, particularly short ribs and many offal products."[445] The 'Controlled BSE risk' status opened up a way for the US beef industry to export short ribs and offal to Korea, which would bring more profit.

The requests of the US to import beef of all cuts and all ages were not accepted by the MIFAFF. Indeed, the MIFAFF simply stated that it would reject only beef boxes where bone chips were found, instead of returning whole shipments including bone chips. However, it could not satisfy the US. On 8th March 2007, at the briefing for the 8th KORUS FTA negotiation, Wendy Cutler, chief negotiator of the US on KORUS FTA, denounced the Korean government's ban on bone as scientifically un-

[443] MIFAFF, "Press Release," March 8, 2007.

The conditions for 'Controlled BSE-risk' state was shown in Chapter 4.

[444] OIE, *Terrestrial Animal Health Code 2010*., Article 11.5.14

[445] U.S. International Trade Commission, *Global Beef Trade: Effects of Animal Health, Sanitary, Food Safety, and Other Measures on U.S. Beef Exports*.

grounded and commercially nonsensical.[446] The FTA was in crisis and the deadline of negotiation set by both governments for the FTA, 31st March 2007, was approaching.[447]

However, with emergent talk via telephone between both countries' presidents on 29th March, the Korea-US FTA came, rather dramatically, to a settlement on 2nd April 2007. In the national address announcing the agreement of KOREA-US FTA, Korean President Roh stated that he had promised President Bush to 'open Korean beef market at reasonable level with respecting the recommendation of OIE.' A Korean newspaper stated that due to the president's statement, the MIFAFF would have difficulty in taking a hard-line attitude against US beef as it had done before.[448] On 5th April, Deputy US Trade Representative Karan Bhatia stressed that the US Congress would not ratify the agreement, unless the Korean government fully opened its beef market, mentioning the promise of President Roh. The US seemed to regard the promise as complete acceptance of the OIE standard.[449]

With the assessment of the BSE risk status of the US, there was suspicion that the US pressured the OIE to create an advantageous situation for the US. Before introducing the current three-category system ('Undetermined risk', 'Controlled risk', and 'Negligible risk') in 2005, the OIE had five categories with which to assess BSE

[446] Korean press meeting in Montana, US on December 4, 2007 cited in *Pressian* December 5, 2007

[447] The deadline of concluding FTA which was set by the both governments was March 31 2007. It was because Trade Promotion Authority (TPA) which had been given to US president by the *US 2002 Trade Act* was going to be expired on June 30; and the US Congress required 90 days to review before voting. As agreements negotiated under the TPA was not expected to be amended at the Congress, both governments hoped to conclude the FTA negotiation before the TPA was expired.

[448] "President's Promise Embarrassed MIFAFF," *Yeonhap News*, April 3, 2007.

[449] Jong-hoon Kim, statement at Special committee for investigation of beef negotiations with US, *Stenographic Report of the Special Committee for Investigation of Beef Negotiations with US*.National Assembly, 8 September 2008

risk in the member countries ('BSE-free' state, 'BSE provisionally free' state, 'minimal risk' state, 'moderate risk' state, and 'high risk' state).[450] The five categories depended on BSE incidence in a country as well as enforcement of risk controlling measures. However, the surveillance system is considered more significant than BSE incidence in the new three-category system. It seems that the condition of BSE which had seemed under control and the considerations of international trade had influenced the change of the category system.[451] As this

[450] The definition of the five categories are as following (OIE, *International Animal Health Code* 2002, Chapter 2.3.13.3~7):

> 1) 'BSE-free' state: no *case* of BSE; or all *cases* of BSE have been clearly demonstrated to originate directly from the importation of live cattle; or the last indigenous case of BSE was reported more than 7 years ago; and the OIE criteria have been complied with at least 7 years and/or MBM has been banned for ruminants at least 8 years.
>
> 2) 'BSE provisionally free' state: 'no *case* of BSE' or 'all cases of BSE have been clearly demonstrated to originate directly from the importation of live cattle'; and the OIE criteria have not been complied with for 7 years.
>
> 3) 'minimal risk' state: 'the last indigenous *case* of BSE more than 7 years ago'; and less than 7 years' compliance of the OIE's criteria and less than 8 years' MBM ban;
>
> OR the last indigenous case of BSE less than 7 years ago and less than one case per million BSE incidence rate during each of the last four consecutive 12-month periods within the cattle population over 24 months of age in the country or zone, and with at least 8 years' MBM ban and at least 7 years' compliance of the OIE criteria.
>
> 4) 'moderate risk' state: the BSE incidence rate, calculated over the past 12 months, has been a) greater than, or equal to, one indigenous case per million and less than, or equal to, one hundred cases per million within the cattle population over 24 months of age in the country or zone; or b) less than one indigenous case per million for less than four consecutive 12-month periods.
>
> 5) 'high risk' state: the BSE incidence rate, calculated over the past 12 months, has been a) greater than one hundred cases per million within the cattle population over 24 months of age in the country or zone; or b) greater than, or equal to, one case per million and less than, or equal to, one hundred cases per million within the cattle population over 24 months of age in the country or zone, but at least one of the other requirements to be considered as presenting a moderate BSE risk is not complied with.

[451] For the background of the change in the categorizing system, the OIE explained as following:

> … It became clear, however, that clinical incidence alone was not a sufficiently robust indicator for the categorisation of countries affected by BSE. Additionally, *the recognition of a single case frequently precipitated the application of disproportionate trade barriers, significantly beyond those recommended by the OIE. This was a major disincentive to the establishment of surveillance programmes and the reporting of cases.*
>
> *… Furthermore, evidence from affected countries suggested that, despite the presence of BSE, risk to consumers and to animal health could be controlled with effective, and fully enforced, measures.* It was therefore no longer necessary to create arbitrary divisions

change provided favourable conditions to the US where BSE cases had been continuously discovered since 2003, some US civil organisations raised suspicion that the US exercised its influence over the change and the OIE's assessment of its BSE risk status.[452] Likewise, the Korean civil organisations, which held demonstrations in front of the OIE headquarter while the 75th general session was in progress, also argued that the US pressured the OIE to classify the US as a 'Controlled BSE risk' state. They claimed that it would be the evidence which indicated that the OIE existed for profit of the multinational livestock industry not for public health, if OIE would make decisions as the US wanted.[453]

The US was identified as a 'Controlled BSE risk' state at the 75th OIE general session in May 2007. Following this, both Korea and Japan opposed the preliminary assessment regarding the risk status of the US, arguing that the cattle traceability system was incomplete and the animal feed policy could not prevent cross-contamination. They pointed out that the US government failed to trace the animals in the same cattle shed with the third BSE-infected animal, which were assumed to be at a high risk of being infected with BSE, and the animal feed policy allowed

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between affected countries based upon case numbers. After all, case numbers reflected infections acquired four to eight years earlier rather than risk in the country at the time of detection. ...

D Matthews and A Adkin, "Bovine Spongiform Encephalopathy: Is It Time to Relax BSE-Related Measures in the Context of International Trade?," *Revue Scientifique et Technique (International Office of Epizootics)* 30, no. 1 (April 2011): 107–117. p.109

[452] For example, a representative of US consumers' organization 'Food & Water Watch' said at an interview with a Korean radio program that the 'Controlled Risk' status of the US was the outcome of powerful lobby by the US government and the livestock industry. "Sisa Jockey: Today and Tomorrow" (CBS, March 16, 2007).

[453] They were 'Veterinarian's Association for Public Health', 'Livestock Association', 'Dairy Industry Association', and 'Anti-KORUS FTA Association.' "Slogan in Paris…"America, Don't Threaten Us!," *Livestock Newspaper*, May 22, 2007.

ruminant protein for pigs and poultry feed.[454] However, although flaws in the US animal feed policy and the surveillance system were admitted by the OIE, the resolution to define the US as a 'Controlled BSE risk' state was passed by a vote of member states.[455]

As soon as the OIE resolution was made, the US argued that as the OIE recognised the safety of US beef, Korea should import US beef in accordance with the OIE guidelines on the 'Controlled BSE risk state.' The United States Department of Agriculture (USDA) top official commented on this matter, stating that this "risk classification recognizes that OIE-recommended, science-based measures are in place to manage effectively any possible risk of BSE in the [US] cattle population" and "provides strong support that the US regulatory controls are effective and that US cattle and products from cattle of all ages can be safely traded in accordance with international guidelines, due to our interlocking safeguards."[456] Max Baucus, an American Senator from one of the major cattle production states, said on 23rd May that the Korean government could not refuse US beef with the excuse of public health.[457] The next day, the US ambassador reminded the Korean government of the promise of President Roh one month before.

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[454] According to the EC regulation, "animals which received the same feed as the positive animal in the first year of their life", and EC TSE legislation foresees the killing and culling of the animals. European Commission, "TSE Road Map," 2010., paragraph 2.6.1

[455] For the assessment process to decide BSE-risk status of member countries, see OIE, "In Response to Members' Requests for Information on Bovine Spongiform Encephalopathy (BSE) and Trade," March 2008.

[456] USDA: Animal and Plant Inspection Service, "Statement by Dr. Ron DeHaven Regarding OIE Risk Recommendation," March 9, 2007, cited in Remy Jurenas and Mark E. Manyin, *U.S-South Korea Beef Dispute: Agreement and Status*, CRS Report Congress Research Service, November 25, 2008. p. 2

[457] "The Chairman of the US Senate Committee on Finance, 'Discrimination on US Beef Will Be Taken to WTO,'" *Yeonhab News*, May 24, 2007.

As previously mentioned, the Korean government officially denied the connection between beef import and the FTA. However, it recognised that a wider opening of the beef market than the current level was inescapable. President Roh said: "Once the international organization recognizes no (BSE) risk in US beef, Korea has no choice but to import beef, regardless of the FTA with the US."[458] He also said: "Some progressive politicians, who oppose US beef import, arguing 'BSE-infected beef will be imported with the conclusion of the Korea-US FTA', are exaggerating scare."[459] Nevertheless, the government did not externally admit the safety of US beef. This was because the beef market represented one of the most significant bargaining chips in relations with the US. Moreover, Korean consumers' concern about BSE risk in US beef would be helpful in securing the incomes of domestic beef farmers, when the beef market is fully open.[460] In a joint press release regarding the 'Controlled BSE risk' status of the US which was written by the MIFAFF, the Ministry of Finance and Economics (MOFE), and the Ministry of Foreign Affairs and Trade (MOFAT) on 28th May 2007, the government reassured beef farmers, stating that the government would prepare support measures for beef farming households which would be damaged by the OIE's decision for the US. However, the press release did not mention the public health issue regarding BSE. [461]

[458] Cited in Un-cheon Chung, *Bakbihyang* (Ollim, 2009). p.86

[459] "Annual Briefing on Agriculture and Fisheries Policy for the President," March 20, 2007. cited in Korea Policy portal (Korean government's policy portal website, www.korea.kr)

[460] Hung-Soo Park, "The Korea-US FTA, Beef, and Korean Beef Industry," *International Trade Law* 74 (2007): 3–8.

[461] MIFAFF, the Ministry of Finance and Economics (MOFE), and the Ministry of Foreign Affairs and Trade (MOFAT), "Joint Press Release," May 28, 2007.

5.3.3 Import risk analysis and expert committee

After being identified as a 'Controlled-risk state' by the OIE, the US government officially asked the Korean government to amend the 'Import Health Requirements for US Beef and Beef products' agreed in 2006 in accordance with the new BSE risk status of the US. The 'import risk analysis' was needed to resume importation from the US, which had been partly banned. The objective of 'import risk analysis' is to assess the likelihood of the influx of pathogens and of the spread of diseases by importing meat products or animals.[462] The general steps with regard to allowing meat products from a certain country were:

1) To consider the permissibility of import by preliminary risk assessment based on existing information;

2) To send a questionnaire about livestock sanitation to the country which wants to export animal or meat products (hereafter 'exporting country') for information about animal diseases, condition and control system;

3) To review and assess the possible influx of pathogens through importation of the commodity, based on the answers of the exporting country about the questionnaire;

4) To dispatch experts and investigate livestock sanitary conditions in the exporting country in order to verify the information provided by the exporting country and the preliminary assessment made through the previous steps;

5) To decide whether to permit importation when the safety of the commodity is confirmed (if necessary, NLHCC will be held to consider and make recommendations for the MIFAFF minister);

6) To discuss import sanitary requirements with the exporting country in order to minimise the risk of influx of animal diseases;

[462] MIFAFF Announcement 2008-74, "The Guidelines for Import Risk Analysis on Importation of Designated Goods for Quarantine Inspection," 2008.

7) To establish and to announce import sanitary requirements;

8) To approve meat establishments which are qualified to export; and to confirm certificate forms.[463]

The Korean government pushed ahead with these steps swiftly. The first step was omitted because US beef had already been imported. After the Korean government sent a questionnaire regarding livestock sanitation to the US and received answers, a field investigation was carried out in order to assess the livestock sanitary conditions in the US from 30th June to 4th July 2007. The government said that experts who participated in the field investigation concluded that the likelihood of the influx of BSE to Korea and infection to human by importing US beef was negligible.[464] The investigation team's conclusion was:

> It does not seem that BSE was perfectly eradicated in the US, considering that US had no cattle traceability system and cross-contamination risk remains due to the use of non-ruminant animal protein. However as the US meets the requirements of the 'Controlled BSE risk' requested by OIE, and BSE-infected animals can be detected through surveillance and screening, the risk of human infection and introduction of the disease in Korea is negligible.[465]

The grounding of the risk analysis conclusion by the government was that BSE risk was controlled by animal feed regulations and risk to humans was widely prevented by the removal of SRMs. BSE was not considered as an uncertain disease. A civil scientist at the NVRQS said that as the route of the infection of BSE –

[463] *MIFAFF Announcement 2011-8, The Import Banned Region of Designated Goods for Quarantine Inspection*, 2011.

[464] Min, *To Live as Public Servant in Korea*.

[465] Cited in *Farmers Newspaper*, 1 August 2007

contaminated animal feed - was already known, risk assessment regarding BSE was to check whether risk control measures in exporting countries were properly implemented properly.[466] She also stated that import risk assessment for the meat produced in countries, whose risk-control measures were considered to provide the same or higher levels of safety than the regulatory measures of Korea, generally came to a positive conclusion. As presented by the principle of equivalence in the WTO SPS agreement, the international trade policy regime requests countries to take acceptable risk, not a zero-risk policy, as long as the risk control measures in exporting countries are equivalent to the level of the importing country. As mentioned in the previous chapter, BSE regulation policy in Korea was based on the notion that Korea was a BSE-free country, and the regulatory measures was not strict compared to those of the EU, Japan, or even the US. While the US was identified as a 'Controlled BSE risk state' where the risk control measures have been appropriately implemented, Korea was an 'Undetermined BSE risk' state which did not satisfy the condition to be identified as 'Controlled risk state' by the OIE. Therefore, the conclusion of the risk assessment for US beef by the NVRQS was positive to the US.

The MIFAFF held NLHCC meetings on 25th July and on 31st August, which was attended by producers' and consumers' representatives as well as scientists. The position of the MIFAFF was already set: risk of BSE from US beef was negligible, and therefore, there was no problem when it came to easing the beef import requirements. A matter of primary concern at the NLHCC meetings was whether or

[466] Interview with a civil scientist at the NVRQS

not to allow the importation of bone and bone-in beef, because bone and bone-in beef originating from 'Controlled BSE risk state' countries and were considered safe according to the OIE *Terrestrial animal health code*. However, importation of bone-in beef was a sensitive issue for domestic beef farmers due to short ribs, as mentioned in the previous section. The NLHCC meetings ended with no agreement reached due to strong opposition from producers' representatives. The member organisations of the 'Anti Korea-US FTA association', for example, the 'BSE Watchdog' and the 'Korean Beef Association' demonstrated in front of the government complex, arguing 'Stop deceptive NLHCC which aims to import bone-in beef infected with BSE!' Producers' organizations argued that the government was promoting the importation of bone-in beef, following a previously settled schedule and conclusion.[467]

The MIFAFF did not think that an agreement between the NLHCC members could be reached by convening the committee meeting again. Instead, in order to develop a strategy for the upcoming negotiation with the US, it convened meetings to which only scientists were invited. The MIFAFF often convened advisory meetings rather than the NLHCC, and the scientists who were invited to these meetings included both members of NLHCC and non-members. They sometimes attended bilateral meetings with the US or field inspection in the US. However, their names and the discussions were generally not published (although the two expert meetings referred to below, which took place in 2007, were exceptionally revealed during the

[467] Ho-kyung Nam (Representative of the Korean Beef Producers Association), cited in "NLHCC Ended without Conclusion," *Farmer's Newspaper*, August 31, 2007.

controversy in 2008). MIFAFF officials said that they were 'true experts.'[468]

The participants of the meeting chaired by the Director-General of Livestock Policy Bureau at MIFAFF on 11th September 2007 were: 6 civil servants of the MIFAFF and NVRQS, and Yong-sun Kim (professor at Hallym University, virologist), Hee-jong Woo (professor at Seoul National University, veterinary immunologist), Su-hwan Ahn at Livestock Health Control Association (an executive quango of MIFAFF, a former NVRQS official), and Young-soo Chang (expert in meat processing).[469] The number of experts from the government and the government-related quango was larger than that of scientists from academia. The aim of the meetings was to compile scientific data and information which could be presented as scientific evidence to minimise the importation of US beef at the forthcoming negotiations with the US.

At the meeting on 11th September, it was suggested to investigate research papers about BSE, which were published after the amendment of the *OIE Terrestrial Animal Health Code* in May 2005. The NVRQS took up the task. Indeed, the second meeting, held on 21st September 2005, was only attended by officials of the MIFAFF and NVRQS, as well as Su-hwan Ahn (Livestock Health Control Association, MIFAFF-associated quango). The meeting was held to discuss the findings from the investigation of research papers. The participants expressed concern that it would be difficult to resist the request of the US with the research results achieved from

[468] Chang-sub Kim (Head of Livestock Quarantine Division at MIFAFF), interview with CBS Radio, Sisa Jockey: Today and Tomorrow, 9 September 2006

[469] MIFAFF, "Meeting Report," September 12, 2007.

experimental conditions using genetically modified mice not from real conditions.[470] As previously demonstrated, at the 73rd OIE general session meeting in 2005, where the safety of muscle meat was discussed, many countries including the US opposed the consideration of experimental results obtained by using genetically modified animals as evidence which implicated risk of muscle meat to humans in real conditions. Thus, it did not seem that the studies examined by the NVRQS could be accepted as evidence with which to verify the risk in US beef at the coming negotiation meetings with the US. Nevertheless, the results were included in the list of counterclaims against the US.

On 5th October 2007, the MIFAFF held NLHCC meeting which was attended by consumers' and producers' representatives as well as external scientists. The aim of the meeting was to discuss the strategy for the upcoming negotiation with the US due to be held a week later. Counterclaims prepared against the US by MIFAFF included:

> As it is likely that additional BSE cases will occur in the US, the ban on beef from cattle older than 30 months should be maintained to secure the safety.
>
> The US inspects only high-risk animals, not normal ones to be slaughtered for human consumption. It is not enough to guarantee the safety of beef.
>
> Considering that abnormal prions were discovered in spinal cord of animals under 30 months, the vertebral column of animals under 30 months should be banned (although the OIE does not define it as SRMs).
>
> Considering many violation cases of the current beef requirements by the US beef exporters, it is not likely that distal ileum, SRMs, will be removed perfectly in the US. Therefore, whole intestines should be banned

[470] MIFAFF, "Meeting Report," September 21, 2007.

for Korean consumers' safety.

