BALANCING CONTRACTUAL AND RELATIONAL APPROACHES FOR PPP SUCCESS AND SUSTAINABILITY

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Abstract

Useful synergies are targeted by proposing a convergence of hitherto parallel international endeavours towards: (1) developing better and sustainable relationships for more productive construction project teams, in general; and (2) optimising the necessarily long term contractual arrangements of PPPs in particular. Examples are drawn from Africa and Latin America to reinforce reported PPP experiences from other regions, in building up a case for injecting 'relational contracting approaches' in order to develop more productive and sustainable PPPs. Strong and sustainable relationships are shown to be essential, and complementary to appropriate contractual incentives, that would together empower PPP project teams to focus on developing sustainable infrastructure and ultimately on overall sustainable development. These propositions are merged into a basic model that merits further investigation and development, in order to ensure that planned PPPs benefit the community at large, in respect of both present and future generations.

Keywords: Africa, classical contracting, Latin America, PPP, relational contracting, sustainability

1. Introduction and Background

The growth of partnering and alliancing in infrastructure project teams often generates tensions between those espousing more relational approaches, and those reluctant to abandon traditional (classical) contracting protocols. A balance is needed, for example in assigning risks as clearly as possible through 'reasonable' classical contractual provisions (Kumaraswamy, 1997), while relational contracting (RC) principles can be mobilised to deal with both unforeseen risks and some other special eventualities that may be better handled jointly (Rahman and Kumaraswamy, 2002). The need for striking the right balance between these approaches is even more critical in public private partnerships (PPPs), given the longer time horizons for the responsibilities, relationships and arguably for the infrastructure itself.

The case for RC in producing sustainable infrastructure in general (i.e. not specifically under PPP arrangements) has been recently presented by Kumaraswamy *et al.* (in press). This need for RC becomes even more important in PPP scenarios, where the relationships between partners need to be sustained for much longer, i.e. during the operation and not just during the production of the infrastructure. The need for developing sustainable relationships among team members is therefore viewed in this paper from both an RC vantage point, and an angle of providing adequate contractual safeguards, so as to provide well balanced strategies, that could together ensure overall success in the first instance, and sustainability of that success in the longer term.

Striking a balance is also needed between the levels of profit that can be potentially earned (even when stipulated to be 'reasonable but not excessive' in some cases), as against the risks expected to be assumed by the private partner in the PPP. The risk-reward profile over the longer term will also depend on the reliability of guarantees and assurances e.g. in 'comfort letters' that the public partner or related organisations can provide. Apart from completeness and accuracy (e.g. when assuring that no parallel infrastructure is expected to be commissioned so as to affect the viability

of the infrastructure product of the current project), the mutual credibility of both parties is crucial in determining the value or otherwise of such guarantees or assurances. Thus it is also important to identify the degree of trust in the relationships.

For example, if trust levels are high, the relationships could be built up faster and better. In such scenarios the risks of one party defaulting on agreements, exploiting loopholes or indeed of 'letting down' another party would be less. Then for example, each partner may be content with a lower level of 'rewards' commensurate with the perceived lower risks of defaults. Thus this second need - for a better 'risk-reward balance' - connects back through heightened 'trust' to the first need for appropriate mechanisms based on RC. Such a balance of 'reliable interdependency', if achieved, could also lead to more 'competitive' and hence successful and sustainable PPPs.

This paper thus focuses on conceptualising a desired equilibrium between relational and contractual approaches that could stabilise a platform from which to launch successful and sustainable PPPs. Rather than describe a completed research exercise or case-study, this paper proposes a basic agenda for Research & Development towards establishing the aforesaid platform, based on synergising relevant thrusts from parallel streams of research into RC and PPP. These approaches also highlight the imperative for injecting relational approaches into PPP protocols and practices.

2. Benefiting from Relational Approaches and a Sustainability Focus in PPPs

Performance specifications are increasingly used in all construction contracts. The need for RC is accentuated in such scenarios, since end results rather than methods are specified. Disputes could arise since it may be difficult to completely define such end results and even if defined, there could be different interpretations. For example, what the client perceives as a minimum standard to be attained may be targeted as a maximum by the contractor, hence the need for sound and sustainable 'relational understandings' to resolve such differences efficiently.