Considering the risk of bone marrow, preference of Korean people who enjoy broth made with bone and bone marrow, and the genetic vulnerability to vCJD of Korean people, hard bone should be banned.[471]

(MIFAFF document on 5th October 2007, my translation and summary)

The MIFAFF's ideal goal in beef negotiation with the US was to maintain the current level of regulation on beef or, a little more - to allow only for importation of bone in beef from animals under 30 months and to ban seven parts regardless of slaughtered animals' age.[472] Consequently, counterclaims were made with a focus on risk and uncertainty. Most of the counterclaims were those raised by civil organisations and refuted by the MIFAFF as not being scientifically grounded. Although the MIFAFF recognised the limitations of the claims, such as the applicability of the research results achieved from experimental conditions rather than from real conditions, it attempted to mobilise as much evidence as possible to use in negotiation with the US.[473]

Producers' organisations demanded that the government not proceed in beef negotiations with the US, and requested that the government take a strict position against the violations of the US on the beef import requirements. Despite the

[471] As mentioned before, there was a single case that the infectivity was detected in bone marrow of experimentally infected cattle, but the finding was never duplicated and the risk of bone marrow has not been proven. The genetic susceptibility of Korean people to BSE was based on a study of Korean prion research team. The detail will be provided in next chapter.

[472] Seven parts were: tonsils, distal ileum, brain, eyes, spinal cords, skull, and vertebral column. Among them, the OIE designates tonsils and distal ileum in cattle of all ages, and the others in cattle above 30 months as SRMs.

[473] MIFAFF, meeting report, 21 September, 2007

opposition, however, the MIFAFF announced the next step, the negotiation meeting with the US. As was the case in 2005 when making the decision to resume boneless muscle meat from animals younger than 30 months, the conclusion of the NLHCC was not significant to the MIFAFF. Even if NLHCC members did not reach a consensus, the MIFAFF promoted a policy decision which had been already settled within the government. Opposition from the producers' representatives was an ever-present concern, and MIFAFF officials thought that the representatives of the beef industry stuck to only the interests of the domestic beef industry.[474] Although representatives of producers' and consumers' organisations were invited to the NLHCC, they were not considered as experts. A director of the MIFAFF stated that the representatives from producers' and consumers' organisations were invited 'to be informed', not to provide expertise to the government[475] Scientists who attended the NLHCC had the same attitude as the government officials with respect to the representatives of the interest groups. They stated that there was nothing for the representatives of the industry to contribute in terms of expertise.[476]

The situation faced by external scientists was not very different from that of the representatives of producers and consumers. A scientist recollected: "Advisory meetings at MIFAFF were generally not to seek experts' advice, but to explain the government's decisions to experts and to request experts to accept the decisions."[477] He stated that only summary reports organised by MIFAFF and NVRQS officials

[474] Interview with MIFAFF official

[475] Chang-sub Kim (Head of Livestock Quarantine Division at the MIFAFF), interview with CBS Radio, Sisa Jockey: Today and Tomorrow, 9 September 2006

[476] Interviews with scientists

[477] Interview with a dissenting scientist

were provided to scientist members of NLHCC and full documents of risk assessment and on-site inspections of US beef plants were not open as the negotiation was in progress. Therefore, the role of the scientists in the NLHCC was limited to admitting policy and evidence which had been set by bureaucrats. The report of the NLHCC meeting on 5th October 2007 by the MIFAFF said: "Experts 'recognized' that the government's counterclaims were made well …"

5.3.4 Agony of the government on beef over 30 months

While the government prepared for the negotiation with the US, bones continued to be detected in beef boxes. As whole rib and vertebral columns were found in beef boxes from the US in July and August 2007, the quarantine process for all US beef was stopped. Quarantine was resumed on 24th August, but a vertebral column was discovered again on 5th October and quarantine inspections were stopped again. The MIFAFF stated that the suspension would continue until new import conditions (yet to be discussed with the US) were established, and as a result, beef importation from the US was actually stopped.[478] According to the report submitted by the MIFAFF to the National Assembly, there were 47 violation cases of the import requirements, and bone fragments were detected more than 28 times. Repetitive bone detection following the suspension of beef import painted the US as shameless and unreflecting and also prompted distrust in the safety of US beef.[479] In surveys,

[478] National Assembly, "Stenographic Record of the Committee for Agriculture, Marine, and Fisheries Meeting," August 9, 2007.

[479] "Strict Response to US Beef," *Yeonhab News*, 24August 2007.; "Sandwiched MIFAFFF due to

housewives said that the first image which came to mind when they thought of US beef was 'mad cow disease' (35%) while 70% of respondents said that they would not purchase US beef (*Chosun Daily*, 7 January 2007). People who thought that 'US beef is not safe (75.9%)' were far more numerous than people who answered that 'US beef is safe (7.9%)' (*Chosun Daily*, 19 October, 2007). The Korean media criticised that the government, despite the repetitive violations of US exporters and no betterment, accepted the request of the US to amend the beef requirements for the ratification of the FTA by the US Congress.[480] The Korean media requested that the government not submit to the pressure from the US in dealing with public health issues, however important their relationship with the US was.

The US still demanded beef imports of all ages and all cuts in accordance with the 'Controlled BSE risk' status of the US, identified by the OIE guideline, although Korea opposed this. Beef negotiation between Korea and the US on 12th October 2007 ended without success, and it did not seem that both countries' standpoints would be narrowed. To close the gap, the Korean government suggested a two-phased approach. The first phase was to keep the age restriction and import bone-in beef from cattle under 30 months of age. The second phase was to accept the OIE guideline entirely when the US implemented 'the enhanced feed ban.'

The US government had, since 1998, prohibited some mammalian tissues-derived protein for ruminant feed, while the feed policy was criticised, with many saying that

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Bone Chips," *Chosun Daily*, December 6, 2006.

[480] "Mad Cow Disease Horror Story? Looking for Truth about US Beef Import" (SBS (Seoul Broadcasting System), May 19, 2007).; "We Won't Hurry, but Beef Negotiation Started," *Chosun Daily*, October 9, 2007.

it could not remove cross-contamination.[481] In October 2006, the US Food and Drug Administration (FDA) proposed to amend the regulation. The proposal made by the FDA included a ban on brain and spinal cords of cattle at the age or older than 30 months and of all cattle which were unfit for human consumption (regardless of the age) for animal feed.[482] It was also the OIE's recommendation to exclude SRMs from all animal feed to prevent cross-contamination.[483] However, the US rendering industry opposed the proposal, claiming that the current level of regulation was enough to prevent BSE and the benefit from the proposed feed ban would not outweigh the cost.

As the enhanced feed ban proposed by the US FDA had already been delayed for

[481] "Protein derived from mammalian tissues means any protein-containing portion of mammalian animals, excluding: Blood and blood products; gelatin; inspected meat products which have been cooked and offered for human food and further heat processed for feed (such as plate waste and used cellulosic food casings); milk products (milk and milk proteins); and any product whose only mammalian protein consists entirely of porcine or equine protein." US government, "Federal Register: October 6, 2005 (Volume 70, Number 193), Proposed Rules, Page 58569-58601."

[482] ibid.

[483] The OIE report noted:

> "the absence of a feed ban before 1997, the partial implemented feed ban since 1997 (potential cross-contamination, limited number of samples taken to control the implementation of the feed ban), and the absence of a prohibition on the use of specified risk material for animal feed allow the risk of recycling and amplification of the BSE agent within the country.
>
> Despite some reasonable gains in compliance rates of the feed ban, there is still room for improvement. Although the increased inspections will assist in raising the level of compliance further, as long as potentially infective material continues to be rendered and enter the animal feed chain, the potential for cross contamination is still present. The likelihood of such events can be eliminated by excluding specified risk material from the animal feed chain.
>
> It is recommended that the United States carefully consider excluding specified risk material from use in animal feed."

Report of the Meeting of the OIE Scientific Commission for Animal Diseases, Paris, France, February 26-28, 2007 pp27-28 cited in R-CALF USA, "Re: Supplemental Comments by R-CALF USA in Docket No. APHIS-2006-0041: Bovine Spongiform Encephalopathy; Minimal-Risk Regions; Importation of Live Bovines and Products Derived From Bovines; Proposed Rule R-CALF USA Submits These Supplemental Comments to Ensure That the U.S. Department of Agriculture's (USDA's) Animal and Plant Health Inspection Service (APHIS)," August 2, 2007. p.5

more than two years, the US government did not accept the two-phased proposal of the Korean government. The US government said that it was difficult to persuade US congress to ratify the Korea-US FTA with the proposal, because it would take more than one year for the enhanced feed ban to be implemented. The US government argued that Korea should accept the OIE standard entirely and beef from animals over 30 months of age should be allowed when the US 'announced', not 'implemented', the enhanced feed ban.

Beef negotiations with the US were deadlocked, and it was a serious obstacle to the FTA which the two governments were waiting to be ratified by each parliament. The US pressured the Korean government, arguing 'no FTA without beef.' The Korean Ministry of Foreign Affairs and Trade (MOFAT) which took overall responsibility for the FTA, argued that Korea should urge the US to ratify the FTA as soon as possible by backing down from the ban on beef from animals older than 30 months. [484] The dominant view about the safety of US beef within the Korean government was:

> Even if 100% of safety could not be guaranteed, as long as the condition in the US was in accordance with the international standards [the OIE guideline], there would not be a serious problem in the safety of US beef. In addition, as beef imported from the US before 2003 was generally prime level of meat from cattle under 30 months, it was unlikely for beef from old animals to be imported even if beef from cattle older than 30 months was allowed. In terms of the effect on the Korean beef industry, as US beef was actually in competition with Australian or New Zealand beef rather than Korean beef, the impact on the Korean beef market would not be huge.[485]

[484] Jong-hoon Kim (trade minister at Ministry of Foreign Affairs and Trade), statement at the special committee for investigation on beef negotiations with US on 3 September 2008, *Stenographic Report of the Special Committee for Investigation of Beef Negotiations with US*. National Assembly,

[485] Interview; Jung-Hwan Lee, *What Threatens Korean Livestock Industry? (research Series about*

The major concern of the MIFAFF was inconsistency in beef policy and the public sentiment against US beef which had been exacerbated during the conflict with the US over bone detection.[486] Japan still imported only bone-in-beef from cattle under 20 months and Taiwan imported deboned muscle meat from cattle under 30 months. Korea did not need to go faster than its neighbour countries. Opposition from the agriculture sector was obvious. Another concern of the MIFAFF was that it could have no more excuses to justify maintaining its ban on beef from countries which had indigenous BSE incidences within the border such as most European countries and Canada, if it accepted the OIE standards without reservation in importing US beef. With this in mind, the MIFAFF wanted to procrastinate lifting the ban on beef from animals older than 30 months.

The economic ministerial meeting was held on 17 December to manage the conflicting positions among the ministries. The conclusion of the meeting chaired by the Vice Prime Minister for Economy was to allow the import of bone-in beef from animals younger than 30 months as the first step, and then to allow beef from animals older than 30 months with the 'announcement' of the enhanced feed ban by the US government. The decision was to accept the request of the US.

However, this conclusion of the economic ministerial meeting was rejected by President Roh, and beef negotiation with the US was stopped. With regard to the veto of president Roh, his opponents argued that he, who had lost the presidential election in December 2007 and was due to pass his power to Myung-bak Lee in

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Livestock Industry 11) (GS&J Institute, March 6, 2008).

[486] MIFAFF, *Report for the Transition Team of President-Elect Lee*, January 2008.

February 2008, broke the promise he made to President Bush in April 2007 in order to gain political popularity for his party in the upcoming general election in April 2008. However, his secretaries claimed that it was because he had not expected the US Congress to ratify the FTA, even if the Korean government eased the beef import requirements. Following this, the US Democratic Party, which was dissatisfied with the way in which the car industry was treated in the FTA, won the general election, became the major party in the US Congress, and demanded re-negotiation of the KORUS FTA. Moreover, according to them, Roh thought that if the government allowed the beef imports as the US demanded, the ratification of the FTA in the Korean National Assembly would be difficult due to exacerbated public opinion. He was known to have advised the president-elect Myung-bak Lee that the beef market should be exchanged with the ratification of the FTA at the US Congress. Whichever claim is true, it seems clear that the safety concerns over US beef were not central to the government's position.[487]

5.4 Conclusion

This chapter has described the regulatory policy-making process for US beef from 2003 to 2008. The US beef issue was constructed within the complex political and economic interests between Korea and the US.

[487] Duk-soo Han, Prime minister in Roh's administration; Gyeong-ryung Sung, Senior secretary of President Roh, statements at the special committee for investigation on beef negotiations with US on 5 September 2008, *Stenographic Report of the Special Committee for Investigation of Beef Negotiations with US*.; Jae-in Moon, Chief secretary of President Roh, interview with *Oh My News* "President Roh Did Not Break the Promise with Bush," *Oh My News*, July 4, 2010.

Korea, which was the third largest beef market of the US in 2003, imposed a total ban on US beef in 2003 when a BSE infected animal was discovered in the US, and lifted the ban partially by allowing boneless muscle meat from cattle under 30 months of age in 2006. However, the beef import conditions agreed between the two countries in 2006 caused serious conflict over bone fragments in beef, and the Korean government struggled to resolve the conflict with the US.

The regulations on US beef were presented as a sanitary and health issue, although the safety concerns of the Korean government were always mixed with consideration of the domestic beef industry. Moreover, the beef issue took on a more complex nature, as it became interrelated with the FTA under negotiation between the US and Korea. The Korean government used uncertainty and risk concern regarding beef to further its objectives, namely the protection of the domestic beef market and retaining the significant bargaining chip in the FTA deal with the US. Therefore, the attitude of the government regarding the BSE safety of beef was dual. Whereas the government took very precautionary positions on the international stage, with a focus on the uncertain knowledge regarding BSE, the government refuted the same claims as those of itself at the OIE meetings, which were raised by civil organisations, stating that they were not scientifically grounded.

The MIFAFF advisory body, NLHCC, was comprised of scientists, representatives of producers' and consumers' organisations, and MIFAFF and NVRQS officials. Though the scientific members of the NLHCC were leading scientists in their fields, most of them were not active researchers in the TSE field, due, to some extent, to a lack of research base in Korea. In terms of policy-making about beef and BSE risk,

MIFAFF officials did not depend heavily on the advisory members. Even if NLHCC meetings did not result in conclusions, the MIFAFF promoted policy decisions which had already been settled within the government. Representatives of producers' and consumers' organisations for the NLHCC were not considered as experts on a par with scientist members. The NLHCC meeting was viewed by MIFAFF officials as a procedural formality rather than consensus making or a process to seek expertise.

The following chapter, detailing the second part of the Korean BSE controversy, will describe the public protests against the newly agreed beef import requirements in 2008 and the disputes among the government, civil activists, scientists and the public.

6 The Chronology of the BSE controversy in Korea (2): new beef requirements and public protests in 2008

6.1 Introduction

The last chapter provided an insight into the policy-making process adopted by the Korean government until 2008 to address concerns surrounding beef. The 'Import Health Requirements for US beef and Beef products' was newly settled between Korea and the US on 18th April 2008. The new requirements for US beef were relaxed compared to the previous beef import requirements made in 2006, and it leading to serious public controversy over the potential risk of the BSE epidemic in Korea from the import of beef. Conflicting claims regarding BSE and beef safety were raised by the government as well as government opponents, while 'scientific truth' was represented as a solution to the controversy.

Thep present chapter, detailing the second phase of the Korean BSE controversy, will focus on the public protest against the new beef requirements agreed in April 2008. In the first section, I will show how the public protests against US beef were formed. In the second section, I will provide a description of disputes over the new beef import sanitary requirements, whilst in the third section, I will discuss the government's response to the protests and the policy shift taken to pacify the public.

6.2 New beef requirements and public protests

In this section, I will show how the public protests were formed and how the Korean public made sense of the threats from US beef. Public concern sparked by a TV program led to massive public protests and a series of events bred public distrust of the government.

6.2.1 Conclusion of the new 'Import Health Requirements for US beef and Beef products'

As mentioned in Chapter 5, Korea hold a presidential election and Myung-bak Lee from the Hannara Party (major conservative party) was elected after appealing to the peoples' hopes for economic growth. New president Lee was a former CEO of Hyundai Engineering and Construction. Indeed, he used his inaugural address on 25th February 2008 to stress the significance and urgency of market opening and the FTA with the US as keys to revitalising the national economy, and also highlighted the necessity to strengthen relations with the US. As stated in Chapter 4, maintaining the US-Korea alliance has always been one of the most important tasks for the Korean government. The conservative new ruling party was more concerned with the relationship with the US than its left wing predecessor.

By then, beef import from the US had been stopped for six months, and the United States Trade Representative (USTR) pointed out that the beef ban of Korea was one of the "significant barriers to US trade and investment."[488] Beef was regarded as a

[488] USTR, *2008 National Trade Estimate Report on Foreign Trade Barriers*, n.d.

key factor in improving the relationship with the US and in bringing forward the FTA which would open the largest export market for Korea. According to the US Congressional Research Service (CRS) report,

> South Korea's aim was to improve prospects that the Bush Administration would send the KORUS FTA to Congress before the end of 2008. The Bush White House had for some time signalled that Korea had to reopen its market to US beef – a step necessary to secure the votes of Members of Congress who represent cattle production and beef processing states and whose support for the KORUS FTA is viewed as critical.[489]

Likewise, Dong-suk Min, the head negotiator of the 2008 beef negotiation with the US, recollected in his reminiscence:

> With only resolving beef issue, the newly launched Korean government could recover the trust of the US. … The relationship between two countries was at dead end due to beef conflict. … I was sure that the US market was one of the important lifelines for the Korean economy. I believed that I had to engage myself in my job in terms of national interests.[490]

The beef safety issue regarding BSE was rarely discussed within the government, and the new MIFAFF minister, Un-cheon Chung, a former CEO of agricultural business, shared recognition about the beef issue with MOFAT and President Lee.

> Beef was the most serious issue between two countries which had been

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The lost value of beef exports of the US to Korea due to BSE-related restrictions during 2004–2007 was estimated about $3 billion. United States International Trade Commission, *Effects of Animal Health, Sanitary, Food Safety, and Other Measures on U.S. Beef Exports*, September 2008.

[489] Jurenas and Manyin, *U.S-South Korea Beef Dispute: Agreement and Status*., p. 1

[490] Min, *To Live as Public Servant in Korea*. pp.91-92, my translation (He was a trade official at MOFAT and dispatched to MIFAFF for the FTA negotiation in agriculture part).

> pending for more than one year. To recover the trust of the US, which was seriously damaged due to the bone fragment conflicts, and to promote the ratification of the KORUS FTA at the US Congress, beef issue should be resolved. If beef negotiation breaks down again, it must be a heavy burden to the Korean government as well as the US.[491]

The instruction for the Korean beef negotiation team was to confirm the two-phased position which had been agreed at the economic ministers' meeting in December 2007.[492] The first step was to allow imports of both boneless and bone-in beef from cattle younger than 30 months. The second step was to permit imports of beef from animals older than 30 months, as long as SRMs were removed in accordance with the OIE's standards, and that the US government implements (preferred proposal) or announces the enhanced feed ban. Other issues were within the discretion of the head negotiator, presuming acceptance of the OIE standard. Rather than beef safety concerns regarding BSE, the government focussed on developing policy measures to support livestock farmers who were expected to suffer a loss due to the beef market opening. The main agenda at the ministers' meeting on 1 April, which was held for the final check for the upcoming beef negotiation meeting with the US, was concerned with the policy measures to support the domestic livestock industry and to expand the Beef Origin Labeling System which could keep foreign beef from being sold as Korean beef. [493] Although the lift of the ban on bone-in beef and beef from cattle older than 30 months had been seriously conflicting issues, expert meetings, including the NLHCC, were not held to

[491]Chung, *Bakbihyang*. p. 97 (my translation)

[492] MIFAFF, "Plan for US Beef Negotiation," April 10, 2008.