Macneil (1974) traced the development of contracts from 'classical', through 'neoclassical' to 'relational'. Williamson (1985) identified their basic differences. Rahman and Kumaraswamy (2002) presented further comparisons of this contractual classification. 'Classical contracting Approaches' (CAs) are characterised by segregated teams, adversarial contracts, a blame culture and short-term focus; and are blamed for the industry's poor performance. 'Relational contracting Approaches' (RAs) on the other hand, are characterised by integrated teams, Joint Risk Management (JRM), sustainable relationships and a longer-term focus.

Figure 1 is now formulated to indicate different degrees of 'balance' between force-fields of CAs and RAs, that position team members at appropriate 'distances' apart in general. In particular, Figure 1(a) shows how CAs push team members apart (e.g. through 'them *vs* .us' attitudes), while RAs pull them together (e.g. through close collaboration, shared problems and successes) in a two-member scenario. Figures 1(b) and 1(c) illustrate the net impacts (of fragmentation and segregation), on a three-member team under dominance of CAs and RAs respectively.

The need for RAs has been identified in many reviews. Special challenges to public clients in implementing RAs (e.g. in partnering or alliancing) and the need for changes in rules and regulations to facilitate their use have been presented (Rahman and Kumaraswamy, 2004a); while the potential for the use of RAs (with JRM, and based on RC) has been confirmed by Rahman & Kumaraswamy (2004b). Public clients seem ready to contractually legitimise and promote the use of RAs e.g. using NEC (ECC) conditions of contract or PPC2000, as reported by Wai (2004).

RC principles provide a sound basis for harmonising relationships among the contracting parties, reducing areas of disagreements and lubricating the transactional friction (Rahman and Kumaraswamy, 2002). These are achieved by focusing on common objectives, adopting more cooperative approaches (e.g. partnering), and introducing conducive and useful mechanisms over

and above classical contracting practices and principles (e.g. through JRM), The latter emphasises clear and equitable allocation of all foreseeable risks, along with RC based contract adjustment mechanisms for addressing any unforeseen events and changes during contract execution. Coupled with such mechanisms, RAs engender proactive project delivery modalities by fostering cooperation among team members with a longer-term mind-set; and can therefore also focus team efforts on whole-lifecycle performance and sustainability issues in infrastructure provision (Kumaraswamy *et al.* in press). The pull (i.e. relational) forces are therefore stronger than the push forces (i.e. RAs > CAs) and so reduce the 'distances' between multiple team members, as shown in Figure 1(c), thereby facilitating 'close-knit' (integrated) team-working with a long time horizon.