[493] Food Origin Labeling System was introduced in July 1991 to prevent cheap imported agricultural products from being assumed and sold as expensive domestic products. Violation cases on beef were 928 cases and 3,068.8 ton in 2009, and the most violation was US beef which was sold as Australian or Korean beef.

MIFAFF, *Understanding of Agricultural and Aquatic Food Safety Policy*, 2010.

discuss the instruction for the beef negotiation team.

6.2.2 The new "Import Health Requirements for US beef and Beef products"

Main changes in beef import requirements

The Korean and US governments started their beef negotiation meeting on 11th April 2008. The beef negotiation represented the first Korea-US summit of the Lee government. As such, there was an overriding prediction that the conflicts over beef between the two countries thus far would be resolved somehow by the beef negotiation meeting, signalling a successful start to the Lee government in improving the Korea-US relationship. As expected, the 'Import Health Requirements for US beef and Beef products' was newly settled between the two countries on 18th April 2008.

The new beef requirement was relaxed in comparison to the previous condition agreed in 2006. Firstly, one of the most important changes was to allow beef from cattle older than 30 months. As discussed in the last chapter, whether or when to allow beef from animals older than 30 months was the most controversial point during the beef negotiations. The new beef import condition allowed the import of beef from animals older than 30 months, which had been totally banned in the 2006 beef requirements, with the condition that the US government announce the enhanced feed ban.

> When the United States publicly announces its enhanced feed ban, Article 1 [beef and beef products excluding beef from cattle older than 30 months] shall be modified to read as follows: "beef or beef products" includes all edible parts.[494]

The US FDA announced on 28th April 2008 that its enhanced animal feed ban would be implemented from April 2009. Korea was required to import beef from cattle over 30 months immediately.

Secondly, the new beef requirements narrowed the scope of items which should be banned. The items prohibited to be imported from the US were:

> (a) tonsils and distal ileum from cattle of all ages; and
>
> (b) brain, eye, spinal cord, skull, dorsal root ganglia and vertebral column (excluding vertebrae of the tail, transverse processes and spinos processes of the cervical, thoracic and lumbar vertebrae, median crest and wings of the sacrum) from cattle 30 months of age and over at the time of slaughter.[495]

Contrary to the beef import requirements in 2006 which had allowed only boneless muscle meat, the new condition expanded the scope of cuts which could be imported. Offal and bones which had been banned in the previous requirements could now be imported (Table 8). The new definition of SRMs was based on the definitions of the prohibited items which were applied to the Controlled BSE risk state in the OIE *Terrestrial Animal Health Code*.

[494] MIFAFF, *Import Health Requirements for US Beef and Beef Products*, 2008., Addendum

[495] Import Health Requirements for US beef and Beef products, MIFAFF Announcement 2008-15

Table 8 Comparison between the requirements in 2006 and in 2008

	2006	2008
Beef products which can be imported	only deboned skeletal muscle meat from carcasses under 30 months. (SRM, diaphragm, trimmings, tongue, cheek meat, ground meat, mechanically recovered / separated meat and products from advanced meat recovery, offals, and processed meat products cannot be imported.)	All parts except SRMs
SRMs (Specified Risk Materials)	brain, eye, spinal cord, skull, vertebral column, tonsil, distal ileum and protein products produced from these	tonsils and distal ileum from cattle of all ages brain, eye, spinal cord, skull, dorsal root ganglia and vertebral column (excluding vertebrae of the tail, transverse processes and spinos processes of the cervical, thoracic and lumbar vertebrae, median crest and wings of the sacrum) from cattle 30 months of age and over at the time of slaughter.

Thirdly, the new condition limited the right of the Korean government to suspend the importation of US beef. Under the 2006 beef import requirements, the Korean government could suspend beef import from the US in cases where violation of the requirements was deemed to be serious, where BSE risk in the US was considered to be exacerbated, or where BSE occurred in animals born after the feed ban of April 1998. These conditions were the grounds on which the Korean government could suspend importation of beef from the US when bone chips and vertebral columns were detected in beef boxes in 2006 and 2007. However, under the new beef requirements, the Korean government could not stop importing beef as long as the BSE risk status of the US classified by OIE had not changed.

> In the event (an) additional case(s) of BSE occur(s) in the United States ……The Korean government will suspend the importation of beef and beef products if the additional case(s) results in the OIE recognizing an adverse change in the classification of the US BSE status.[496]

In sum, the new import health requirements for US beef were in full accordance with the OIE guidelines and it accepted what the US had requested.

Benefit to consumers

The Korean government announced the conclusion of the beef agreement one day before the Korea-US Summit scheduled on 19th April. In reference to the meaning of the beef deal, President Lee stated: "Now, Korean people will be able to eat beef with good quality at cheap price."[497] Korean Farmers' associations argued that unsafe US beef would cause serious damage to Korean cattle-farming households and consumers. However, the government regarded the opposition as the usual resistance from the agricultural sector to global market opening. President Lee said that the beef market should be open to the world, not only to the US, as widely as possible and that the choice rested with consumers. In addition, he said that the Korean beef industry should produce expensive and high-quality beef which could compete against beef from any other country.[498]

The government announced policy measures to support the livestock industry,

[496] MIFAFF, *Import Health Requirements for US Beef and Beef Products*., General Requirements 5

[497] Myung-bak Lee, Tokyo press breakfast meeting for accompanying reporters on 21 April 2008 qtd in "To Eat Cheap and Good Quality Beef," *Yeonhab News*, April 21, 2008.

[498] "To Boost the Quality of Korean Beef Is the solution…Consumers Will Decide Whether to Buy or Not [US Beef]," *Hangyureh Newspaper*, April 27, 2008.

including subsidies for beef farmers to produce high quality Korean beef. In addition, the Beef Origin Labeling System, which had been applied only to grill restaurants with a floor space of 300 m^2 or larger, was applied to all eating establishments including small restaurants and catering facilities at schools, firms, or military. The government viewed the new beef deal with the US as a solely economic issue, confronting interests between consumers and beef farmers. No concern over BSE risk appeared in the government's statements. Though there were some reports which expressed concerns about the increasing risk of beef by the easing of conditions, the main interest of the mass media in this period was the economic impact of the beef deal and the damage to livestock farmers.[499]

6.2.3 The beginning of the public protests

The beef negotiation changed from an economic issue affecting beef farmers to a public health issue with a TV programme. On 29th April 2008, MBC, a broadcasting company in Korea, televised an episode of its current affairs programme *PD notebook*, entitled "Urgent report: US beef, is it safe from Mad Cow Disease?"[500] The programme argued that US beef with BSE risk would be imported to Korea as a result of the newly agreed import sanitary requirements. Firstly, it argued that the beef inspection system in the US was too loose to prevent BSE-infected cattle from

[499] Ji-bum Jung and Jong-hun Chae, *The Politicization of Risk and an Effective Response Strategy Purpose and Methodology* (Korea Institute of Public Administration, 2010).

[500] "*PD Notebook (Producer's Notebook)*" is a current affairs documentary TV programme of Munhwa Broadcasting Coporation (MBC), one of the most influential broadcasting companies in South Korea, First broadcast in May 1990, it has dealt with social problematic issues and is famous for raising suspicion first on Hwang's stem cell research fraud in 2005.

entering the food chain, showing the video of downer cows which were forced to stand by abattoir workers (Figure 5) and presenting the recent beef recall case in the US.[501] It argued that violations of SRM rules occurred frequently in the US, and animal feed policy in the US was potentially at risk of cross-contamination, and that even the American people were very concerned about the safety of US beef. Secondly, the programme raised suspicions over the case of 22 year old Aretha Vinson in Virginia who died on 9th April 2008 perhaps infected with vCJD, and said that the same tragedy might occur in Korea. It warned of the potential risk of US beef, citing the comment of Michael Hanson from the US Consumer's Union:

> … folks that eat this beef are being guinea-pigs and hoping that there's not a problem in the US. So, if Korea decides to import meat from these animals then they share the same risk.

Figure 5 A worker tries to make a downer cattle stand up by shocking it with a water hose.

("Up or die! Up or die!")

[501] Downer (non-ambulatory) is one of the symptoms of BSE-infected animals and downer animals' are considered to have much higher likelihood of BSE-infection than normal animals. However, as there are more than 50 causes of downer symptom such as fracture, it cannot be said that downer was definitely BSE-infected animal.

Thirdly, the programme said that vCJD could be infected by 0.1g of SRMs, could not be prevented or cured, and would lead to death with 100% certainty. It also stated that as vCJD was a disease regarding which much was unknown, it was horrible and scary. It also said that the Korean people were more likely to be infected with vCJD due to their genetic characteristics. It said that as every vCJD case had MM type gene in Codon 129 and as 94% of Korean people had the MM type gene, the Korean people were likely to be infected with vCJD with 94% probability when consuming BSE-contaminated beef. Indeed, this was twice the chance of Americans and three times more than the UK people. This claim was based on the frequencies of MM type in the population (Table 9). Moreover, the programme argued that vCJD risk could not be escaped by avoiding beef because of powdered soup bases in instant noodles, and cosmetics and gelatin capsules in medication made with cow-derived materials.

Table 9 Relations between vCJD and Gene type[502]

Genotype of Prion protein	vCJD cases	Genotype frequencies in population		
		UK (%)	Korea (%)	US (%)
MM	159	36.8	94.3	50.0
MV	0	50.9	5.5	41.6
VV	0	12.3	0.2	8.4

The programme raised doubts that the government was not fully aware of the horrendous conditions of the US beef production system or whitewashed the risk, and that the government agreed the beef deal for the success of the summit. The

[502] This table was made by translating the table which was shown at the program.

programme pointed out that the government made a decision on the relaxed beef conditions "which was directly linked with the nations' life" without holding NLHCC meetings to listen to experts' opinion.[503] One of the presenters said: "The problem is that [the beef deal] was made suddenly. …. It is an important issue for public health and life, but nobody did have the opportunity to say their opinion."[504] The programme gave the image that BSE was spreading in the US, while the US government hid the risk, and the Korean government decided to import hazardous beef with or without knowing the truth for political aims. The second series of *PD Notebook* on May 13 argued that, whereas beef from cattle under 24 months of age was mainly consumed in the US, beef from old cattle which was avoided by the US people would be rushed into Korea.

After the first series of *PD Notebook* aired, the BSE story occupied public media and opposition to the beef deal spread through online discussion boards. Candlelight vigils calling for the beef agreement to be abrogated started in downtown Seoul on 2nd May. Candlelight vigils represented a new form of public demonstrations in Korea. Indeed, they had grown in popularity since the candlelight vigils in November 2002, which mourned the girls who were killed by an armored US army vehicle in June.[505] Candlelight vigils were generally organised as cultural events in order to avoid the violation of the law on assembly and demonstration, because the law prohibited assembly and demonstration after sunset except for cultural events.

[503] "Urgent Report: US Beef, Is It Safe from Mad Cow Disease?," *PD Notebook* (MBC, April 29, 2008).

[504] Ibid.

[505] It became anti-US movement to protest the acquittal of the two US soldiers by the US court martial. According to the Korea-US State of Forces Agreement, the Korean government does not have jurisdiction to try US soldiers in Korean courts, and it has been perceived as intrusion into Korean sovereignty by the US.

Accordingly, candlelight vigils took on a peaceful character, contrary to militant student and labour anti-government (pro-democracy) movements under the authoritarian regime in the 1980s.

The main participants of candlelight rallies on US beef in the initial period were teenagers who had held 'candle festivals' to oppose the competition-oriented education policy of the government. They expressed their anxiety about school meals which were likely to use cheap beef products, holding candles in one hand and banners and boards saying "I have only lived 15 years!" in the other hand.[506] With teenagers participating actively in the protest, the high school student who proposed the campaign for the impeachment of President Lee said in an interview with internet news media:

> Students consider the beef issue to be serious because it is a problem which directly affects them. The fact that the incubation period of BSE is at least 10 to 40 years worries students and brings about anger. When US beef is imported, the people who will consume most will be probably students, because they cannot but eat relatively cheap food due to small allowances. In other words, students, who are the poorest, are exposed to the risks of US beef. It is most likely that cheap foreign beef will be used for school meals. Rich adults can eat safe beef, but we, students, cannot help eating US beef even though we do not want.

Figure 6 Teenage girls with banners and boards

[506] interview cited in "The Reason Why High School Student 'Andante' Proposed Complaint to President," *Oh My News*, May 4, 2008., my translation

During the initial period, the atmosphere of the protests was festival-like with participants singing and dancing. Participants included general citizens such as families with children, office workers, and housewives. The number in attendance increased and discussions in cyber space became more heated as time went by. Online boards on Internet communities and mobile phones were the main tools with which people shared information and organised vigils. Almost daily candlelight rallies to demand the scrapping of the beef deal started to be held in downtown Seoul.

The Grand Nation Party (the major political party) and the conservative press suggested that a politically-impure group maneuvered from behind the scenes. They claimed that anti-FTA groups used the mad cow disease panic as an anti-American campaign, or that a left group or pro-North Korea group incited students and the public with an absurd story for their political objectives.[507] These responses offended the public. Then, the Lee administration was criticised due to certain policies which were perceived as beneficial only to the wealthy such as competition-oriented education policy, privatisation of public service, and the choice of the cabinet members, most of whom were very wealthy. There were also allegations of illegal real-estate speculation. The number of people who joined the cyber-campaign for impeachment against President Lee surpassed 1 million.

On 6th May 2008, nearly 1,500 NGOs held a 'National Convention to oppose the import of US beef with BSE risk.'[508] The dissenting organiaations included political

[507] *Chosun daily*, 2 May 2008; *Dong-a Daily, 2* May 2008

[508] "South Korean NGOs have been particularly adept at forming loose, temporary coalitions with one another to organize large-scale protests on a particular issue. Many of the most successful examples of citizen activism in South Korea involved the formation of umbrella organizations that pool the resources of member groups. The country's rapid adoption of the Internet — South Korea has one of

parties whose supporters were mainly labours and farmers, NGOs for environment and ecology movement, consumers' cooperative organisations, farmers' associations, and labours' unions. They belonged to anti-FTA groups, and their claims about US beef and BSE mostly depended on the two activists Sang-pyo Park and Seok-kyun Woo, who were the representatives of the 'Veterinarians' Solidarity for Public Health' and the 'Korean Federation of Medical Groups for Health Rights' respectively. Indeed, they had raised an alternative account of BSE risk regarding US beef since 2005. The claims of *PD Notebook*, for example, relied on their theories. They argued that US beef was not safe from BSE risk and that the government did not secure sufficient safeguards against BSE risk in US beef. In their claims, the government was blamed for selling the nation's health for the ambiguous benefits of the FTA. Activists argued that the beef deal should be scrapped and renegotiated.[509]

With hindsight, *PD Notebook* was accused distorting some information and intentionally translating inaccurately some excerpts of sources in the US to exaggerate the risk of US beef, which could have misled the audience.[510] For example, the video of a downer animal filmed by a civil organization for animal welfare in the US in order to denounce cruelty to animals, and the recall was due to mistreatment of cattle, irrelevant to BSE. The non-ambulatory animals in the film

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the world's highest rates of Internet usage — has facilitated such networking by enabling groups to quickly establish linkages, coordinate activities, and spread the word about protest activities." Mark E. Manyin, *South Korean Politics and Rising "Anti-Americanism": Implications for U.S. Policy Toward North Korea*, Report for Congress, May 6, 2003.

[509] Suk-Kyun Woo, "US Beef Is Not Safe from BSE and the Beef Import Sanitary Conditions Cannot Protect Lives of People," in *Collection of Materials, National Convention for Opposing Import of US Beef with BSE Risk*, 2008.

[510] The Korean Supreme court cleared that some content regarding BSE in *PD Notebook* were false, but it ruled that the producers of *PD Notebook* were not guilty of defamation of the MIFAFF minister through the program. "PD Notebook, Found Not Guilty," *Yeonhab News*, September 2, 2011.

were dairy cows, which are likely to be downers due to lack of calcium. The cause of death of Aretha Vinson, attributed to vCJD without clear evidence, was revealed as Wernicke encephalopathy, not vCJD by the US National Prion Disease Pathology Surveillance Center in June 2008. The claim that Korean people had a 94% probability of being infected with vCJD was a far-fetched interpretation of the research, since it presented the gene as the only factor causing vCJD by presenting frequencies of genotype in the population as the incidence of the disease. The MIFAFF requested that *PD Notebook* correct its report, and the Korean Press Arbitration Commission raised doubts about the neutrality and objectivity of the report of *PD Notebook* and ordered MBC, the broadcasting company, to report clearly that not all downers were BSE-infected, that Aretha Vinson did not die from vCJD, and genotype frequency was not the only factor of vCJD infection. MBC was also ordered to apologise to viewers in July 2008, the heaviest disciplinary action by the Korea Communications Standards Commission.

6.2.4 The government's untrustworthiness

The new administration, which had been in power less than 100 days, was criticised for foregoing public health for economic interests, in contrast with the previous government which had taken a strict stance on even bone fragments in beef. Responses of the press media diverged according to their political orientation. While the conservative press such as *Chosun Daily* and *Dong-a Daily* criticised *PD Notebook* for exaggerating BSE risk, progressive press such as *Hankyureh* and

Ohmynews opposed the import of US beef.[511] The government tried to block rallies by exercising its power. The prime minister stated that spreading false information and illegal assemblies would be punished, saying that most claims by *PD Notebook* were not scientifically verified, nor were they in accordance with international standards.

In the meantime, there were a series of events which rendered public doubts about the competence and credibility of the government, as shown below.

On 4th May, some documents which had been prepared by the MIFAFF were revealed by politicians of opposing parties. Reports written in September and October 2007 for the negotiations with the US included information emphasising the risk in beef such as detection of prions in muscle tissue and animals under 30 months age, as well as genetic susceptibility of the Korean people to vCJD (see Chapter 5.3.3). In addition, the report, written by MIFAFF officials after the OIE general session meeting in 2005, showed that the Korean delegates had raised the risk in blood and muscle tissue at the OIE meeting; moreover, another report by the MIFAFF in 2007 showed that the Korean government had opposed the preliminary assessment of the OIE which classified the US as being in a 'Controlled BSE risk state', addressing the incomplete cattle traceability system and animal feed policy which could not prevent cross-contamination in the US. Dissenters criticised the government for ignoring scientists' opinions, and argued that these documents represented evidence showing that the government hid the truth and lied to the public,

[511] Yang-June Im, "A Comparative Analysis of News Frame on U.S. Beef Imports and Candlelight Vigils," *Journal of Korea Association for Communication and Information Studies* 46 (2009): 108–147.

ignoring the scientific advice.

MIFAFF officials explained that all available scientific evidence, regardless of whether or not it had been confirmed scientifically and internationally, had been collected in order to take advantageous positions in international negotiations and to defend the beef market.[512] In fact, as presented in the previous chapter, NVRQS officials who attended the meeting on 21st September 2007 expressed concerns about the limitation of the research results which had been achieved from experimental conditions. At the OIE meeting in 2005, in which boneless muscle meat from animals under 30 months was defined as a safe commodity for trade, claims of the existence of abnormal prions in muscle tissue and the risk of muscle meat, which referred to the experimental result using genetically modified animals, were not accepted. The government officials repeated that the Korean beef negotiation team could not present sufficient scientific evidence to negate the OIE's guideline and the Controlled-risk status of the US. However, the government's explanation was not enough to convince public.