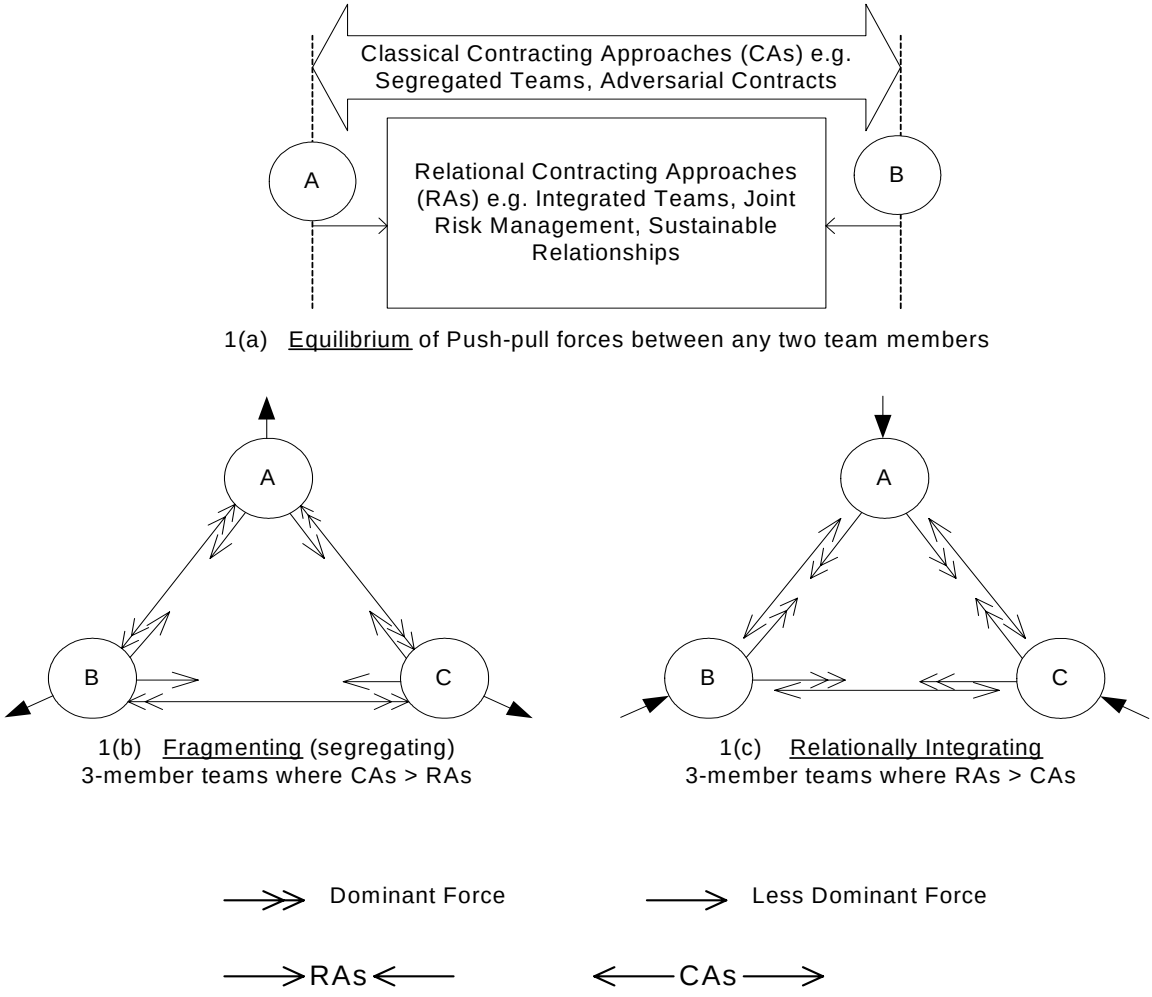
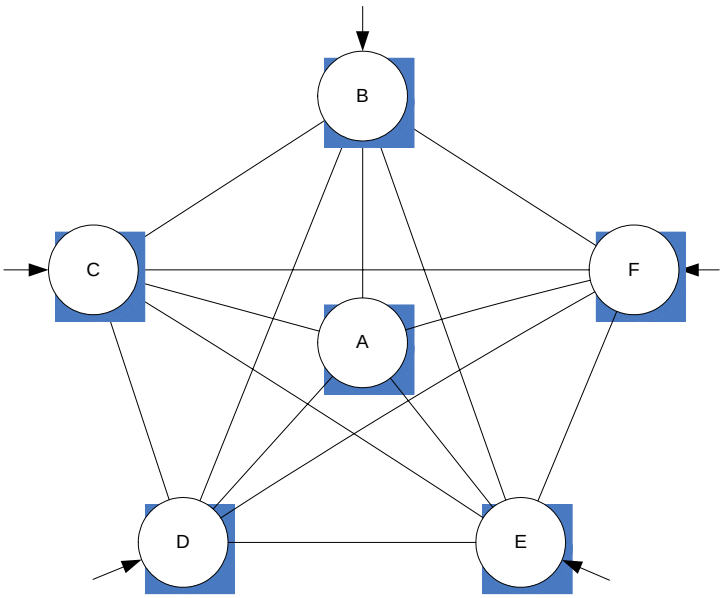


Figure 1: Optimising team member 'distance' in general

RAs have been covered in the wider literature on collaborative working arrangements and are said to have made the need for a contract to be much less important (Macneil, 1974). Bresnen and Marshall (2000) observe that much of the literature on partnering type RAs has tended to be rather prescriptive in nature, with many attempting to promote partnering as 'new procurement' (Pryke, 2004), or a little more than just a new preferred procurement route (CIB, 1997), or a fundamentally new way of doing business (e.g. Bennett and Jayes, 1998). In fact, Bennett and Jayes (1998) seem to present strategic partnering as central to the vision of a modern construction industry. RAs are powerful in pooling the resources of project stakeholders towards win-win scenarios, that can extend beyond a single project, e.g. in framework agreements and term contracts; and that can thus benefit from a longer-term view e.g. to focus on sustainable infrastructure.

In this context, sustainable development has been defined by the World Commission on Environment and Development (1987) as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'. Sustainable construction, as a part of sustainable development, goes beyond the concept of 'green' construction, i.e. meeting environmental standards (Uebegang *et al*., 2004), to include conservation of energy, water and raw materials; creating built assets that are liveable, comfortable, safe and productive (Kumaraswamy *et a.,*. in press). Sustainability issues need to be addressed along the entire project lifecycle, from conception, through design to construction, operation and decommissioning. Approaches to injecting durability (and hence sustainability) considerations into the design process have been suggested (Ugwu *et al.*, 2003a) and a taxonomy of sustainability indicators has been presented (Ugwu *et al.*, 2003b). PPPs provide excellent opportunities for injecting sustainability considerations into infrastructure projects since they cover a considerable part of a project's lifecycle (at least in design, construction and operation). Whole-lifecycle sustainability issues can therefore be assessed more easily and factored into design decisions, materials selection, and construction methods. The sustainability indicators referred to above can then be used to evaluate the sustainability performance at relevant stages of planning, design, construction and operation (Kumaraswamy *et al.,* in press). The outcomes are expected to exceed performance specifications.

Given the long time horizons, the desired end results/ performance levels would be more difficult to specify under rapidly changing technologies, consumer demands and standards. Examples of related contract clauses contain 'best efforts', 'prevailing standards', and 'good' industry practice (Goetz and Scott, 1981). The complex and evolving nature of risks involved in PPPs and the large numbers of project stakeholders make it both necessary and expedient to adopt RAs to secure a sustainable product/ service (Kumaraswamy and Zhang, 2003). The longer-term nature of PPPs allows trust to grow and consolidate among project team members. This should in turn engender greater cooperation and 'reliable inter-dependency'. The target is a 'Relationally Integrated Project Team' (RIPT) that is shown in circle A of Figure 2 which indicates the complex interactions in a PPP environment. Here the RIPT (the 'special purpose PPP project team A) must emerge from the strong RAs of five indicative PPP stakeholders (B, C, D, E, and F e.g. including governmental bodies, concessionaire, constructors, lenders, share-holders, operators and the community at large). As in Fig. 1(c), RAs > CAs, hence the convergence of relevant stakeholder representatives into a 'winning' RIPT. Within such an environment, JRM in general (as described above) could be extended to include Joint Sustainability Risk Management (JSRM) in the longer term.



(B, C, D, E, F are stakeholders and
A is the RIPT (Relationally Integrated Project Team)
Figure 2: Relationally integrating larger PPP teams where RAs > CAs

3. Lessons Learned from Latin America and Africa

Case histories of successful implementation of PPP arrangements in Asia, Australia and USA are abundant (e.g. Kumaraswamy and Morris, 2002). PPPs in European countries are also covered in the wider literature of private financing arrangements. However, PPP arrangements in Africa and Latin America are not well covered in the literature, even though they together account for a significant portion of the global PPP scenario. It seems relevant to elicit experiences from those countries. The focus is to highlight the potential for and relevance of RAs in PPP infrastructure projects, while maintaining adequate contractual safeguards against abuse of these RAs.

For example in 1997, Latin America attracted the second largest share of the IPP market (Albouy and Bousba, 1998) and the largest share of toll road concessions for the period 1990-1999 (Silva, 2000). However, Ruster (1997) reviewed shortfalls in the Mexican Toll Road Programme in 1989-94, during which inaccuracies in forecasts of investment costs and operating income, coupled with a currency crisis left local commercial banks with non-performing toll road loans and road users with some of the most expensive road tolls in the world. Concessionaires and their partners had to write off significant parts of their investments and some roads were taken over by the Government.

Silva (2000) lists some of the factors that contributed to the poor performance of the Mexican toll road projects, including: over estimation of traffic, inflexible contracts that limit the ability of the private sector to manage market and construction risks, inadequate strategic network planning, a greater interest by private investors in construction than in operation, and voters' dislike of tolls. Similar experiences have been observed in other Latin American countries. This may be because that construction related risks are easier to handle than political and financial/ market risks (Kumaraswamy and Zhang, 2003). The latter have wider and longer-term causes and effects, and require joint efforts. These experiences underscore the need for greater cooperative relationships and the need to build flexibility (i.e. adapt RC approaches) into concession contracts.