On 10th May, activists raised the suspicion that the enhanced feed ban announced by the US FDA on 25th April was different from the initially proposed ban. The original version of the enhanced feed ban which had been proposed by the US FDA since October 2005 was known to exclude brain and spinal cords originating 'from animals of all age' from animal feed, and it was the most significant ground for

[512] Chang-sub Kim, statement at Special Committee for Investigation of beef negotiations with the US on Sep. 5, 2008. *Stenographic Report of the Special Committee for Investigation of Beef Negotiations with US*. p71; Moon-il Kang, Sang-gil Lee, statement at the Inquiry on full beef market opening, *Stenographic Report of the Committee for Agriculture, Marine and Fisheries, National Assembly*, May 7, 2008.

allowing the importation of beef from cattle older than 30 months age, according to the Korean government's announcement. However, the feed ban, which was actually announced by the US government approximately 10 days after the new beef requirements were agreed, was to ban only brain and spinal cords 'from cattle over 30 months.' In other words, it was to allow entire carcasses including brains and spinal cords from cattle under 30 months to be used for animal feed.[513] The government was accused of hiding intentionally the fact that the US government revised its feed ban.

The government admitted that there were some errors in translating the FDA's ban from English to Korean. However, it said that as brains and spinal cords of cattle under 30 months originating from 'Controlled BSE risk state' of the OIE were not defined as SRMs, it was not problematic for them to be included in animal feed, although it was indeed a more relaxed regulation than the initially proposed one. Nevertheless, the government could not escape criticism that it entrusted the US with full power by not clearly defining the condition of 'the enhanced feed ban' which represented the most significant reason for permitting beef from old cattle.

These series of events (strict stance to public protests, revealed documents, and the mistranslation of the enhanced feed ban of the US) cultivated the image of an 'incompetent untrustworthy government.' Even conservative newspapers which had supported the government criticised its insensibility and incompetence. Suspicions about poorly-managed beef negotiation and criticism that the government conceded the beef market to the US without benefit were raised. The legitimacy of the beef

[513] *Rules and Regulations, Federal Register Vol. 73, No. 81, April 25, 2008*, p. 22733

deal was damaged, regardless of the safety of US beef.

6.3 Disputes over the new beef requirements

The last section has described the way in which the public protests were formed. The newly agreed beef import requirements changed from being an economic issue affecting beef farmers to a public health issue regarding BSE risk in US beef. Public protests sparked by a TV program dominated the country and a series of scandals which revealed poor management of beef negotiations damaged the trustworthiness of the government.

In this section, disputes over the new beef import sanitary requirements will be shown in detail. Contradictory claims regarding BSE and beef safety were raised by the government as well as government opponents, while 'scientific truth' was represented as a solution to the controversy. In the first part, claims of the government and the counterclaims of the civil organisations regarding the new import sanitary requirements for US beef will be presented. Following this, I will show how the Korean government responded to the alternate accounts relating to the uncertainty and the risk of BSE. Lastly, discussions by the Korean scientific community will be shown. Through an examination of the conflicting claims and accounts, I will show how the Korean government's safety claims were challenged and why scientific claims about beef failed to calm the controversy.

6.3.1 The government's claims and the counterclaims

As shown in the previous section, the 'Import Health Requirements for US beef and Beef products' agreed in April 2008 were less strict than the beef import requirements of 2006. The new beef import conditions allowed the import of beef from animals older than 30 months and offal and bone which had previously been banned. Moreover, it limited conditions under which the Korean government could ban US beef.

Civil organisations (the 'Veterinarians' Solidarity for Public Health' and the 'Korean Federation of Medical Groups for Health Rights') argued that new beef requirements could not secure enough safeguards against the BSE risk in US beef. They warned of the BSE risk associated with US beef since 2005 and most of their claims were overlapped with the claims which had been raised by themselves since 2005.

Firstly, civil organisations argued that the safety of beef from animals older than 30 months could not be trusted. Still, the EU, as well as major US beef importing countries Japan and Mexico, maintained the rule which allowed only beef from cattle under 30 months to be imported. They also argued that the enhanced animal feed ban proposed by the US FDA, which was the condition to lift 'the 30 month age ban', did not reach the safety level of the animal feed policy of the EU and Japan, which banned all animal protein for all farm animals to remove cross-contamination. They argued that as it would take time for the enhanced feed ban which was announced to be implemented and to produce an actual effect on beef safety, the announcement of the enhanced feed ban should not be seen as grounds to permit the importation of

beef from old cattle.

The MIFAFF refuted the claims of the civil organisations. It said: only if SRMs were removed in accordance with the OIE standards, even beef from cattle over 30 months originating from the US was safe to eat, and there was no vCJD patient who had been infected from eating beef in the US. The government also said that there were few possibilities of BSE recurrence in the US even with the current level of animal feed ban, and the enhanced feed ban would decrease even the smallest risk from US beef.[514]

Secondly, civil organisations argued that the new beef requirements allowed the importation of cuts which were banned in the EU and Japan. For example, the EU bans whole intestines of animals of all ages and Japan prohibits vertebral columns from cattle of all ages (see Table 5 in Chapter 4.3.3). They said that as the Korean people consumed various cuts of beef which are not used for food in the US, cuts with high BSE risk were likely to be imported for commercial profit. In addition, they argued that as there was no cattle traceability system in the US, it was not possible to distinguish animals older than 30 months, and thus, it would be impossible for the quarantine agency to assess them, even if SRMs from old animals were imported mixed with the same parts from young cattle.[515]

The MIFAFF said that the new definitions of SRMs were based on the OIE *Terrestrial Animal Health Code*, and offal and bones originating from the Controlled

[514] MIFAFF, "Stenographic Record of Press Conference on 6 May 2008," May 6, 2008.

[515] Woo, "US Beef Is Not Safe from BSE and the Beef Import Sanitary Conditions Cannot Protect Lives of People."

BSE risk state US were safe excluding seven parts which were defined as SRMs by the OIE.

Thirdly, civil organisations argued that the new beef requirements restricted the sovereignty in quarantine of Korea. According to the new beef requirements, as shown in Chapter 6.2.2, the Korean government could not suspend beef import from the US, even if SRMs are discovered or new BSE incidence occurs in the US, but could only stop importation of beef when there was an adverse change in the risk status of the US by the OIE. Activists argued that this actually meant that Korea could never ban US beef, because it was unlikely that a few additional BSE cases in the US would change the BSE risk status of the US. For example, Canada, where more than 10 cases of BSE had occurred since 2003, was classified as a 'Controlled risk' state by the OIE in May 2007 (and despite an additional case in 2008, there was no change in the BSE risk status).[516] They argued that the government had agreed an 'unequal and humiliating' beef deal giving up 'sovereignty in quarantine.' They blamed the government for neglecting the basic duty of the state to secure the health rights of the nation (Figure 7).

[516] The standards to assess BSE-risk status of countries and the background logic of the OIE were provided in Chapter 5.3.2.

Figure 7 Cartoon on 3 May 2008, *Kyunghyang Shinmun*

The US president Bush wearing a gown of the American flag sits with a paper 'Korean nation's public health' in his hands and the Korean president Lee in traditional red king's gown bows in front of him ('MB' is the initial of President Myung-bak Lee). On the belly of a cow beside Bush, "inspection only for 0.1% of cattle, no record and traceability of 80% of cattle" is written.

Bush: How does he believe (that US beef is safe), even though I who sell it cannot?

Regarding the limited condition of banning US beef, the MIFAFF explained that it was the OIE's recommendation that member countries should not ban importation of beef products even when new BSE cases are discovered in exporting countries. The OIE explained the reason why member countries should not disrupt trade even with a new BSE case, as follows:

> … Such situations penalise countries with a good and transparent surveillance system for animal diseases and zoonoses, and which have demonstrated their ability to control the risks identified through a risk assessment. *This may result in a reluctance to report future cases and an increased likelihood of disease spread internationally*.
>
> …. A continuing assessment of the importation policies of a trading partner (especially concerning live cattle, and meat and bone meal), its animal feed regulations for cattle, and its knowledge of the disease

> situation within the country should be the basis for setting import policies for commodities at risk of introducing the BSE agent. *If this assessment has been accurate, the announcement of a case of BSE by a trading partner should not lead to significant changes in these import policies, and should certainly not lead to bans on a broad range of imports.*[517]

When a BSE case was discovered in US 2003, the OIE and the US government argued that many countries' bans on US beef broke the OIE standards. Indeed, at that time, it seemed to Korean people like an unreasonable measure which focussed more on economic profit than safety. The government said that as BSE was infected by contaminated animal feed not by bacteria or a virus like FMD or Avian Influenza, the risk could be controlled by the animal feed policy. Indeed, even with regard to BSE incidence in the Controlled BSE risk US, as surveillance systems would prevent the infected animal from entering the food chain and SRMs would be removed in accordance with the OIE guideline, the BSE incidence would not influence the safety of beef products.

The grounds for the safety of US beef and the legitimacy of the regulatory policy, which were represented by the Korean government, were the international standards represented by the OIE *Terrestrial Animal Health Code*. The OIE guideline provided the Korean government with the grounds to judge the safety of US beef and set sanitary requirements for imported beef. The partial lifting of the ban on boneless beef from animals under 30 months of age in 2006 was based on the OIE's decision to designate deboned muscle meat from animals under 30 months of age as a safe commody which could be traded irrespective of exporting countries' BSE risk status.

[517] OIE, "International Standards and Trade Decisions," 2004.

It was the 'Controlled BSE risk state' status of the US which had significant influence on the decision in 2008 to lift the ban on US beef from animals over 30 months of age. The government argued that the OIE standard was based on objective science and should be observed as a global standard; they also argued that 95 countries imported US beef under the same conditions which Korea agreed, and future beef agreements of the US with China, Taiwan and Japan would be the same as the agreement with Korea.

Contrary to the government, which expressed trust in the scientific authority of the OIE standards, civil activists claimed that the OIE was just a political organisation, not a scientific one.[518] They raised the suspicion that the US, whose beef had been banned from many countries after the detection of BSE-infected animals in 2003, pressured the OIE to ease the regulations on deboned muscle meat and to classify the US as Controlled BSE risk state' despite its recent BSE cases.[519] They argued that the OIE *Terrestrial Code* was not a scientific guideline to protect public health but just a minimum condition for trade. A scientist who supported activists argued that Korea should accept the regulation policy of the EU which was 'more scientific' than that of the OIE.[520]

> Compared to the regulations on SRMs in Europe and Japan, the US has very loose regulations. … W*e should follow the regulations of Europe*

[518] Woo, "US Beef Is Not Safe from BSE and the Beef Import Sanitary Conditions Cannot Protect Lives of People." (my summary and translation)

[519] It was also a claims raised by the US civil organizations. When the US was identified as 'Controlled risk' state in 2007, a representative of US consumers' organization 'Food & Water Watch' said at an interview with a Korean radio program that the 'Controlled Risk' status of the US was the outcome of powerful lobby by the US government and the livestock industry). "Sisa Jockey: Today and Tomorrow."

[520] Hee-jong Woo, "What a Shame, Shame, Shame!," *Pressian*, May 26, 2008.

where more studies about BSE have been done.[521]

Both the government and civil organisations blamed each other for being unscientific and political. While the government criticised the civil organisations for exaggerating negligible risk only to oppose US beef and the Korea-US FTA, the activists blamed the government for rendering the sanitary and quarantine issue which should be dealt with on the scientific and technical grounds a political issue. In addition, they criticised the government for ignoring scientists' advice without holding NLHCC meetings. Both the government and civil organisations resorted to science as the source of authoritative, objective and universal knowledge, and as the unquestionable basis for policy making.

6.3.2 Absurd stories and science

Alternate accounts of BSE risk were disseminated rapidly in very simplified form through the Internet. In 2008, the information about BSE provided through the Internet increased 10 to 15 times more than in the previous years and personal blogs produced more information about BSE than public media during the controversy.[522] Online discussion boards of portal sites were the main places where demonstrations

[521] Ibid. (my translation)

[522] < Information about BSE provided online >

	News article	video	Blog
2004	2,921	173	1,556
2005	1,772	142	1,553
2006	2,628	211	3,795
2007	4,725	577	5,902
2008	45,814	6,212	90,126

Korean Rural Economic Institute, *A Study on the Socio-economic Influence of Consumers' Safety Concerns on Animal Products* (Ministry of Food, Agriculture, Fisheries and Forestry, 2010), p.173.

were organised and BSE-related information was disseminated; in addition, the information and claims were shared and disseminated through personal blogs or elsewhere through the online community. The BSE-related claims within the Internet generally repeated or integrated information from various sources such as *PD Notebook*, civil organisations' statements, or books which had warned of BSE risk.[523] The accounts within the Internet focussed on the uncertainty of BSE and vCJD in common, and were usually based on the worst scenarios which were often mixed with rumours and hyperbole.

The government argued that the accounts raised by *PD Notebook* and circulated within the Internet were 'absurd stories' which were scientifically unsound and ascribed the public protests against US beef to a public misinformed by 'absurd stories.' The Korean government argued that the new beef requirements were based on science, and made efforts to provide the public with 'scientific truth' about BSE in order to blockade spreading the 'absurd stories.'

On 2nd and 6th May, the government held press conferences on the new import sanitary requirements for US beef. In addition to civil scientists at the Centers for Disease Control and Prevention (CDC) and the NVRQS, representatives from the Korean Medical Association, (Dong-chun Shin, professor of Yonsei University, Environmental health epidemiology, and GI-hwa Yang, a researcher at the Medicine

[523] The representative books which often referred to as the evidence of the risk of BSE were: Richard Rodes, *Deadly Feasts: Tracking The Secrets of A Terrifying New Plague* (Simon & Schuster, 13 July, 1999) (The Korean version of this book was published in October 2006); and Colm A. Kelleher, *Brain Trust: The Hidden Connection Between Mad Cow and Misdiagnosed Alzheimer's diseases* (Simon & Schuster, 9, October, 2004) (The Korean version was published in February 2007) These books published in the late 1990s and the early 2000s when BSE swept the whole Europe assumed the worst-scenario of the epidemic and warned the risk of BSE.

policy research institute of the Korean Medical Association, pathology) were invited by the CDC. Advisory committee members of the MIFAFF were not invited. Government officials at the MIFAFF and the NVRQS thought that they themselves would be able to provide sufficient answers to the questions regarding veterinary issues without help from external scientists.[524] At the conferences, MIFAFF officials explained that newly agreed beef requirements were effective in securing the safety of beef, because they were in accordance with the scientific and international standards of the OIE.

In addition to the press conference, the Korean government ran advertisements for the general public on major daily newspapers and Internet portal sites from 5th May 5. Joint advertisements of the MIFAFF and Ministry of Health and Welfare (MOHW) said: "Beef consumed by the US people is the same as the beef to be imported to Korea"; "300 million of US people and 96 countries are enjoying US beef"; and "there is no BSE-infected animal which was born in the US after 1997." [525] The government tried to reassure the public by stressing that beef to be imported to Korea would be as safe as beef consumed in the US and other countries.

Besides this, the government published a brochure entitled 'Truth about Mad Cow Disease' with the aim of correcting public misunderstanding of BSE. The items classified as 'absurd stories' by the government were mainly based on the claims which had been raised by *PD Notebook* or by civil organisations. The government's explanation of the 'absurd stories' was refuted again by civil activists, while the

[524] interview with a MIFAFF official

[525] MIFAFF and Ministry of Health and Welfare (MOHW) on newspapers, 5-8 May 2008

claims of the government and dissenting organisations were completely opposed to each other (Table 10).

The claims of the government were not wrong from the perspective of mainstream BSE science, and it was true that many of the items which were defined as absurd stories were over the top. Nevertheless, the items of the 'absurd stories' could not be regarded as absolutely true or false, as shown by a survey of international scientists, which was carried out by a Korean TV program (Table 11).[526] The counterclaims of civil organisations were more precautionary, placing greater emphasis on the areas of uncertainty. The government was blamed for glossing over the uncertainty of BSE risk, and the disputes over the absurd stories, despite the government's intention to resolve the controversy by informing the public, could do nothing more than identify different positions on the uncertainty of BSE and vCJD.

[526] A TV program '*Consumer report by Lee Young-don PD – Listen to international BSE experts* ' conducted a survey about the issues about BSE and vCJD to scientists who had published academic papers in international prion conference. Korea Broadcasting System, aired on 30 May 2008.

Table 10 Summary of the 'absurd Stories', and the claims and the refutation[527]

'Absurd Story'	The government	Civil activists
1. Around 600 cattle-derived products such as cosmetics, sanitary napkins, and diapers can infect humans with Mad Cow Disease.	Abnormal prions have not been discovered in gelatin and collagen for medication and cosmetics which were made with the skin of cattle.	US FDA recognised that cosmetics made with materials originating from BSE-infected cattle or SRMs can infect BSE via eyes or cut or abraded skin.
2. Tap water can be contaminated by knives and chopping boards which were used for BSE-infected beef.	As US beef will be imported with SRMs removed, BSE cannot spread by tap water.	Infection from tap water is unlikely, but knives, chopping boards, and water used to wash them, are risky. This is the reason that tools for cattle over 30 months and those used for cattle under 30 months should be kept separate in US abattoirs.
3. 95% of Korean people have a genetic sensitivity to Mad Cow Disease [vCJD].	A particular gene cannot decide the likelihood of Mad Cow Disease [vCJD] occurrences.	It was the government's claim and the author was the advisory member of the government.
4. Beef from animals above 30 months of age, which is not used even for pet food in the US, will be exported to Korea for human consumption.	In the US, beef from old cattle is used for food, after removal of SRMs. 300 billion US people and 2.5 million of Korean people in the US eat the same beef as that which will be exported to Korea.	90-97% of slaughtered cattle in the US are under 20 months. The new beef deal allowed beef from old animals which is not consumed in the US to be imported.
5. Out of 5 million patients with dementia in the US, 250 – 650 thousand are suspected to be vCJD patients.	Dementia and vCJD are different, and the suspected vCJD case in Virginia was confirmed to not be vCJD. As the US government has regulated BSE risk by the animal protein feed ban for cattle and removal of SRMs, beef produced in the US now is safe.	As there is no national medical care system in the US, statistics on vCJD or dementia in the US are not confident. The ruminant feed ban cannot eliminate BSE due to cross contamination. The OIE, Japan and even the Korean government recognised this.
6. People can be infected with Mad Cow Disease [vCJD] even by eating muscle meat only.	Abnormal prion which causes BSE cannot be transmitted by muscle meat. vCJD can be infected when eating SRMs of BSE-infected cattle.	An academic article claiming that abnormal prion was discovered in a peripheral nerve of old cattle was cited by the government. Claiming that muscle meat is absolutely safe is not scientific.
7. Mad Cow Disease [vCJD] can be transmitted by kissing.	Mad Cow Disease [vCJD] cannot be transmitted by saliva, because abnormal prion is not discharged as saliva.	Chronic Wasting Disease (CWD), TSE of deer and elk, is known to be transmitted by saliva. In an experiment, abnormal prion of CWD-infected deer changed normal prion of human to abnormal prion.