In South Africa a PPP arrangement called the 'Build Operate Train Transfer' (BoTT) was developed and successfully implemented to provide free basic water services to poor communities. Ayoub *et al*. (2002) found that the success of this BoTT scheme, in serving about seven million people during the period of 1994-2001, was largely due to the emphasis on community leadership, 'on the ground' partnerships between the project stakeholders, and the recognition of and attention to both 'hard' (e.g. technical design, construction) and 'soft' (e.g. community consultations, education and training) programme issues. This integrated approach ensured that the scheme optimised the value capture, achieved 'community buy-in' and remained viable and sustainable.

These RAs are not meant to make PPP projects cosy. Contracts should be clear, must transfer significant risks to the private sector, perform better than the public sector comparator (or 'base case') and must optimise the value capture to the society. High-powered incentive regimes target cost savings, which could then be transferred to end users in future regulatory reviews. It is argued that high efficiency savings can only be elicited if concessionaires are allowed the possibility of substantial profits that can later be passed on as lower costs to end-users. However, the potential for high initial profits may undermine public confidence in the regulatory system, with suspicions of corruption, hence the crucial needs for 'balance' in such PPP risk-reward transition scenarios.

Renegotiations are central to mainstream RC literature, due to uncertainty, difficulty and inherent human limitations in drafting complete performance specifications (Macneil, 1974; Goetz and Scott, 1981). Similarly, renegotiations are common in PPP projects, as contracts may extend 30 or more years during which time many unforeseen developments may arise. In fact 74% of transport concessions and 55% of water concessions, from a total sample of 942 concessions awarded in 17 countries in Latin America, were renegotiated during the 1990s (Harris, 2003). Renegotiations can however create the potential for opportunistic behaviour by investors. They might 'low ball' bids in the hope of successfully renegotiating more advantageous terms, once they have been awarded the

contract. Acceding to renegotiations that absolve investors of commercial risks, may weaken incentives for efficiency and compromise the objectives of the PPP project. These decisions require the exercise of discretion on information-deficient matters and these decisions cannot be contracted out. Such scenarios therefore heighten the need for reliable RC approaches.

Lack of adequate government support, in the form of guarantees and comfort letters, were blamed for the failure of the Mexican toll-road programme (Ruster, 1997). The importance of such guarantees has been noted (Kumaraswamy and Morris, 2002; Kumaraswamy and Zhang, 2003). However, Harris (2003) argues that such guarantees, whether implicit or explicit, could make investors pay less attention to project fundamentals, reduce the performance risk borne by the private sector and consequently the benefits of private participation, and can expose taxpayers to significant liabilities. There is thus a need to maintain a balance between the extent of guarantees provided and the risks transferred to the concessionaire. This balance also has to be dynamic to accommodate the many uncertain and changing operational and market parameters; and thus again requiring RC (including JRM) approaches.

Whilst technocratic solutions can be mobilised, building consensus and trust in, and support for PPPs remains the challenge. Harris (2003) suggests that the key is to build regulatory frameworks that are credible to investors and considered as legitimate by end users. Ruster (1997) concludes that the most important lesson to be learned from the Mexican road programme is that of devising systems of regulation and support that provide the encouragement and manoeuvrability required by the private sector, while minimising public risk exposure. There is thus also a need to incorporate sound contractual safeguards to minimize the abuse of RAs and good relationships.

4. Contractual Safeguards

The need for a comprehensive regulatory framework has been emphasised. The framework should be clear, transparent and predictable for bidding procedures; and the documents and the bid evaluation mechanisms should be efficient, effective and fair (ADB, 1996, 1997; Harris, 2003). Key issues, that need to be addressed, include: (a) guidelines to optimise the value capture or ‘service’ to the public e.g. with regard to toll/ tariff levels, quality of construction and operation, sustainability issues, (b) guarantees/ ‘comfort letters’ required to attract investors without stifling performance and innovation, (Kumaraswamy and Zhang, 2003) and (c) the selection of appropriate concessionaires (Zhang and Kumaraswamy, 2001).

Price adjustment mechanisms for BOT-type concessions (as described by Kumaraswamy and Morris, 2002) or output-based payment approaches for publicly funded PPPs (Harris, 2003) are required to shift significant performance risk to the concessionaire (with higher service quality to the end users). However, such risk-transfer should ensure that concessionaires make reasonable returns to ensure sustainability. Prices for infrastructure services will remain politically sensitive, until sufficient competition can be introduced to provide consumers with choice and reduce the need for regulation. Considering that most PPP infrastructure services will be natural monopolies, this is a long call for most developing countries (Harris, 2003). Kumaraswamy and Zhang (2003) report that pricing remained a central issue on a BOT toll-tunnel project in Hong Kong, despite a toll adjustment mechanism to enable ‘reasonable but not excessive returns’. Building consensus for reforms through public education and consultative mechanisms, as evidenced in the South African BoTT model, is important.

The need for governments to consider providing more comfort to investors and operators through guarantees has been highlighted (Kumaraswamy and Zhang, 2003). Harris (2003) suggests that such guarantees should focus only on the mitigation of political and regulatory risks. He argues that guaranteeing commercial risks will reduce private sector efforts to screen projects, and raise the likelihood of bad projects being undertaken. These political and regulatory risks seem to be the hardest to handle. It appears that a JRM strategy by the concessionaire and sponsor is required.

Other areas suggested as requiring guidelines include government commitments to pre-defined regulatory frameworks, dispute resolution processes and the payment of contractually obligated subsidies (Harris, 2003). Such provisions were explicitly legitimised through enabling ordinances (laws) in the BOT toll tunnel projects in Hong Kong and also extended to cover transfer issues and post-transfer operational issues (Kumaraswamy and Zhang, 2003). The generic/ basic risk allocation between the concessionaire and the government needs to be appropriately balanced.

Kumaraswamy and Zhang (2003) list some evaluation criteria used in selecting BOT concessionaires, while Kumaraswamy and Morris (2002) compare methodologies for evaluating BOT-type bids. After examining a number of studies on the critical success factors and distinctive winning elements of final BOT-type bids, Kumaraswamy and Morris (2002) found that bids offering a cost-effective solution and a financial package which exceeds others in meeting government's (or sponsor's) priorities (such as construction costs and concession periods) were more competitive. They also point to the importance of building flexibility into Structured Concession Agreements and of having a supportive community.

RC advocates incomplete contracting, in that the 'exchanges' are projected into the future and contracts are frequently renegotiated (Macneil, 1974). As discussed above, PPPs require similar arrangements. This draws attention to the usefulness of introducing RAs into PPP project arrangements. The selection of concessionaires should therefore, in addition to the technical, financial and minimum-guarantee considerations, also consider the 'relational' capabilities of the bidders. This approach is necessary in order to 'kick-start' the realignment of mindsets of the stakeholders that is required for the improved management of many unforeseen events in PPP projects (Kumaraswamy and Zhang, 2003).

The potential advantages of embracing RC principles (e.g. for partnering, alliancing and JRM) have been reported by Rahman and Kumaraswamy (2004a) and covered extensively in the wider literature on collaborative working arrangements in construction. The longer-term interactions among different parties accorded by PPP projects will help in building trust and reliability, which will in turn facilitate their integration for JRM-type joint working mechanisms. However, not every organisation may work well in such flexible contracting environments. Therefore, PPP concessionaires should be selected on the basis of their 'relational qualities'. Rahman and Kumaraswamy (in press) conceptualise a framework for selecting a Relationally Integrated Project Team (RIPT) from a Relationally Integrated Supply Chain (as briefly discussed in the next section). This framework is generic and hence is applicable to and arguably more suitable for PPP projects, being longer-term. The need to achieve sustainable construction through RIPTs in general has been discussed by Kumaraswamy *et al.* (in press), and the benefits of achieving such integration in PPPs in particular, are now proposed as above, and discussed further in the next section.

5. Proposed Research Agenda

In an international survey on selecting potential project partners for RAs, Rahman and Kumaraswamy (2004b) evaluated the importance of 22 factors that comprised 9 'hard'/ technical factors and 13 'soft'/ relational factors. The results indicate that: (a) consultants need to possess a mixture of both hard and soft factors; (b) contractors need to possess very high abilities in all the 22 factors; (c) clients/ sponsors required, in addition to strong financial strength, good relational capabilities; (d) subcontractors need to possess more of hard but also soft factors, and (e) suppliers should perform well on time, cost and quality and also possess some relational capabilities. These findings reinforce the importance of RAs to RC and project success.