[527] MIFAFF and MOHW, "Truth of Mad Cow Disease," May 6, 2008.; The Veterinarians' Solidarity for Public Health and Korean Federation of Medical Groups for Health Rights, "10 Questions & Answers about Mad Cow Disease," May 9, 2008., my summary and translation

Table 11 Answers regarding issues of 'absurd stories' by scientists (%)[528]

	Yes	No
Is vCJD transmitted by kissing?	4	96
Is vCJD transmitted by gelatin capsule?	23	77
Is vCJD transmitted by diapers or sanitary napkin?	11	89
Is vCJD transmitted by cosmetics?	10	90
Is vCJD transmitted to people who come into contact with knives or chopping boards used for BSE-infected animals?	26	74
Is BSE transmitted between beef by knives or chopping boards used for BSE-infected animals?	92	8
Do the Korean people have a higher chance of being infected with vCJD than other ethnic groups due to the high proportion of M/M type gene among the population?	Very high (19), high (35), Same (with other ethnic groups) (19), low (4), very low (4), don't know (19)	

Most of all, the weakest point of the government to be attacked was the contradiction caused by the change in positions shown by the government with regard to BSE risk. Some of the claims that the government called 'absurd stories' overlapped with the claims that the government had raised in international settings to decrease beef import from the US. For example, as presented in the previous chapter, the Korean government raised possible BSE risk from muscle meat at the OIE meetings. The government's reassurance about the safety of beef was inconsistent with the strict attitude about bone fragments in beef from the US.

[528] Selection from the 'Survey on the Prion (BSE and vCJD) research', http://office.kbs.co.kr/huragi844, 14 May 2008

6.3.3 Pursuit of scientific truth by scientists

As 'scientific truth' was represented as a solution to the controversy, the Korean scientific community joined in disputes over BSE. Within the scientific community there were calls for scientists to contribute to resolving social conflicts with their scientific expertise. As Jae-seung Jung and Se-jung Oh have written:

> Though the BSE issue came to the fore as a serious social issue, scientists remained silent for a while. The Korean scientific community has neglected its role in science-involving social issues, though authoritative scientific bodies and scientists can contribute to resolving unnecessary and wasteful controversy by providing scientific facts … It should be regarded as the bounden duty of scientists who do research with nation's tax.[529]

> Regrettably, scientists have not played a leading role in the recent controversy. … Now, scientists ought to provide objective scientific knowledge in order for lay people to make rational decisions on issues for which scientific knowledge is important. … When responding actively to social issues with their expertise, scientists will be able to have power and be respected as experts.[530]

On 8th May, the Korean Academy of Science and Technology (KAST), the most prestigious scientific organisation in Korea and composed of senior scientists, held a roundtable forum on 'Mad Cow Disease and Safety of Beef.' The KAST stated that the forum was held from a purely academic perspective in order to 'provide the exact knowledge of BSE to the public and help them to make the right decision' with regard to the beef and BSE issue.[531] The speaker was Yong-soon Lee (Seoul

[529] Jae-seung Jung, "BSE Scare, What Scientists Did," *Kyunghyang Newspaper*, May 26, 2008. (He is a physicist and professor at Bio and Brain Engineering Department, Korea Advanced Institute of Science and Technology. He is widely known by his books for popularizing science.)

[530] Se-jung Oh, "BSE Scare and Communication of Scientific Knowledge," *Joongang Daily*, May 8, 2008. (He is a renowned physicist and professor at Seoul National University.)

[531] Korean Academy of Science and Technology, "The Voice of KAST," January 2009. (my

National University, veterinary pathology), and debaters included: Joong-bok Lee (Konkuk University, veterinary epidemiology), Hee-jong Woo (Seoul National University, veterinary immunology), Hae-gwan Cheong (Sungkyunkwan University, epidemiology), Gi-hwa Yang (Medical policy research institute of the Korean Medical Association, neuropathology), Sang-yoon Kim (Seoul National University, neurology), and Dong-chun Shin (professor at Yonsei University, prevention medicine). Yong-soon Lee was known to have provided advice regarding the new beef requirements to the MIFAFF minister. Gi-hwa Yang participated in translating the BSE inquiry report of the UK to Korean in the early 2000s. Yong-soon Lee and Gi-hwa Yang were said to be supporters of the government; Hee-jong Woo and Hae-gwan Cheong were presented as dissenting experts after being cited by *PD Notebook*. The activist groups, which were primarily responsible for raising dissenting claims against the government, were not invited.

Government Research Institutes including the Korea Institute of Science & Technology (KIST) and the Korea Research Institute of Bioscience & Bioengineering (KRIBB) also held press conferences to discuss the issue of Korean people's genetic susceptibility on 8th and 9th May respectively. The conferences of KIST and KRIBB were attended by Hee-seob Shin, one of 'the Supreme Scientists' who was best honoured for his scientific achievement in neuroscience in Korea and Myeong-hee Yoo, a team leader of one of Korea's biggest biotechnology research groups .

The genetic susceptibility of the Korean people to vCJD was one of the most

translation)

controversial issues, since *PD Notebook* reported that there was a 94% probability that the Korean people would be infected with vCJD by eating BSE-infected beef due to the high frequency of MM type Codon 129.[532] The claim was based on studies by a Korean prion research team. According to the studies, polymorphism of the prion protein gene (PRNP) at Codon 129 affects susceptibility to sporadic, iatrogenic and variant CJD, while the distribution of the genotype in Korean people was 94.33% of Met/Met, 5.48% of Met/Val, and 0.19% of Val/Val.[533] Considering that almost all vCJD patients in the UK have been reported as having the Met/Met genotype and 36.79% of the UK population have the Met/Met genotype, the studies suggested that the Korean people were more likely to be infected with vCJD when exposed to BSE-infected beef. The study attracted interest due to the fact that the team leader, Yong-sun Kim, was one of a few experts in prion research in Korea and a member of the government's advisory committees for BSE and vCJD issues. Moreover, the claim that Korean people might be genetically susceptible to vCJD was one of the pieces of evidence to have been prepared by the MIFAFF with a view to defending the ban on beef from animals older than 30 months for the negotiations with the US.

At the KAST forum, Gi-hwa Yang and Sang-yoon Kim said that the occurrence of a certain disease does not depend on a particular gene, and incidence of vCJD is related to the exposure level to abnormal prions and various factors such as dietary habit or incidence of BSE in the country affect it. Gi-hwa Yang stated that though

[532] The Korean Supreme Court ruled that this claim was false, because *PD Notebook* reported it as conclusive fact without mentioning the limitation which scientific research in progress has.

[533] Jeong et al., "Polymorphisms of the Prion Protein Gene (PRNP) in a Korean Population." ; Yong-sun Kim, "Mad Cow Disease and New Variant Creutzfeldt Jacob Disease," *J Kor Acad Fam Med*, no. 25 (2004): 509–518.

China and Japan showed similar distribution of MM type in their population to that of Korea, the incidence of vCJD or sCJD in China, Japan, and Korea is not higher than the world average. Therefore, he said that the high frequency of MM type Codon 129 in Korean people was unlikely to result in two or three times higher vCJD risk in Korean people than in UK people.

The opinions of the scientists at KIST and KRIBB were identical. The controversial research of Yong-sun Kim who was regarded as the best expert of prion research in Korea was disparaged by the scientists, due to the fact that it surveyed sCJD patients rather than vCJD patients.[534] They said that it was lamentable that the infinitesimal risk of BSE had become such a big issue, and that the vCJD issue should have been in the domain of scientists rather than that of the media and the general public.[535] However, Hee-jong Woo and Hae-gwan Cheong focussed more on the fact that MM type had shown more susceptibility to vCJD than other genetic types. Hae-gwan Cheong warned astronomical costs to be invested with only one vCJD case for replacing surgical instruments with disposable ones and for importing blood in order to prevent infection during medical treatment.

In fact, scientists' basic understanding of BSE, whether they supported or opposed

[534] However, as presented in Chapter 3, there is a potential for BSE to cause sCJD, not vCJD. A UK team's experiment showed that transgenic mice inoculated with BSE prions produced not only vCJD-like phenotype but also a sCJD-like one. It suggested that some patients may develop a clinical disease indistinguishable from classical CJD or sCJD as the result of exposure to BSE-prions. Therefore, the MM type frequency in sCJD patients could not be regarded as clearly unconnected with the susceptibility to vCJD.

Asante et al., "BSE Prions Propagate as Either Variant CJD-like or Sporadic CJD-like Prion Strains in Transgenic Mice Expressing Human Prion Protein."

[535] Hee-seob Shin, "[Opinion] Let's Leave BSE Controversy to Science," *Dong-a Daily*, May 12, 2008.; Myung-hee Yoo, Jae-chun Ryu (scientists at KRIBB), cited in "Truth of BSE That Scientists Say," *Dong-a Daily*, May 9, 2008.

the new beef import requirements, did not differ considerably. They agreed that vCJD risk by consuming beef was low, but showed differences in how they applied this scientific uncertainty to real conditions. For example, Young-soon Lee argued that the BSE incidence was decreasing and BSE was expected to disappear in the near future with a positive trend worldwide. On the contrary, Hee-Jong Woo and Hae-gwan Cheong took a more cautious stance, namely that no rash conclusions should be made regarding BSE and vCJD until a cycle of the disease had been completed. The official conclusions of the scientific discussions were skewed towards assuring the safety of beef rather than focussing on the uncertainty, as demonstrated by the below summary of the conclusion by the KAST forum. It was to some extent a reflection of the intention with which the scientific organizations held the forum and press conferences, a resolution of the controversy by offering true knowledge of BSE to the public.

> BSE has decreased since the animal feed ban in 1988, and in this trend, it may disappear in the near future;
>
> As 99.87% of abnormal prion protein is accumulated in SRMs, the chance of BSE infection by eating non-SRM cuts is very low and the probability of vCJD occurrence by using cosmetics and medicines from cattle originated materials is low;
>
> The probability of BSE is very low in cattle under 30 months and beef originating from cattle under 30 months with removing SRMs is considered safe;
>
> People with MM type Codon 129 gene were reported to be more likely to be infected with vCJD than people with MV or VV type of Codon 129. MM type is most common among Korean people. However, various genes play a role in diseases occurring, and the possibility of a certain disease occurrence cannot be judged only by a particular gene.
>
> The public and the media are forming extreme conclusions about the risk

of BSE, and fear was exaggerated excessively.[536]

However, news reports regarding the scientific discussions were divided following the political tendency of each paper. Some conservative newspapers reported that BSE was a disappearing and controllable disease and the risk was seriously exaggerated *(Dong-a Daily, Chosun Daily, Maeil Business Newspaper*), but others reported that 'Even experts did not agree with each other' (*Yeonhab news*) or 'Koreans are susceptible to vCJD' (*Hankyoreh*).[537]

Online scientific discussions were organised by the Biological Research Information Center (BRIC), a Korean academic website for researchers in biology. It opened an online discussion board called 'BSE controversy, Let's discuss it scientifically!' from 30th April 2008 to 10th May. Discussions at BRIC, whose main participants were junior scientists and research students, were expected to make more neutral and objective conclusions than the older and more established scientific organisations like KAST or KIST, which might not have wanted to present opinions which ran against the position of the government. Moreover, as junior scientists' discussions in BRIC played an important role in unveiling Hwang's stem cell fraud in 2005, the online discussion attracted attention from the media and the public. Like

[536] Korean Academy of Science and Technology, "The Report of the KAST Round-Table Forum on 8 May 2008," 2009, pp 13-25 (my translation and summary)

[537] Heeje Bak argued that mass media in Korea constructed news reports which represented particular political positions even in reports about scientific knowledge. During the BSE controversy, he said, experts were mobilized as informants who represented particular political position not as information provider. For example, Yong-soon Lee and Gi-hwa Yang were cited mainly by conservative media which supported the government, and Hee-jong Woo and Hae-gwan Cheong were cited mainly by progressive media which opposed US beef import. Heeje Bak, "Scientists in the Media and Politicization of Science - The Case of BSE Controversy in 2008," *DAMRON (Discourse) 201* 14, no. 2 (2011): 27–51.

the other scientific organisations, the manager of the online discussion board tried to confine disputes to scientific discussions and block disputes about political or social ones. Discussions on general online boards involved, for the most part, dissenting claims regarding the safety of US beef and BSE risk. In contrast, the majority opinion coming from BRIC discussion differed. The BRIC discussion consulted academic papers, statistics about BSE and vCJD, or calculations of the chances of vCJD infection from eating US beef. The conclusion was that vCJD risk from eating US beef was very low and that some media and activist groups exaggerated the risk and rendered the public panicked only for the purpose of opposing US beef import. This was the same conclusion reached following discussions by scientists at the KAST, KIST, and KRIBB.

However, discussions at BRIC, which provided the lay public with a more relaxed atmosphere than the forum held by the established scientific organisations, showed clearly why science-focussed discussions of the scientific community could not resolve the controversy. For example, even though most of the debaters at BRIC agreed that eating US beef was not as risky as anti-US beef groups argued, it did not always result in support for the government's decision, and they did not want their discussions to be referred to as evidence for the safety of US beef. One online contributor wrote:

> Many people on this board are concerned about exaggerated BSE risk, and I agree to some extent with the view. However, *even if the risk of BSE was exaggerated, it cannot justify the current way of importing US beef.* (…)

(ID: gwangwoo, 30th April 2008, my translation and emphasis)[538]

Moreover, debaters who identified themselves as lay people pointed out why scientists' discussions reduced to scientific aspects of the beef issue were empty.

> If the low probability of risk was verified scientifically as you said, (…) why does Japan import only beef from cattle under 20 months and why dispose beef as waste when bone is detected? (…) It is reckless to say that US beef is not risky based on probability and a few articles, because the facts about BSE are not perfectly known. Whatever can probability do?
>
> (ID: keung, 1st May 2008, my translation)[539]

> … The public are not concerned about the possibility of infection without recognising the low incidence, but *expresse discontent with the government which increased fear and did not leave the right tools to control the risk.* This is not a subject for scientific discussion.
>
> (ID: simmian, 6th May 2008, my translation and emphasis)[540]

As shown by the above claims, disputes over BSE related to political issues regarding the government's role and responsibility for protecting the public's health rather than the issue of the possibility of a BSE outbreak. Conflicting issues over BSE and US beef could be separated abruptly into questions of the following categories: 1) questions about scientific uncertainty of BSE; 2) questions about how to guarantee effective enforcement of risk control measures in the US; and 3) questions about how much risk would be acceptable and whether the government's decision to accept the risk by allowing beef from old cattle was legitimate. Whilst

[538] "BRIC Discussion Board." (bric.postech.ac.kr/scicafe).

[539] Ibid.

[540] Ibid.

scientists may provide answers regarding the first category at most, this will not be the case for the others. When scientists said that the risk from eating US beef was negligible, it was assumed that risk control measures in the US were properly implemented. Moreover, as presented in discussions at BRIC, even if the extremely low risk of beef was admitted in scientific terms, it did not mean that the risk should be accepted by the Korean public. Scientific claims such as 'safety of beef after removing SRMs' or 'extremely low chance of vCJD infection from eating beef' could not provide appropriate answers to the common questions of the public such as: '(If the risk is negligible), Why does Japan and the EU maintain such strict regulations?' or 'Why do we have to import beef from the US, taking even negligible risk?' The answers to these questions should be provided by the government with authority, and as such, the efforts of scientists who have attempted to resolve the controversy with scientific knowledge ended in failure.

6.4 Closure of the controversy

In the previous section, disputes over the beef import requirements agreed in April 2008 were presented. The claims of the government and civil activists were conflicting, and both of them relied on scientific knowledge as conclusive grounds. However, scientific discussions aiming to provide knowledge of BSE and correcting the misunderstanding of public failed to resolve the controversy. This section will detail the process behind the government's policy shift to pacify the public and the aftermath of the BSE controversy.

6.4.1 Modification of beef requirements

As public protests continued, the government decided to postpone promulgating the beef import requirements, and looked for ways to defuse public concerns without scrapping the beef agreement. On 19th May, a letter from the US Trade Representative (USTR) Susan C. Schwab was sent to Korea Trade Minister Jong-hoon Kim and her statement was released. In her letter, Schwab said that the US recognised that "every government has the right to protect its citizens from health and safety risks in accordance with the GATT Article XX and the WTO SPS agreement" and "US regulations require SRMs, as defined under U.S regulations, be removed from all beef or beef products, whether they are intended to domestic consumption or export to another country."[541] This letter aimed to calm public dissatisfaction regarding the potential situation of Korea being unable to ban importation of US beef even when additional BSE cases occur in the US. It also put to bed the rumor that the US would export beef products which were not being used for human food in the US such as beef from animals older than 30 months and SRMs. The letter from the USTR, which guaranteed the equivalence of regulations on beef, regardless of whether it is destined for domestic consumption or exportation, did not reassure the public. The civil organisations argued that the government was trying to patch up affairs without amending crucial problems in the requirements such as import of beef from cattle older than 30 months and offal.

On 22nd May, President Lee addressed public talk of apologies on the beef issue. He admitted that the government had not paid enough attention to public concerns

[541] "Letter of Susan Schwab (United States Trade Representative) to Jong-Hoon Kim (Trade Minister)," May 19, 2008.

and had not consulted with the public. He said that citizens' health was more valuable than any other interests, and apologised for his failure to fathom the Korean citizens' minds.[542] However, public concern on mad cow disease was still described as an 'absurd story' and unscientific anxiety in his address. The position of the government that renegotiation was impossible was firm. The grounds were: 'the government cannot destroy the beef deal just because of public emotion'; 'there is no problem in scientific terms in the beef deal'; and 'international standards should be respected.' Moreover, as the number of participants increased, candlelight rallies became often violent demonstrations, and frequent conflicts between demonstrators and police brought back memories of the military crackdown during the military dictatorship. Now, the slogans which were the most frequently sung and shouted at street demonstrations were "The Republic of Korea shall be a Democratic Republic" and "all state authority shall emanate from people."[543] Here are some voices.

> The most important problem was not about food safety, but the response of the government and the decision making process. … (A student, cited in Lee, Jae-sin & Min-young Lee, 2008, p. 58-59, my translation and summary).

> The public opposed the fact that the government made the decision over the nation's health without any consultation and the undemocratic process and the way of thinking of the government. Risk of BSE and US beef was a less important issue. (an office worker in the thirties, cited in Lee, Jae-sin & Min-young Lee, 2008, p. 63, my translation and summary).[544]

The focus of the candlelight rallies was changing to the request for democracy and

[542] President Lee, "Public Address of Apologies," May 22, 2008.

[543] Constitution of the Republic of Korea, Article 1

[544] Jae-sin Lee and Min-young Lee, *The Creation of Civic Culture and Change in Lifeworld* (Korea Information Society Development Institute, 2008).

communication between the government and the public.[545] When the government announced the enforcement of the new import sanitary condition as of 3 June, more than 40,000 people gathered in downtown Seoul on May 31, 2008. Demonstrators blamed the government and President Lee for not stopping US beef import which the nation did not want. The Korean government decided to postpone enforcing beef requirements and requested that the US ban the export of beef from cattle over 30 months on 2nd June. However, public outrage was not appeased. The Grand Nation Party (the ruling political party) was beaten completely at the regional by-election on 4th June and the approval rate of President Lee plummeted. All senior presidential secretaries and all cabinet members including the prime minister offered to resign *en masse* to express regret for the beef issue. On 6th June, a constitutional appeal, which claimed that the beef import requirements infringed on the right of the people's health, was filed by a civil organisation ("Lawyers for Democratic Society") with the signatures of nearly 100,000 people.

Nevertheless, the government still refused to scrap the beef agreement, saying 'The effect will be huge, in case the cancellation of the beef deal leads to trade conflict with the US and it is harmful to the national interest.'[546] The number of people who attended the street demonstration peaked with 80,000 protesters in Seoul and 140,000 throughout the country on June 10th. This was the 21st anniversary of

[545] According to a survey in July 2008, more citizens participated in protest 'to express dissatisfaction to the government and President Lee' (32.9%) than 'to request the government to discard the beef negotiation and renegotiate with the US' (20.3%). Respondents said that they had participated in the protest first for lifting beef negotiation (58.3%). "Candlelight Is the New Power for Democratic Development," *Naeil Newspaper*, August 11, 2008.