Rahman and Kumaraswamy (in press) also measured the importance of 25 strategies and factors for building a successful relational contract. 'Mutual trust' was ranked as the most important factor. Using Factor Analysis, they showed that the 25 factors and strategies could be regrouped into 8

'broader' factors, some of which are interdependent. Therefore, it should be valuable to develop a framework of indicators that can help to evaluate relationships. Each of these relational factors will link to a number of key relational sub-factors. A scoring system could then be formulated to evaluate the 'relational capability' of each potential project team member.

The above developments will enable an objective comparison of the relational qualities of various potential team players based on their 'relational capability' on previous projects. Some decision rules could also be established, defining the minimum 'relational capability' requirements, and categorising potential team players into different 'bands' of 'relational capabilities'. This will then make it possible, for example, to select potential team players from only the top 'band' of relational qualities. Project-specific relational strategies and/ or factors should be decided and weighted to match the client requirements, as well as project contextual conditions. The 'relational capability' metrics and the associated decision rules could also be developed for the specific requirements of a country or territory, in order to ensure the 'value' contribution of PPP proposals to the overall sustainable development of the host country in general, and its infrastructure in particular.

Thompson and Sanders (1998) observed that the benefits of RAs increase with a progression of teamwork attitudes from competition, through cooperation to collaboration and finally coalescence. Under coalescence, the project team members work as a virtually seamless team. However there are no objective indicators for comparing the relational performance of team members at each stage, or for defining the boundaries of cooperation, collaboration and coalescence. The above framework is expected to provide an objective means for comparing such relational performance levels.

Meanwhile, sustainability reporting is becoming an important feature of corporate performance reporting and some companies now report their sustainability and financial performance in the same report. Sustainability performance measurement is based on guidelines drawn by the Global Reporting Initiative (GRI) (Uebegang *et al.*, 2004). The performance measurements are based on social, economic and environmental factors. The GRI guidelines are currently applied only on a voluntary basis and performance measurements are only available annually. This precludes using the GRI performance measurements in assessing the sustainability qualities of potential team players. In order to overcome this shortfall, a similar evaluation system to the one described above can be developed, followed by the development of useful sustainability indicators (e.g. as initiated by Ugwu *et al.*, 2003b) and appropriate decision rules. This will help in comparing and selecting potential team players based on their sustainability performance on previous projects.

This 'relational capability' and 'sustainability performance' metrics, in addition to performance against hard/ technical criteria, can be stored in continuously updated databanks to provide information on the proposed Relationally Integrated Supply Chains (RISCs). The latter are the longer term relationally integrated networks postulated by Rahman and Kumaraswamy (2004a). Each potential team player may then be assessed and compared on their (1) 'competency' (based on hard/ technical capabilities), (2) 'compatibility' (based on soft/ relational capabilities) and (3) 'sustainsivity' (a word now coined to denote 'sensitivity to sustainability', or 'sustainability consciousness'). It will then be possible to select the 'optimal' Relationally Integrated Project Team (RIPT) for a specific PPP arrangement. Various members of the RIPT can then be mobilized at appropriate stages of the PPP arrangements. As shown in Figure 3, the members of the chosen RIPT will then be able to effectively mobilize their various individual relational qualities to synergistically interact, collaborate and deliver the 'sustainable' product/ service to the community, thereby also contributing to sustainable development.

RIPTs in a PPP environment will also proactively address the many uncertainties and changes during project progress and use the best available options in targeting project objectives. The JRM mechanisms will also then be effectively extended to address sustainability issues through specific 'Joint Sustainability Risk Management' (JSRM) protocols as in Figure 3. These objectives should be translated into easily understandable success factors in a 'Project Evaluation Framework' that can (a) target project-specific criteria and (b) contribute to a longer term 'knowledge base' of

critical success factors as in Figure 3. The synergies so successfully developed from such an integrated approach will provide a great assurance of more sustainable PPP procured infrastructure.

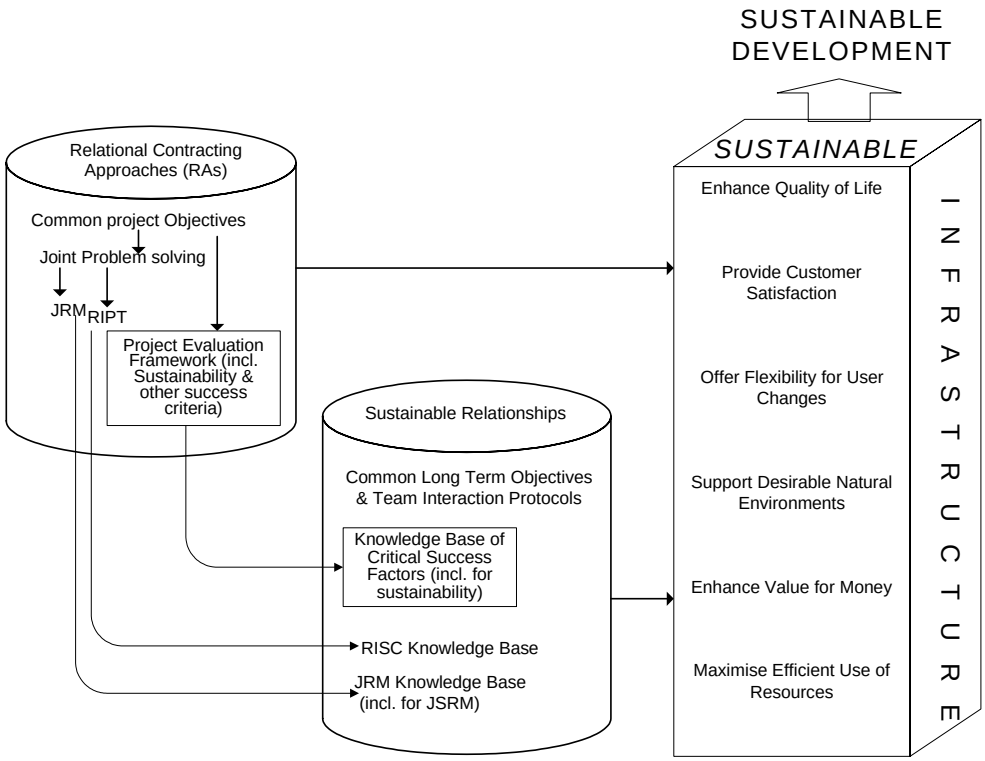


Figure 3: Relational contracting and sustainable relationships for sustainable development through PPPs

However, the RISC and the RIPT were previously conceptualised, developed and validated from 'relational' perspectives only (Rahman and Kumaraswamy, 2004a, 2004b). The conceptualisation of RIPT presented in this paper now incorporates sustainability issues and secondly focuses on PPP arrangements in this application. Deeper exploration of all the issues involved, and a broader model formulation is thus needed prior to testing the validity of this proposal. Space does not permit full description of all the basic conceptualisations indicated in Figure 3, nor even a depiction of the envisaged important inputs from improved CAs to the above model - through optimised procurement and delivery systems. Still, in its present form the basic model in Figure 3 indicates two types of contributions from RAs on a PPP project: (1) direct contributions to sustainable infrastructure and (2) long term and wider contributions via 'sustainable relationships' through 'relationship building' (in RISCs) and 'knowledge-building' e.g. of critical success factors including for sustainability and JSRM as indicated.

6. Conclusions

PPPs present useful opportunities for infrastructure development in both developed and developing countries. The increasing demand for sound and sustainable infrastructure amidst dwindling global resources (both financial and natural), and the longer time horizons of PPPs also provide opportunities to address sustainability concerns more effectively e.g. by building in evaluation frameworks and incentives for the various stakeholders. While contractual arrangements attempt to cover all foreseeable eventualities, relational approaches (RAs) are also crucial for developing relationally integrated teams that can respond rapidly and efficiently to unforeseen risks as well as technological and socio-economic developments during the life span of the infrastructure.

Frameworks for evaluating 'relational capabilities and sensitivities to sustainability implications ('sustainsivities'), in addition to technical/ 'hard' capabilities, are recommended, along with a proposal for investigating the feasibility of developing a comprehensive model for targeting sustainable infrastructure (and indeed sustainable development) through sustainable relationships in PPP scenarios as indicated in the basic indicative model developed for this paper.

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