[546] President Lee, meeting with Buddhist leaders on June 6. He sought for advice from leaders of major religions in Korea to retrieve the situation. "Re-Negotiation Will Cause Bigger Crisis," *Yeonhab News*, June 6, 2008.

democratic movement which eventually brought an end to the military dictatorship which had lasted since 1961.[547]

Finally, President Lee made a second apology at a press conference on 19th June. He said that he had thought that KORUS FTA, a shortcut to improve Korea's economic competitiveness, could not be ratified without opening the beef market to the US and the relationship with the US should be recovered as soon as possible considering the military tension Korea faced with North Korea. The government, which had continuously denied the association between the beef deal and other political interests including the FTA, finally admitted that the political and economic consideration affected the beef issue. Though not cancelling the whole beef deal agreed in April, the government declared that beef from cattle older than 30 months would not be imported, as long as the Korean public did not want it.[548] On 21st June, the MIFAFF Minister and Trade Minister announced that both governments had agreed to introduce 'Less than 30 Month Age-Verification Quality System Assessment Program' (QSA) as a transitional step to improve Korean consumers' confidence in US beef.[549] It would verify that beef destined for Korea would be from cattle less than 30 months old by a 'voluntary private sector' arrangement.[550] In addition, brains, eyes, skulls, or spinal cords from cattle less than 30 months of age, which had been banned by the beef requirements in 2006 but not banned by the beef

[547] The number was estimated by the police, but demonstration organizer estimated that the attendance was 700,000 in Seoul and 1,000,000 throughout the country.

[548] President Lee, statement for press interview, June 19, 2008

[549] MIFAFF, "Addendum of the Import Health Requirements on US Beef and Beef Products," June 2008.

[550] Remy Jurenas and Mark E. Manyin, *U.S.-South Korea Beef Dispute: Issues and Status*, Congressional Research Service 14, September 23, 2010, p. 6

requirements in April, would be banned.[551] These changes meant almost returning back to the beef import health requirements of 2006. Though the civil activist groups raised doubts about the credibility of the QSA Program which relied on voluntary observance of US exporters rather than on the US government's verification, candlelight rallies petered out. However, surveys showed that public anxiety about US beef was not clearly resolved. Approximately 65% of people said that they were still concerned about the safety of US beef.[552]

6.4.2 The aftermath

The government announced the 'Import Health Requirements for US beef and Beef products' which was amended by the additional negotiations with the US on 26th June. On 29th June 2008, the Korean government announced the 'Plan for Hygiene and Safety Control of Livestock Products and Livestock Industry Development': According to the plan, quarantine officers and special investigation teams would be dispatched to the US and beef products with more risk such as tongue and intestines would be investigated through defrosting and biopsy in the quarantine process. In addition, subsidies to produce high quality Korean beef would be provided for beef farmers. In July 2008, the Korean government enforced the expanded application of 'Beef Origin Labeling', which had been applied only to grill restaurants with a floor space of 300 m^2 or larger, to all eating establishments

[551] MIFAFF, "Addendum of the Import Health Requirements on US Beef and Beef Products."

[552] Surveys by *Hankyureh* (26 June 2008) and *Munhwa Daily* (1 July 2008)

including small cafes and catering firms.[553] It was announced that the Beef Traceability System would be implemented on a full scale from June 2009, affecting 2 million domestic animals. US beef went on sale from 1st July 2008.

Nevertheless, there was no change in the government's notion about science as authoritative, objective and universal knowledge even after the controversy. At the hearing on the beef negotiations by the Special Committee at the National Assembly in August 2008, government officials argued that there was no problem in the beef requirements agreed in the April, because it was based on the scientific OIE standards. They said that while the initial beef deal agreed in the April was based on 'science', the amended beef requirements through additional talk with the US in June (the ban on beef from cattle over 30 months and brains, eyes, skulls and spinal cords) reflected 'public emotion not science.'[554]

The Korean National Assembly amended the Act on the Prevention of Contagious Animal Diseases (Act 9130, 11 September 2008) to resolve issues which had been raised during the BSE and US beef controversy. A definition of prohibited items which cannot be imported from other countries was newly included in the Act. Before the amendment, there was no general definition of SRMs in Korea, with the exception of import requirements for US beef. As Korea imported beef from Australia, New Zealand, and Mexico which had no BSE incidences, there were no

[553] MIFAFF, *Understanding of Agricultural and Aquatic Food Safety Policy*.

[554] Un-cheon Chung (MIFAFF Minister), statement at the National Assembly, *stenographic report of the Special Committee for the Investigation of Korea-US Beef Negotiation, Korean National Assembly*, Augist 1, 2008, p.32 and 57; Sang-gil Lee (Director General for the Livestock Policy Bureau at the MIFAFF), statement at the National Assembly, *stenographic report of the Special Committee for the Investigation of Korea-US Beef Negotiation, Korean National Assembly*, September 5, 2008, p.92

restrictions on the beef products produced and imported in the countries. The amendment not only designated the cuts which are normally defined as SRMs (e.g. brain, tonsil, and distal ileum) as prohibited items, but also granted the MIFAFF minister the authority to prohibit certain cuts of beef, considering ‘the national dietary habits.’

> Article 2
>
> 6. The term "specific hazardous matters" means any of the following items of the tissue of cattle from a country where bovine spongiform encephalopathy has broken out:
>
> (a) Amygdala and distant parts of the ileum derived from cattle of all monthly ages;
>
> (b) Brain, eye, spinal cord, skull, spinal column derived from cattle older than 30 months; and
>
> (c) Matters separately designated and announced by the Minister for Food, Agriculture, Forestry and Fisheries by taking into consideration the conditions of outbreak of bovine spongiform encephalopathy by country and national dietary habits, etc. (underlines added)

These measures reflect the concern that Korean people who eat most of all parts of the cow are likely to be more susceptible to BSE than Western people who eat mainly muscle meat. Nevertheless, the newly made definitions of SRMs are not applied to beef produced and slaughtered in Korea.

In addition, the amendment included the ban on ‘beef and beef products of cattle older than 30 months produced from countries where five years have not passed since the outbreak of bovine spongiform encephalopathy’ (Article 32). This ban was controversial due to a concern about potential trade conflict. It was more stringent

than the *OIE Terrestrial Animal Health Code*. According to the global trade regime, more stringent regulation than international standards is required to be scientifically justified.

Besides this, according to the amendment, in the event that the government intends to import beef from the above-mentioned countries, the decisions shall be subject to deliberation by the National Assembly (Article 34). This was done to restrict the government's discretion to permit importation of foreign beef products. The deliberation of the national assembly was made as a compromise between the opposing party which claimed that the decision should be made with the consent of the National Assembly, and the government which claimed that the policy decision on beef import requirements was a technical issue which did not require the Assembly's agreement. The Canadian beef resumption, discussed below, was the first case where concern about trade conflict was realised and the deliberation by the National Assembly was applied.

Canada, whose beef had been banned since 2003 due to BSE cases, requested that the WTO settle the disputes over the Korean ban on Canadian beef in July 2009. Canada, which was identified as having reached a 'Controlled BSE risk state' by the OIE in 2007, had 15 BSE cases from 2003 to 2009, and new cases were discovered in 2010 and 2011. Canada argued that Korea should open its beef market to Canada with the same conditions as those applied to US beef. Korea made an agreement with Canada to import beef from cattle under 30 months in June 2011 before the WTO panel process started. This was because the Korean government thought that if Korea were to lose the case at the WTO panel, it should open its market to beef from cattle

older than 30 months from many Controlled BSE risk countries which had BSE incidence such as the UK and many European countries.

The Committee for Agriculture at the National Assembly opposed the importation of Canadian beef, though it recognised that the beef import and sanitary requirements agreed by the two governments secured the acceptable conditions to protect public health. The grounds for the opposition were: new BSE case detected in Canada in February, and potential economic difficulty faced by Korean beef farmers as a result of Canadian beef import. The report was adopted at the plenary session of the National assembly, but the adoption of the report had procedural meaning and it did not have binding force to the government's decision. The government pushed ahead with the process to import Canadian beef, regardless of the intent of the report. 'Deliberation in the national assembly' did not mean 'the assembly's consent', and it did not influence the government's policy decision on Canadian beef

Indeed, a potential source of conflict still existed in 2013. It is uncertain whether Korea will be able to maintain the ban on beef above 30 months of age. Firstly, the pressure from the US to open the Korean market to beef from cattle over 30 months continues. The CRS Report stated:

> The issue facing US negotiators is how and at what pace the United States can get South Korea to accept all US beef, irrespective of the age of the cattle when slaughtered.[555]

Secondly, as the BSE incidence decreases and the positive trend continues,

[555] Jurenas and Manyin, *U.S.-South Korea Beef Dispute: Issues and Status*., p.13

regulations to reduce BSE risk are being relaxed world-wide. Therefore, harmonisation with the international standards could well be a cause of tension in the future. The OIE amended its *Terrestrial Animal Health Code* in May 2009 to designate deboned skeletal muscle meat as a commodity which can be safely traded 'regardless of the age of cattle and risk status of exporting countries.' The European Commission, which started to examine easing BSE risk reducing measures and amendment of the list of SRMs 'in line with the OIE recommendation', increased the age of bovine cattle for BSE testing from 30 months to 72 months in September 2009.[556]

6.5 Conclusion

This chapter, detailing the second phase of the Korean BSE controversy, has presented the development of the public controversy in 2008. The newly formulated conditions for US beef allowed beef from cattle older than 30 months and offal. This was a more relaxed condition than the previous import health requirements for beef, and led to serious public controversy over the safety of beef and BSE. Public protests sparked by a TV program dominated the entire nation for more than two months. The government argued that as the new beef sanitary requirements were in accordance

[556] European Commission, "TSE Road Map."; European Commission, "Commission Decision of 28 September 2009 Authorising Certain Member States to Revise Their Annual BSE Monitoring Programmes (notified Under Document C(2009) 6979) (Text with EEA Relevance) (2009/719/EC)," http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2009D0719:20110701:EN:PDF.

Cattle which are born in some member states are the target of this decision. The authorized countries are: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden and the United Kingdom. Food Standards Agency, "Food Standards Agency - BSE Controls Explained," accessed February 27, 2013, http://www.food.gov.uk/policy-advice/bse/controls#.UVkVdDfk6TI.

with the OIE standards, beef safety would be guaranteed. Civil organisations raised alternate accounts about beef safety and BSE risk from a more precautionary perspective. Contradictory claims about BSE and beef safety were voiced by both the government and government opponents, while 'scientific truth' was represented as a solution to the controversy. However, there remained too much uncertainty surrounding BSE for conclusive answers to be provided, and disputes reduced to scientific issues could not calm the controversy which was combined with the issue of political legitimacy. Public protest ended when the government stepped back, reintroducing the ban on beef from cattle above 30 months age. However, there was no fundamental change in the Korean government's policy approach.

In the next chapter, I will analyse the Korean BSE controversy by pooling evidence presented in preceding chapters with a view to answering the research questions.

7 Analysis of the BSE controversy in Korea

7.1 Introduction

In this chapter, the characteristics of the BSE controversy in Korea will be presented and discussed, with a focus on the overarching research questions presented in Chapter 1: 'what caused the huge BSE controversy in Korea in 2008 when the disease seemed to be controlled and not threatening?'; and 'how was the risk and uncertainty of BSE addressed and what was the particularity of the Korean response?' I will first summarise the Korean BSE controversy under the themes which were presented in Chapter 2, following which, I will compare and contrast the ways in which scientific knowledge were produced and presented in Korea and the UK policy process. Finally, I will suggest the particularity of the ways in which science was dealt with in the Korean policy process by using Jasanoff's concept of 'civic epistemology.'

7.2 Summary of the Korean BSE controversy

To the UK government in the 1980s, BSE was a totally unknown disease, and lack of knowledge represented one of the significant factors which instigated anxiety. Indeed, the origins of the disease were unknown, as was how it could be treated, or whether it would cause risks to human health. Since the tragic events in the UK, knowledge of BSE has been accumulated. As a result, BSE incidence decreased drastically as risk control measures were put in place widely, although the uncertainty of the disease was not completely resolved. Despite these conditions,

Korea was faced by massive public scare and panic over BSE risk in 2008 and the increase in scientific knowledge did not resolve the conflicts in Korea.

Jasanoff has written that "… increasing knowledge is often likely to create new frontiers of uncertainty, where the evaluation of evidence depends primarily on the interpreter's individual judgment and institutional or personal values." [557] Accordingly, scientific uncertainty is likely to be mobilised as a resource by those who would like to affect or oppose regulatory policy.[558] For example, during the Korean controversy, the high frequency of MM type in Korean sCJD patients was interpreted as evidence suggesting a higher vCJD risk for Korean people by dissenters and by the government according to their interests. Simultaneously, it was presented by some scientists as evidence suggesting relatively low risk in comparison with the other countries which showed a similar sCJD incidence to Korea despite the low frequency of MM type in their population. The clear case that uncertainty was mobilised to affect regulatory policy marked the Korean government's dual stance on BSE risk and uncertainty when responding to the international situation and the domestic situation. The risk and uncertainty claims which the Korean government raised in international settings boomeranged on the government later by the civil organisations which attacked the government's decision to relax the beef conditions with the same claims.

The mobilisation of uncertainty surrounding BSE was closely related with the complex interests related to US beef in Korea. The import of US beef was always a

[557] Jasanoff, *Risk Management and Political Culture*., p. 47

[558] Jasanoff, *The Fifth Branch*.

politically sensitive issue in Korea, often represented as a threat to domestic agriculture. BSE had been linked to the US beef issue since the detection of BSE-infected cattle in the US in 2003, while political and economic considerations of the Korean government regarding the domestic livestock industry and the relationship with the US complicated the beef issue. The complexity of the beef issue impeded the Korean government's efforts to take a clear stance on BSE risk and beef safety. The Korean government stressed uncertainty regarding BSE risk in international settings to minimise beef import from the US and to secure more advantageous positions in beef negotiations with the US; simultaneously, it supported the safety of beef in the domestic arena in order to maintain stability in the home beef market and to prevent public anxiety about beef. The opening of the beef market in accordance with the OIE standards was magnified as the key matter to resolve the FTA with the US, the priority issue for the two countries. As such, BSE risk in US beef was presented as the main reason to oppose the FTA with the US by the anti-FTA group. Thus, the Korean government was put in a double bind. It could not officially admit the safety of beef processed in accordance with the OIE standards, nor could it fully support the risk claims about US beef, as the anti-FTA group argued.

The Korean government, which imposed a total ban on US beef in 2003, permitted the import of boneless beef from cattle under 30 months of age in 2006, and finally made an agreement with the US to allow beef from cattle above 30 months of age, including beef-on-the-bone and some cuts which had previously been prohibited, in order to remove obstacles for the FTA in 2008. The decision resulted in massive public protests. BSE had specific features which meant that its risk was likely to be perceived by the public as serious, despite the minimal chance of infection. It was a

disease regarding which knowledge was not clear and with potentially irreversible and catastrophic damage capabilities. Besides this, public evaluation of risks depended on political and social factors such as the procedures for decision-making and trust in relevant institutions. The trustworthiness of official assurances about the safety of US beef was undermined by the earlier pressures from the US and the abrupt policy change ahead of the summit between Korea and the US. Moreover, neither the BSE risk control system in the US nor the enhanced Beef Origin Labeling System in Korea were trusted by the public due to earlier cases of the detection of prohibited bone in US beef boxes and frequent beef origin fraud in the Korean beef market.

The Korean government presented the decision on the new beef sanitary requirements as having been made on scientific grounds. Further, it contrived to resolve the controversy by appealing to scientific knowledge, and the government's safety claims were generally supported by scientists. However, they could not reassure the public. Guidelines for the safety of imported beef belonged to the domain of 'policy-relevant science' or 'regulatory science' which required the intervention of non-scientific factors, in the sense that the legitimacy and credibility of the policies relied not only on seeking better scientific knowledge but also on attaining political authority of the knowledge.

Though the scientific claims of the government were supported by scientists, the beef import requirements agreed in April 2008 failed to secure its political authority. Contrary to the consistent claims of the opposition groups which had warned about the risk of US beef since 2005, the government's arguments regarding the safety of

beef, which changed depending on the circumstances, were less credible. The dual positions of the Korean government about BSE risk and beef safety in international and domestic settings, which were disclosed by revealed documents during the controversy, raised doubts about the trustworthiness of the government. Misinterpretation of the US enhanced feed ban raised doubts about the government's competence. Besides this, the government's rejection of public demands to scrap the beef deal was regarded as the ignorance of public opinion and a retrograde step for democratic governance.

Moreover, under the new beef requirements in April 2008, the safety of beef to be eaten by Korean consumers relied entirely on actions controlled by the US government. In 2006 and 2007, the government imposed strict stature on the breach of the beef requirements by the US exporters. It sent back entire beef containers which contained only small bone fragments and suspended import by stopping or postponing inspection of US beef when banned items such as bone were found. The strict measures of the government were supported by the public, regardless of the actual risk of bone. However, under the beef requirements in 2008, the Korean government could not force the US government to implement the enhanced feed ban, and it could not suspend or ban US beef import even in cases involving a breach of the beef requirements by the US or a new BSE case in the US. Moreover, it would not be possible for the Korean quarantine agency to identify beef items which were designated as SRMs in old cattle, unlike bone which could be detected X-ray using detectors. These conditions raised doubts as to whether the Korean government could take actual actions against the breach of the requirements by the US and secure the safety of beef. It was framed by dissenters as giving up of sovereignty to protect

a nation's health and a dereliction of basic national duties. Therefore, the controversy became an issue of trust in the government beyond food safety, and it was this factor which primarily caused the long, and indeed sizeable public protest. As Sung-Chul Park has commented, it was;

> Not danger of BSE but the fact that there is no way to escape from the risk made the Korean public seized with fear. *How do we entrust our food safety wholly on conscience and good will of multinational livestock capital and foreign government?*[559]

To summarise the cause of the Korean BSE controversy, firstly, BSE risk was amplified and mobilised under political and economic considerations; and, secondly, the government failed to recognise the political and social implications of the beef issue, and consequently failed to secure political authority for its beef policy.

7.3 Comparison of the Korean ways to approach to scientific knowledge with those of the UK

The Korean government had scientific advisory committees and defended its policies as having been based on science, just as the UK government had done in the 1980-90s. In this section, the way in which scientific knowledge in the policy area was produced and presented during the Korean BSE controversy will be compared with that of the UK. Comparison with the UK will clarify the particularities of the ways in which knowledge is produced and presented in Korean policy processes.

[559] Sung-Chul Park, Disappearing Science in front of BSE, *Science and Technology*, June 2008, pp.78-79, my translation and emphasis

Bureaucrats dominated the expert advisory system

The uncertainty surrounding BSE and beef safety was a shared feature of the two controversies. The UK and the Korean government set up expert advisory committees for policy-making on BSE and beef safety issues. Korea and the UK showed similar strategy patterns whereby scientific uncertainty was dealt with in policy-making, as Jasanoff described in her analysis on the regulatory politics of carcinogens in the UK.[560] Contrary to Germany where the resolution of scientific issues is delegated to technical experts and the interpretation of evidence and the criteria were explained by an expert group, she stated that scientific and administrative processes were mixed in the UK and the analysis of scientific and policy issues was not provided in its explicit detail by the government. In addition, the advisory committees of Korea and Britain looked similar in that they depended on bureaucrats for their operation: the selection of experts was at the discretion of bureaucrats; expert advisory members depended on bureaucrats for information and the creation of policy recommendation, whilst committees were not open to the public.

However, compared to the UK, expert committees in Korea played a less visible role in the policy-making process and public relations. Contrary to the UK, MAFF officials who hid themselves behind their scientific advisors in representing their policy decision, Korean MIFAFF officials emphasised that decision making on US beef rested with the minister not experts. Of course, contrary to the UK in the 1980s, which experienced an enormous increase in BSE-infected cattle, only three BSE-

[560] Jasanoff, *Risk Management and Political Culture*.

infected animals were discovered in the US until 2006, and BSE looked controlled with international guidelines and information to control the risk made available to the public. The controlled situation of the disease was a significant difference between the UK and Korean cases. Nevertheless, the Korean government was also faced by a different kind of uncertainty regarding BSE. This uncertainty had resulted from increasing knowledge since the UK crisis; knowledge which the UK government did not confront, such as the genetic susceptibility of Korean people to BSE. Both governments used expert committees to respond to uncertainty, and the difference in both countries' operating advisory committees cannot be explained only by the difference of the condition of the disease.

In the UK, consultation with an expert advisory committee and gaining scientific advice was an 'inherent part' of the political culture.[561] Under the tradition of economic liberalism and self-regulation of industry in the UK, where intervention of the government was likely to be only reluctantly adopted, a sound science rationale was important to legitimate new regulations. In light of this, policy decisions were represented as emerging from scientific experts.

On the contrary, advisory committees were not considered as important during the Korean BSE controversy as they were in the UK. Korea has a tradition of active government and powerful bureaucracy which did not avoid aggressive intervention for economic growth. The authoritative development process and the lower profile of counter-groups which could challenge the government lessened the burden of bureaucrats to make explicit principles in policy-making. Though the advisory

[561] Brickman, Jasanoff, and Ilgen, *Controlling Chemicals*.

committee system was used to respond to the increasing complexity of policy-making, Korean civil servants exercised their power more directly than their UK counterparts. The NLHCC was chaired by high level officials of MIFAFF and a substantial number of the committee members were civil servants at the MIFAFF and the NVRQS. The government's decision was made regardless of whether or not NLHCC members came to an agreement. Whereas the UK policy-makers stated, "we are just doing what our expert advisors tell us should be done", the expert committee in Korea never represented the policy decision.[562] The attitude of Korean civil servants could be summarised as, 'as experts raised no opposition to the policy alternative of the government, there is no problem in the policy.' The role of expert committees was to recognize the government's policy preference.

The British advisory committee members were chosen among the 'great and the good' people who had proven their capacity to define public good through their years of public service experience.[563] The NLHCC of the Korean government consisted of scientists outside the government, representatives from producer and consumer organizations, and civil servants at MIFAFF and NVRQS. Like the UK advisory committee, most of the advisory scientists outside the MIFAFF and NVRQS were not active researchers in the BSE/vCJD field, because research in the field was not active in Korea. Scientist members of NLHCC generally had good scientific reputations, but none of them could be seen as counterparts to the 'great and good' in the British sense. Many of the scientific advisory members of the UK earned honours such as knighthoods by their contributions to the policy area, but it

[562] Zwanenberg and Millstone, *BSE*. p. 18

[563] Jasanoff, "Civilization and Madness."

was unlikely for Korean scientists to be honored by their service on governmental advisory committees.[564] While there exist orders dedicated to scientists in Korea, they are to honor personal scientific achievement and do not have such an impact on public life. Unlike the UK where expertise was associated with a specific individual whose public standing was verified by his/her record of public service, trustworthiness or legitimacy of expertise did rely heavily on individual experts in Korea. Technical qualifications were of more importance and as such, individual experts could be replaced by others with similar levels of professional knowledge and standing. Moreover, as the process of appointment and dismissal of the government's advisory members is an internal process within the government, it generally does not attract public interest and raises legitimacy issues.

Unlike the UK advisory committees to which only scientists were invited, the Korean NLHCC included representatives from producers' and consumers' organizations as advisory members in addition to scientists. The participation of representatives from producers' and consumers' organisations in the NLHCC may be seen as a form of 'extended peer group' of Funtowicz and Ravetzs. However, the advisory members from the producers' and consumers' organisations were not recognised as experts, but simply considered as subjects to be informed by the MIFAFF officials.[565] In this respect, it is important to look beyond a mere presence on advisory committees and to also pay careful attention to roles taken within them.

These different features of expert committees in the UK and Korea shaped the

[564] Ibid.

[565] Funtowicz and Ravetz, "Science for the post-normal age."

different responses to the BSE controversies in each country. The BSE controversy in the UK brought about criticism of the relationship between science and government, as well as a change in policy processes including the promotion of public engagement. A 'Guidelines on the use of scientific and engineering advice in policy making' was issued to help secure transparency and openness in advisory processes and policy making, while two-way and dialogic forms of public consultation and engagement were encouraged to re-establish the credibility of scientific expertise for policy-making among the public.[566]

However, calls for public debate were rarely heard in Korea, even though the massive public protests represented the most striking point of the Korean BSE controversy. Instead, independence of scientists from politics was suggested by civil organisations as a solution with which to create better policy. Dissenters criticised the government for ignoring experts' advice and rendering a sanitary and quarantine issue, which should have been dealt with on scientific and technical grounds, a political issue instead. The NLHCC was often contrasted with the Food Safety Commission in Japan, which consisted of only scientists without bureaucratic involvement. At a forum in December 2008, held by the Korean Federation of Science and Technology Societies (KOFST), the biggest association of scientific organisations in Korea, participants including representatives from scientific organisations attributed the failure of the Korean scientific community in calming the controversy to public distrust caused by relatively low social status of the

[566] "The Government Chief Scientific Advisor's Guidelines on the Use of Scientific and Engineering Advice in Policy Making'," (Government Office for Science.), http://www.bis.gov.uk/go-science/science-in-government/strategy-and-guidance#sthash.7oEgmlUf.dpuf. First published in 1997, these have since been updated three times following public consultation, most recently in 2010.

scientific community in Korea, and called for a restoration of the impaired authority of science.[567] In the Korean controversy, scientific knowledge was taken as an authoritative and indisputable basis for public policy by the government and dissenters, while scientific expertise was suggested as a way in which to restrain the power of bureaucracy.

Dependence on international standards and foreign authority

As discussed above, both the UK and the Korean government defended their policies as having been based on science, although the ways in which they relied on science differed. The UK government officials and politicians represented their policies as having been strongly guided by their scientific advisors.[568] They used to say that they had had no alternative but to accept the advice of experts or they would do only as their advisors told. On the contrary, the Korean government did not rely on its expert committees or scientific advisors to defend its policies. Instead, the grounding of BSE regulatory policy presented by the Korean government was the international standards represented by the OIE *Terrestrial Animal Health Code*.

The Korean government argued that the OIE guideline could guarantee the safety of beef and it should be observed as a global standard. Risk assessment of the Korean government regarding beef import from the US therefore involved assessing whether the BSE risk control measures in the US were in accordance with the OIE

[567] 'How do (we) resolve the distrust and conflict between science and society?' organized by Korean Federation of Science and Technology Societies (KOFST), 28 December, 2009

[568] Zwanenberg and Millstone, *BSE*.

standards. Even though the Korean government itself raised doubts about the safety of muscle meat and the BSE risk control system in the US, it took the stance that decisions by the international organisation were verified scientifically and should be followed as global standards.

Stilgoe has called the dependence on established guidelines in scientific advice 'discourse of compliance.'[569] In his study of the mobile phone health risk controversy in the UK, he stated that 'discourse of compliance' prevented lay people from raising doubts about the adequacy of safety guidelines on electromagnetic fields (EMFs) by demarcating the uncertainty as only experts' concern. Likewise, the Korean government's 'discourse of compliance' with the OIE standards hid the assumptions and conflicts behind the OIE *Terrestrial Animal Health Code* such as disputes over the safety of muscle meat which had been concluded by voting, or doubts about the risk control system in the US. Kim et al. conducted a study of the regulation on GM food in Korea and concluded that 'discourse of compliance with global standards' existed among the regulators.[570] They said that Korean regulators had a firm notion that assessment of GM food based on 'substantial equivalence' could guarantee its safety. This was in direct contrast with the situation in Europe and the US, where laboratory tests were no longer regarded as the only way in which to guarantee the safety of GM food and the concept of 'substantial equivalence' had

[569] Jack Stilgoe, "Controlling Mobile Phone Health Risks in the UK: A Fragile Discourse of Compliance," *Science and Public Policy* 32, no. 1 (January 2, 2005): 55–64.

[570] Hyomin Kim, Jaeryong Yeo, and Soohyung Yoo, "Three Sides of Korean Genetically Modified Food Controversies: Global Standards, Right-to-Know and Counter-Experts," *Journal of Science and Technology Studies* 11, no. 2 (2011): 31–66.

been continuously challenged and changed.[571]

In addition to the OIE standards, the claims of the Korean government and the opposing activists relied primarily on foreign references such as experimental studies carried out in the West. During the BSE controversy, many foreign scientists who were said to be eminent were presented by each party, and personal networks with foreign scientists were sometimes mobilised by scientists who wanted to exert the authority of their claims. Indeed, dependence on studies by foreign scientists was, to some extent, innevitable, as the research base for BSE in Korea was limited. The problem was that scientific results were only mobilised without discussion regarding the assumptions and limitations of the research. Evidence which was obtained in experimental conditions was not clearly distinguished from the evidence of risk in real conditions, while the different backgrounds and contexts of different regulatory policies in other countries were not seriously examined in disputes between the government and dissenters.

The dependence on foreign authority and importing knowledge was a contrasting feature between the Korean BSE controversy and the UK case. Dressel stated in her comparative study of BSE controversy in the UK and Germany that the notion that ‘a British problem and British scientists are well able to cope with without support from abroad’ was the distinctive feature of British culture in the relationship with the

[571] "Substantial equivalence embodies the concept that if a new food or food component is found to be substantially equivalent to an existing food or food component, it can be treated in the same manner with respect to safety (i.e., the food or food component can be concluded to be as safe as the conventional food or food component).” “Joint FAO/WHO Expert Consultation on Biotechnology and Food Safety” (Rome, Italy, October 1996).

EU.[572] Similarly, according to studies regarding risk assessment, domestic studies were preferred to foreign ones for health risk assessment in the UK and the US. [573] On the contrary, in her study of the Portuguese BSE controversy, Gonqalves pointed out that foreign veterinary science was more deferred to by the policy makers than domestic science in Portugal, a semi-peripheral nation within the EU, which was not "a scientific innovator but rather a receptor of models and methods developed abroad."[574] Similarly, the external dependence of Korea could be explained from the point of the knowledge production structure in Korea which achieved development by importing knowledge and catching up, as shown by the fluoridation controversy in Chapter 4. A notion that 'we (Korea) have only to follow the advanced countries' precedents without throwing resources' hindered research which might have supported indigenous safety guidelines.[575] This resulted in a lack of indigenous data for risk assessment and a situation whereby guidelines for consumers' safety were borrowed from foreign countries.[576] The government responded by simply stressing that beef destined for Korea from the US was the same as beef consumed in the US, and thus safe for Korean people as well. Although the dietary habit of Korean people enjoying offal was a long-pending concern regarding BSE risk, no efforts to find an

[572] Of course, it cannot be denied that UK scientists had the most knowledge on BSE and they dominated EU scientific committee. Dressel, *BSE*. p.126

[573] Frances B. McCrea and Gerald E. Markle, "The Estrogen Replacement Controversy in the USA and UK: Different Answers to the Same Question?," *Social Studies of Science* 14, no. 1 (January 2, 1984): 1–26.; Sheila Jasanoff, "Cultural Aspects of Risk Assessment in Britain and the United States", in *The Social and Cultural Construction of Risk: Essays on Risk Selection and Perception*, ed Branden B. Johnson and Vincent T. Covello (D. Reidel Pub. Co., 1987).

[574] Gonçalves, "The Importance of Being European.", p.439

[575] A formal civil servant at the Ministry of Science and Technology, at the forum 'How do (we) resolve the distrust and conflict between science and society?' organized by Korean Federation of Science and Technology Societies (KOFST), 28 December, 2009

[576]Hwang and Woo, *A Study on the Socio-Economic Influence of Consumers' Safety Concerns on Animal Products*.

appropriate level of regulation for Korean people were made.

In this section, I have detailed the way in which scientific knowledge in Korea's policy area was produced and presented regarding BSE risk and US beef, following which I have compared this with the UK. Although the Korean government defended its policies by appealing to science like the UK government, the advisory system was managed differently in Korea and the authority of scientific knowledge on which the policies were based was based on different grounds to that of the UK. This divergence cannot be explained by the usual 'politicians' evasion of responsibility' or 'abuse of science for political aim', but should be understood by considering particular ways in which science interacts with politics in Korea. In the next section, the particularity of the Korean knowledge ways will be summarized by using Jasanoff's category of civic epistemology.

7.4 Civic epistemology in Korea

As shown in the last section, different political culture and policy making styles suggest specificities in the ways in which scientific knowledge in the public sphere is produced and presented for policy making. Civic epistemology is the way in which policy's knowledge base is perceived as credible within a society. In this section, the features of civic epistemology in Korea will be presented according to the six interrelated dimensions provided by Jasanoff.

Styles of public knowledge-making: The way in which scientific knowledge in the public sphere is made and presented depends on the 'institutional routine' as well as

the players in each country.[577] For example, while knowledge production in the public sphere in the US relied on interested parties, primarily manufacturers, knowledge making in the UK relied on trustworthy experts.[578]

In Korea, knowledge making depended primarily on the state's involvement. As presented in Chapter 4, the Korean government led the national development project over all sectors by mobilising national resources and by introducing knowledge of the advanced Western countries. In a country deficient in human and material resources after colonial rule and the Korean War, the government was the only agent which could lead the nation's development. Indeed, an underdeveloped civil society, the efficiency of the elite bureaucrats, aspirations of the public for economic growth, and the authority of imported knowledge from the advanced West provided a sheltered environment to the government, thus meaning that the government could monopolise the policy process. Therefore, the role of the government as knowledge provider is important. For example, with regard to chemicals management, the Korean Ministry of Environment says that while chemical industries in the US and European countries have the capability to produce information about chemicals which they make, the Korean chemical industry does not, and the government should provide basic information regarding toxicity and hazard.[579] In terms of policy-making related to BSE risk and US beef, there were few research institutions to rival the NVRQS in BSE research, and the government updated scientific knowledge of BSE and international regulatory changes through an international network. The

[577] Jasanoff, *Designs on Nature*.

[578] Ibid.

[579] Ministry of Environment, "Plan for Development of Chemicals Management," February 2009.

government did not need to rely on external advisors.

However, as civil society has grown following political democratisation in the 1980s, civil organisations have emerged as a powerful counter-group. Public controversies related to science and technology in Korea have increased after the democratic transition in the 1980s, and were likely to have been raised mainly by the civil sector due to the lack of a counter-scientist group.[580] It was civil activists that mainly provided alternate accounts on BSE risk and beef safety in Korea (and the fluoridation controversy which was presented in Chapter 4 was started by an ecology activist). Indeed, it stood in stark contrast with the UK where counter-experts such as Richard Lacey and Helen Grant raised potential risk in beef and refuted the government's reassurance. Moreover, the developed Internet provided more direct access to scientific expertise without depending on the government or scientists. As a result of this, and in the midst of the Korean controversy, BSE and vCJD became issues which everyone could easily learn about, unlike before when information was accessed only by experts. During the BSE controversy, civil activists formulated alternate accounts of BSE knowledge by mobilising scientific research papers and documents of international organisations open in online space. As a result, the authority of the government which represented the OIE as the absolute authority in BSE regulatory science was seriously injured. Though the role of civil organisations during the BSE controversy was constrained to introducing counter-knowledge from foreign countries, it was a clear case which showed the capability of civil society to challenge the monopoly of the government in public knowledge productions.

[580] Suh, *Science and Social Controversy and Korean Society*.

Methods of ensuring accountability: Knowledge in the policy area is essential with regard to showing that a policy has been created through use of the appropriate process or by appropriate representatives, and is this considered legitimate.[581] According to a study by Jasanoff, the credibility of public knowledge was achieved by adversary process represented as litigation in the US, and by trustworthy experts who proved their eligibility through their years of public service in the UK. In Germany, institutional affiliation of participants and balance of the interests, which were represented by the members of expert bodies, were crucial in terms of earning credibility and the trust of policy-relevant knowledge.

As presented in Chapter 4, Korea has a tradition of active government and powerful bureaucracy which has never avoided aggressive intervention for economic growth. Elite bureaucracy represented public interest, and efficiency in decision-making rather than a democratic process was emphasised for rapid economic growth. The lower profile of counter-groups lessened the burden of bureaucrats to make explicit principles in policy-making, and the policy process was insulated from public scrutiny.

Nevertheless, with the increasing complexity of policy issues and democratisation, the participation of experts in the governmental committees is increasing and experts' participation in the Korean policy process looks active. As presented in Chapter 4, the committee system is recognised as having contributed to improving "professionalism, democracy, transparency, and fairness in policy process" by using

[581] Jasanoff, *Designs on Nature*.

the expertise of external experts and gathering various opinions.[582] Therefore, many Korean acts specify the expert committee as one of the most important procedural steps in securing public accountability and betterment of policy decision.

However, the actual process of governmental committees depends primarily on bureaucrats, and thus experts' contributions to the policy process are, in most cases, just procedural rather than practical or substantial.[583] An expert committee tends to be used for procedural formality in the policy process rather than as an actual bilateral communication channel between the government and expert or civil society; and the completion of procedural steps was often regarded as sufficient to guarantee the legitimacy of policy decisions regardless of the content. In the case of the NLHCC, the government did not rely on the conclusion of the NLHCC in making judgments on potential BSE risk in US beef. Indeed, it instead made the decision to resume US beef import despite opposition from certain advisory members. MIFAFF officials emphasised that it was the minister rather than experts who had the authority when it came to decision making on US beef. The role of the scientist members was to concede that the government's policy proposal was not problematic. The government officials argued that "the policy decision has no problem, because it went through deliberation process at the relevant committee as specified in the related act." Another example was Canadian beef import, which was discussed in Chapter 6, and was resumed despite the opposing views in the report written by the Committee for Agriculture at the National Assembly.

[582] Ministry of Public Administration and Safety, "Explanation and Related Guidelines."

[583] Kim, "Comparative Analysis on the Role of Bureaucrats and Experts."

Though the public has demanded increasingly practical and substantial participation in the policy process beyond procedural form, there does not seem to have been a fundamental change in the Korean government's bureaucratic approach. As presented in Chapter 4, the Korean government, which introduced a local referendum to resolve the controversy surrounding the nuclear waste disposal facility, is reluctant to promote public deliberation to discuss spent fuel management and the building of a high risk nuclear waste disposal facility. Likewise, during the BSE controversy, calls for public debate were rarely raised and public concern about beef safety was disparaged as absurd stories.

Practices of public demonstration: "Facts and things" in knowledge claims should be seen as credible "in the public eye."[584] According to Jasanoff, a socio-technological experiment was preferred in the US, while the UK and Germany relied on empirical evidence and experts' rationality respectively.[585]

Korea relied on foreign authority for the knowledge claims in the policy area to be seen as credible. As mentioned in Chapter 4, the main strategy for Korea's rapid modernisation was to 'catch up' with the advanced Western countries by importing and imitating their success, while the external dependence on knowledge production which had been settled during the development process was widespread. During the BSE controversy, the important grounding of the Korean government's policy-making was the OIE standards while the safety claims of the government relied primarily on the authority of the OIE. Although the Korean government took

[584] Jasanoff, *Designs on Nature*., p.263

[585] ibid.

different positions from those of the US which requested that Korea fully accept the OIE standards, both the lift of the ban on boneless muscle meat in 2006 and the lift of the ban on beef from cattle above 30 months of age in 2008 were based on the OIE's definition of safe products for trade and the risk status of the US. Scientific knowledge claims authorised by the OIE were regarded as what were scientifically verified and what could not be refuted by domestic science.

The government's dependence on the OIE was refuted by the activists who relied on the BSE regulations of EU and Japan, and as a result, disputes often related to 'whose standards should be followed.' As shown in Chapter 4, each country perceived differently the appropriate level of regulation for the safety of beef, and non-scientific considerations such as convenience. Moreover, cost in implementing regulations or the dietary habits of nations as well as scientific evidence affected the regulatory policies. However, the context-specific features of regulatory policies in the US, EU, and Japan were regarded as conclusive grounds on which to define beef safety in disputes between dissenters and the government.

Objectivity: Objectivity refers to ways in which to show the independence of scientific knowledge from subjective bias or particular interests. For example, objectivity expressed in numbers and risk assessment was preferred in the US, although in the UK and Germany, the consensus was that risk assessment should be supplemented by consultation with influential individuals (UK) or expert bodies including all relevant parties (Germany).[586]

[586] ibid.

In Korea, expert committees are normally and frequently used and presented as a mechanism for balanced and better policy decision-making by putting expertise and various interests into the policy process.[587] Generally speaking, important policy issues within the government should be subjected to discussion by expert committees according to the related law. For example, import risk assessment on US beef, which had been formulated by the NVRQS had to undergo discussion at the NLHCC before the final policy decision.

Though the expert committee of the Korean government looked similar to the expert bodies of the UK and Germany, the difference was that the expert committee in Korea was dominated by bureaucrats. As shown in Chapter 4, Science and technology in Korean political culture was regarded as purely professional knowledge for economic growth, and dependence on knowledge imported from the advanced West left little room to raise doubt about the neutrality and objectivity of knowledge. Moreover, as mentioned in Chapter 4, there was a notion shared amongst the Korean government officials that external members of the governmental committees were incompetent when it came to formulating policy alternatives and were likely to be biased to narrow interests, compared to bureaucrats.[588] As a result, the government sector including civil servants and government-associated institutions (e.g. quangos) predominated in the governmental committees.[589] With regard to the BSE issue, MIFAFF officials felt that the representatives from the beef

[587] Ministry of Public Administration and Safety, "Explanation and Related Guidelines."

[588] Anti-Corruption Network, Investigation Report of Governmental Committees, 2001 cited in Kim and Kim, "The Reformation of Governmental Committees."

[589] Jeong, "A Comparative Study of Roles and Functions of the Korean and Japanese Governmental Committee System."

industry were keen to protect the interests of the domestic beef industry. Moreover, MIFAFF and NVRQS officials dominated the NLHCC with their power. Therefore, policy decisions were made following the government's pre-set position, in spite of opposing views within the NLHCC.

Although the objectivity of the government's decision on US beef was seriously challenged during the controversy with the allegation that the beef requirements had been made to provide favorable conditions for the US, the bureaucratic approach did not change. When taking measures to pacify the public protest such as 'Less than 30 Month Age-Verification Quality System Assessment Program' (QSA) or deciding to import Canadian beef in 2011, the Korean government made decisions on its own without involving the public and regardless of the opposing views raised by the National Assembly.

Expertise: To be accepted as a legitimate expert in a society requires accountability as well as specialised knowledge.[590] For example, unlike in the US where 'formal qualifications' and 'impersonal test of intelligence' are considered as the main constituents of legitimate expertise, expertise in the UK is tied to personal experience and integrity, while expertise in Germany presupposes the existence of a legitimate organisation and institutional support.[591]

In selecting expert advisory members in Korea, experts' professional skills and standing take precedence over the representation of institutions or socio-economical interests. Anyone with professional qualifications can become an expert, and an

[590] Jasanoff, *Designs on Nature*.

[591] ibid. P.269

individual expert's public standing which is achieved through years of service to the UK's common interests is of lesser consequence in Korea. Expertise is not tied to an individual person, but is represented by specific knowledge and qualifications. Indeed, the largest section of Korean governmental committees is comprised of professors.

The Korean Act on the management of governmental committees does not clearly state the balance of views which committee members represent. Instead, the government encourages participation of various members such as civil organizations and minority groups. In the case of NLHCC, representatives of the beef industry and consumers' organisations were invited to become members. However, they were not recognised as experts by the government officials, and participation of various groups in governmental committees was not guided by an all-inclusive concept that every stakeholder should be invited to the committees. Particularly, as presented in Chapter 4, the NGO sector in Korea was mainly characterised by the anti-government position, and thus, it was likely to be excluded from the government's invitation to advisory committees.[592] Therefore, the civil activists who raised doubts about the safety of US beef from BSE risk were not invited as expert members to MIFAFF committees.

Visibility of expert bodies: The activities of expert bodies were not transparent in Korea. Whilst there are broad guidelines about the operation of governmental committees, the specific activities of governmental committees are not generally under the public gaze. The Korean advisory committee left no report, and only a

[592] Kim, "The State and Civil Society in Transition."; Kim and Kim, "The Reformation of Governmental Committees."

summary of a meeting or a press release written by the government was open to the public without details of who said what. In the case of NLHCC, the MIFAFF did not make any open reports or minutes, but only short press releases written by civil servants were provided to the public.

The particular features on six dimensions of civic epistemology which I have found in the Korean BSE controversy are summarised in Table 12. They commonly show an ‘authoritarian’ character in the sense that knowledge production, presentation and use in the policy area relied on the government’s involvement and the authority of foreign knowledge. The pattern of civic epistemology differs from that of the three European countries in Jasanoff’s study, and shows characteristics perhaps typical of a late-comer country which has achieved rapid economic growth and only recent political democratisation under the state’s power by catching up with the advanced West.

Table 12 Civic epistemology presented in the BSE controversy in Korea (added to the table by Jasanoff in '*Designs on Nature*' for contrast)

	Korea Authoritarian	**US** Contentious	**UK** Communitarian	**Germany** Consensus-seeking
Styles of public knowledge-making	The government's monopoly, Importation	Pluralist, interest-based	Embodied, service-based	Corporatist, institution-based
Public accountability	Assumptions of trust; Procedural, formal,	Assumptions of distrust; Legal	Assumptions of trust; Relational	Assumptions of trust; Role-based
Demonstration	Foreign authority	Socio-technical experiments	Empirical science	Expert rationality
Objectivity	Formally consultative but dominated by bureaucrats	Formal, numerical, reasoned	Consultative, negotiated	Negotiated, reasoned
Expertise	Training, professional skills	Professional skills	Experience	Training, skills, experience
Visibility	Nontransparent	Transparent	Variable	Nontransparent

However, it is apparent that this authoritarian character has been faced by resistance. As shown above, the monopolistic status of the government in knowledge production is challenged by a growing civil society and the development of information technology. Public demand for practical participation in policy processes beyond formal and procedural accountability is increasing. Dependence on foreign authority is no longer sufficient to resolve controversy. Doubts regarding the objectivity of the policy process which is dominated by bureaucrats are raised and

the opaque policy process makes the government untrustworthy. In light of this, the BSE controversy in Korea could be defined as a symptom of tension caused by friction between the ingrained approach to policy-making and increasing public awareness of democracy, rather than a one-off phenomenon resulting from a media hyperbole, anti-Americanism, or an irrational public. It also suggests the possibility that plural civic epistemologies exist in a country and that they change over time.

8 Conclusion

8.1 Summary of findings

This thesis has examined the BSE controversy in Korea. I have detailed how the policy decision on potential BSE risk in US beef was made within the Korean government, how the risk issue developed into massive public controversy, and the particularity of the Korean approach to dealing with scientific knowledge in policy areas.

The Korean BSE controversy occurred as the result of uncertainty over BSE being mobilised within complex political and economic contexts, particularly over the issue of the import of US beef after 2003. The complex set of interests over the beef issue impeded the Korean government from taking a clear and consistent position on BSE risk, and also undermined public trust in the government. Indeed, massive protests in 2008 occurred primarily as a result of the government's failure to secure political authority over the policy for beef. Moreover, the presence of alternate accounts and interpretations offered by civil organisations undermined the epistemological authority of the government's claims.

The BSE controversy demonstrated what I have called an authoritarian character of civic epistemology in Korea, and simultaneously showed that this civic epistemology is challenged. The authoritarian character can be ascribed to the traces of the development process which had been led by active government and powerful bureaucracy and which relied on importing advanced countries' knowledge and skills in order to secure strong and sustained economic growth. However, the authoritarian

way has recently been challenged by growing civil society and an increasing demand for public participation. This pattern of civic epistemology, I suggest, is a distinctive outcome of Korea's status as a late-comer country which has achieved compressed economic growth and recent political democratisation under the state's guidance by catching up with the advanced West.

In order to review and summarise the key arguments made in each chapter, the introductory chapter set out why I chose the BSE controversy as a case study. The BSE controversy in Korea was unprecedented in terms of its scale and the extent of conflict among science-technology related controversies in Korea.

Chapter 2 surveyed STS literature which made it possible to understand the relationship between science, politics, and the public. Scientific knowledge in the policy area is not value free and the ways in which it achieves legitimacy are subject to social commitment, thus reflecting the ways in which accountability is constituted in a society. Risk does not arise just from an objective lack of scientific knowledge, but is closely associated with various social and cultural factors. The public are not a passive recipient of scientific knowledge, and have shown their potential to contribute to knowledge production. The legitimacy and credibility of public knowledge relies on the shared public knowledge way in democracy, while each society has its own indigenous way in which credible knowledge should be shown, defended, and represented.

Chapter 3 discussed scientific knowledge of BSE and presented a brief history of the BSE crisis in the UK. BSE is a progressive degenerative disease affecting the nervous system in bovine cattle, and is known to be transmitted by contaminated

animal protein feed. BSE incidence peaked in the UK in the mid-1990s and decreased significantly after risk control measures and surveillance were in place, although uncertainties remain. The story of the BSE crisis in the UK showed that political and cultural factors of the British society, in addition to the lack of BSE knowledge, played a role in exacerbating the crisis. Though the policy decisions were always presented as having been made on purely scientific grounds by the UK government, non-scientific considerations such as financial constraints always directly or indirectly involved the recommendations of the scientific advisory bodies. The main factors affecting the crisis, according to scholars, were the policy orientation of the UK MAFF skewed towards the agricultural industry, structural arrangement surrounding the scientific advisory bodies, and the British political culture's dependence on great and good people.

Chapter 4 explored the broader context in order to understand the Korean BSE controversy. Firstly, Korea's political and scientific culture was summarised, showing the authoritarian feature created during the compressed economic development process and due to the specific role of the powerful bureaucracy. Science and technology has been developed by the government, being mobilised as a tool for economic development. Secondly, the regulatory policy structure regarding BSE was provided. MIFAFF's policy was production-oriented and the government side dominated BSE-related research in Korea. BSE policy was created under the OIE's general guidelines whose authority was enhanced because of the WTO mechanism, even though countries have their own regulatory policies which reflected considerations on domestic regulatory conditions.

In Chapter 5, the Korean government's policy process regarding potential BSE risk in US beef was examined. Beef import conditions were formulated under the complex considerations of the political and economic relations between Korea and the US. The beef issue became more complex since it was interrelated with the FTA between the US and Korea, while the uncertainty of BSE was also mobilised for political objectives. During the process, the role of the expert advisory body was primarily political.

Chapter 6 explored public protests regarding the beef import requirements agreed in April 2008 and the subsequent public and scientific disputes over the safety of US beef and BSE risk. The newly formulated conditions for the import of US beef, which represented a relaxed version of the previous conditions, led to serious public controversy over the safety of beef. Contradictory claims were raised by the government and government opponents, while 'scientific truth' was represented as a solution to the controversy. However, there was remaining uncertainty regarding BSE, which left room for alternate accounts, and scientists' discussions could not resolve the controversy, especially when combined with distrust in the government as well as concern about unknown risk.

Chapter 7 explored the particularity of the Korean ways in which scientific knowledge was produced and used during the policy processes and the controversy. The comparison of the UK and Korean frameworks regarding scientific knowledge production and presentation showed the bureaucrat-dominant character of the advisory system and dependence on external authority in the Korean methods. Korea showed an authoritarian pattern of 'civic epistemology', to use and extend Jasanoff's

term, which is characterised by a bureaucrats-dominant policy process and dependence on external authority. Moreover, the authoritarian civic epistemology has been challenged by the growth of civil society, and is in transition.

This thesis has contributed to explaining the policy making style and identifying the particularity of the ways in which scientific knowledge is made and used within Korean policy-making. It has enabled an understanding of policy-making in Korea and can help to understand future science-based public controversies in Korea.

8.2 Implication and further research

8.2.1 Policy implication

I have identified three areas which are derived from my research and which could result in the Korean government increasing efficiency when responding to public scientific controversy.

Firstly, the public must be offered sufficient information at an earlier stage, before issues are politicised and polarised. Scientific uncertainty always leaves room for alternate accounts, with these alternate accounts influencing the way in which issues are framed. Once an issue is framed, stressing safety and certainty is likely to backfire. In the Korean BSE controversy, once the BSE issue was framed as a problem of incompetency of the government, scientific justification of the new beef conditions was helpless to calm public fear. In addition, the reasoning behind policy-decisions, which involves the process in which scientific evidence is transformed to

policy, should be made explicit. This measure will increase transparency in policy-making and facilitate a shared understanding of the issue.

Secondly, adequate procedures through which the public can present their opinion should be put in place. In other words, there is room for increased public engagement. During the Korean BSE controversy, the Korean public did not have any official route via which to present their concerns, and as such public risk perception was disseminated mainly by informal routes such as via the Internet. Indeed, as a result, there was an unhelpful amplification of scare and protest. Nevertheless, there are other avenues which should be explored, with the Internet representing a positive tool for public engagement.

Thirdly, simply widening participation cannot guarantee the practical engagement of public. Although the NLHCC included representatives from the livestock industry and consumer organisations, their participation was tokenistic. The government officials and scientists who I interviewed had a notion that there was nothing for the representatives from the livestock industry to contribute in terms of expertise. Therefore, with regard to the participation of lay members, greater consideration is necessary over the definition of expertise which lay members offer (for example, Collins and Evans' contributory, interactional or procedural expertise) and how to promote meaningful interactions among scientists, civil servants, and lay members. Without this, the appointment of lay participants will end in a mere gesture.

8.2.2 Further research

I have identified a number of areas for further research.

My first suggestion for future research involves the analysis of other regulatory policy-making cases of the Korean government such as in the areas of food, pesticides, or chemicals. This would allow me to ascertain whether my findings regarding the Korean government's policy-making styles and the pattern of civic epistemology are replicated elsewhere. Due to the closed policy process, studies relating to the internal policy process of the Korean government about regulatory scientific issues are infrequent. Analysis and comparison with other regulatory issues will help draw out the particular features of each regulatory issue and provide an opportunity to explore the ways in which uncertainty and risk issues are dealt with in Korea in a more general manner.

Secondly, it would be interesting to undertake a comparative study with countries which, like Korea, also import US beef. This would make it possible to explore how different risk assessment and regulatory policies on US beef are applied, and how the OIE standards were recognised and used. According to the MIFAFF, 117 countries imported US beef in 2008 including Asian countries such as Japan, Taiwan and China, which are major US beef importing countries. Therefore, it would be interesting to explore how the Asian countries (or US beef importing countries) responded to potential BSE risk in US beef.

Moreover, in the Korean BSE controversy, international harmonisation on BSE regulatory policies, which was represented by the OIE standards, has a significant

impact on the Korean government's regulatory policies. Stricter regulation than the OIE guideline and the following potential trade conflict were ever-present concerns amongst Korean legislators. It would therefore be interesting to explore how the changes in international regulations on BSE (or other animal diseases) affected each country's regulatory policy strategies.

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Appendix1: List of interviewees

Hae-gwan Cheong, Professor, Department of Social and Preventive Medicine, School of Medicine, Sungkyunkwan University – interviewed in October 2011

Dong-soo Im, researcher at the Korea Research Institute of Bioscience & Bioengineering – interviewed in April 2012

Yang-koo Kang, journalist, *Pressian* – interviewed in November 2011

Joong-bok Lee, professor, Department of Infectious Disease, College of Veterinary Medicine, Konkuk University – interviewed in December 2012

Yong-soon Lee, emeritus professor, College of Veterinary Medicine, Seoul National University – interviewed in November 2012

Hee-jong Woo, professor, College of Veterinary Medicine, Seoul National University– interviewed in October 2011

GI-hwa Yang, researcher at the Medicine policy research institute of the Korean Medical Association – interviewed in April 2012

A, civil servant at the Ministry of Food, Agriculture, Forestry and Fisheries, doctor of veterinary medicine – interviewed in November 2012

B, civil servant at the Ministry of Food, Agriculture, Forestry and Fisheries – interviewed in October 2011 and November 2012

C, civil servant at the Animal, Plant and Fisheries Quarantine and Inspection Agency (It was formerly the NVRQS) – interviewed in April 2012

D, civil servant at the Animal, Plant and Fisheries Quarantine and Inspection Agency – interviewed in April 2012

E, civil servant at the Animal, Plant and Fisheries Quarantine and Inspection Agency,

doctor of veterinary medicine – interviewed in December 2012

F, civil servant at the Ministry of Education, Science and Technology – interviewed in September 2011

H, civil servant at the Ministry of Education, Science and Technology – interviewed in March 2012

I, journalist – interviewed in September 2011

Appendix2: Interview questions

< For the government officials of the MIFAFF and the NVRQS >

1. Why is beef important in meat policy and trade? And what is the main concern in beef policy?
2. Research fundamental on BSE and vCJD in Korea
3. Was the detection of bone fragments by X-rays absurd? Was the aim to decrease beef imports?
4. The reason that stricter condition for US beef could be set in 2006 than in 2008
5. What is your opinion about the OIE guideline? Is it sufficient to protect public health?
6. Do you think BSE is still uncertain?
7. The aim, structure, selection of members, decision process, minutes, support for and influence of the decisions of the expert committee
8. What do you think about the committee members who opposed to the government in BSE controversy?
9. Did you expect the severity of the public protest? What is your opinion about that the government had to consult citizens about the beef import requirements?
10. Why did you invite experts from medical association to the press conference not committee members?
11. The head negotiator of the government said that the evidences Korean government presented was not accepted internationally. Why?
12. What is your opinion about the conferences which were organized by Korean science communities? Was it helpful to assure the public?
13. What is your opinion about the role of experts (committee members) in policy decision?

< For the government's advisory committee members>

1. What made you join the advisory committee?
2. Are you satisfied with the operation of the committee? (eg. the atmosphere, decision process, openness, minutes, support for members, influence on policy …)
3. Do you think BSE is still uncertain disease?
4. What is your opinion about the head negotiator's claim ('the evidences Korean government presented (eg. genetic susceptibility of Korean people, prion in muscle meat under 20 months….) was not accepted internationally')?
5. What is your opinion about committee members who support/oppose the government?
6. View on the research fundamental on BSE in Korea
7. Were you pressured by the government or others (media, activist group……) to support / oppose the government?

< For scientists who organized/attended conferences on BSE, civil servants of the MOST, and journalists >

1. What made you organize/attend the conference?
2. What is your opinion about scientists who support/oppose the government?
3. Were you pressured by the government/media/activist group to support / oppose the government?
4. Do you think the conferences were effective to resolve the controversy? If not, why? What do you think is necessary for Korean science community to play a proper role in public controversy?
5. Do you think BSE is still uncertain disease?
6. View on the research fundamental on BSE in Korea