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Assessment of Public-Private Partnerships in Mozambique



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*. The conceptual analysis used in this paper is based on joint work of one of the authors (R. Fischer) with Eduardo Engel and Alexander Galetovic over many years, much of which is collected in *Public-Private Partnerships: When and How* (unpublished manuscript). R. Fischer thanks the Instituto Científico Milenio de Sistema Complejos de Ingeniería for its support of the research that is used in this report.

¹ Revision by Claudio Frischtak (IGC Country Director) and Sandra Sequeira (Lead Academic)

1 Introduction: background and plan

Mozambique became independent of Portugal in 1975, but for the next sixteen years it suffered from a civil war that ended only in 1992, when reconstruction could finally begin. By then most of the limited infrastructure that existed under colonial rule had either deteriorated through lack of maintenance or had been destroyed in the war. Until 1987, the government adopted a state-centered economic programme with limited support for private enterprise. By 1992, GDP per capita in Mozambique was only \$92. Since 1992, the economy has been growing at the rate of 8% yearly and current per capita GDP equals US\$480. Nevertheless, several welfare variables, such as child malnutrition and rural poverty have not improved, perhaps because growth is concentrated in the major cities. Thee large fraction of the population living in rural areas is being left behind, in part due to the lack of adequate transport infrastructure.

In 1992, Mozambique embarked on a privatization process, which led to the sale of most small and medium sized state-owned companies. The process was in part a response to the fall of the socialist countries (and the consequent loss of markets for Mozambican exports) and in part to pressures from the World Bank (and the IMF), which pushed for privatization for fiscal reasons (the massive losses of publicly owned firms)². According to Pritcher (2002), the privatization process was not systematic, with different approaches in different cases, and revealed certain weaknesses in Mozambican institutions³.

The government of Mozambique was and continues to be attracted to the idea of using PPPs to rehabilitate its infrastructure, given the significant capital requirement of infrastructure investment and the lack of technical capacity in the government to manage investments. Yet the results have not been as expected. While some PPPs were carried out (TRAC, the ports of Maputo, Beira and Nacala, and the Ressano Garcia, Sena and Machipanda, and Nacala railways), this PPP program was not accompanied or structured within an established legal PPP framework⁴, so that each project had its own rules and there was little continuity and learning. Several institutional weaknesses that undermined the

²As well as for doctrinal reasons, according to M. Anne Pitcher, in "Transforming Mozambique: The Politics of Privatization, 1975-2000 (African Studies)", New York and Cambridge, Cambridge University Press, 2002.,

³ According to the author, there were accusations of non-transparent practices used in the sales of medium and small sized enterprises, such as bids accepted after closing time, selection made on terms other than price, unclear sale price determination, and that in many cases the sales were behind closed doors. In some instances the firms were sold to individuals who were unable to operate them and this led to the unpopularity of the process. Nevertheless, by mid 1999, more than 1,200 companies had been at least partly privatized (in many cases, the government or one of its agencies kept a significant participation in the company). The process began with the restructuring and privatization of 20 large companies that became 85 large privatized enterprises. The same process was repeated with 222 medium sized enterprises and two banks. The government was left with 33 companies, ten of which were fully owned. See "Privatization in Mozambique", Country Fact Sheet,

<http://wwwfdi.net/documents/WorldBank/databases/plink/factsheets/mozambiquehtm>.

⁴The legal basis for the early PPPs were decrees which do not provide the same level of legal protection as a law.

earlier privatization process in the late 1990s also persist, and should therefore be addressed before beginning a full-fledged PPP program. In 2011, the government passed a general PPP law that should help bring greater contractual uniformity and lead to a new wave of PPP projects in infrastructure.

This paper discusses Mozambique's approach to PPPs and suggests a set of recommendations taking into account the main obstacles the country currently faces. For this purpose, section 2 examines the legislation of PPPs in Mozambique, followed by a discussion of the principles that should guide a PPP program under optimal conditions. Section 4 describes the country's experience with PPPs and provides a critical evaluation of the existing conditions in Mozambique for a successful PPP program. Finally, the paper provides a set of recommendations for a PPP program in Mozambique, given its institutional restrictions.

2 Background: PPPs in Mozambique

This section describes some basic aspects of PPPs in Mozambique, including the laws that govern their use, and an evaluation of key aspects. It must be observed that there is some concern –usually from older government cadres– about the possible loss of sovereignty associated with some infrastructure-based PPPs⁵. In fact, recently, several concessions in railways have been taken over by the parastatal CFM (Portos e Caminhos de Ferro de Moçambique), after complaints that the PPP did not meet the investment targets set up in the contracts⁶ (see below).

2.1 PPP Legislation previous to the current PPP law

The first PPP in the country was for the paved highway between Maputo and Witbank in South Africa, and later reaching Pretoria, awarded in 1996 to Trans-African Concessions (TRAC) consortium. It required some regulatory changes, introduced by Decree N°31/96 (amended by Decree 38/97)⁷. These decrees set the ground rules for PPPs in roads and bridges, as follows;

1. Concessions were to take the form of BOT (Build, Operate and Transfer) contracts on selected roads and bridges.

⁵This was clear in our interview with representatives of the Maputo Port Authority, where some officials at CFM dislike the idea that control over foreign vessels is under the control of a private firm. From that same interview, it appears that the notion of an infrastructure PPP is still not completely accepted at all levels of the Mozambican government.

⁶The terms of contracts under PPP's in Mozambique are not readily available to the public. It is therefore difficult to assess the level of compliance between the contracting parts.

⁷See below for an examination of the case.

2. The Ministry of Public Works and Housing would set (or cancel) tolls on selected roads and bridges, basing the level of tolls on investment amounts and type of vehicle. Toll rates had to be approved jointly by the Ministers of Public Works and Housing, Finance, and Planning and Development⁸.
3. Adjudication of the PPP could be on the basis of:
 - (a) Private negotiation;
 - (b) Closed competition with pre-qualified bidders
 - (c) Open competition with sealed bids.

It is interesting to note however, that the previous decrees were only applied to ports and railways. In the case of road infrastructure, TRAC was awarded under South African PPP Legislation, and there is no example of a highway or bridge awarded under these decrees. It is also interesting that even though there were several other PPPs awarded before 2003 (see below), it was only in that year that the Decree-Law 86/2003 legally defined the term PPP. Therefore, previous PPPs were dealt with on a case-by-case basis, within the very broad parameters provided by the previous decrees, providing less judicial certainty than under a PPP law.

This problem was addressed by the PPP law (Lei 15/2011) published in the *Boletim da República* on August 10th, 2011. It applies to PPPs, Large Scale Projects and Enterprise Concessions for mining and exploration. What follows describes only the section of the Law applicable to PPPs. The Law establishes that each sector of government is responsible for the PPPs in their own sector, and should regulate its PPPs taking care of the interests of users, ensuring the project is sustainable, and there is economic and financial equilibrium among the contracting parties.

More specifically, according to the Law, when contracting a PPP the following aspects should be considered: the specific policies and development plans of the sector; its contribution to adding value to national resources; the equitable division of the benefits of the undertaking; a commitment to reduce the risks inherent in each particular project; the removal of restrictions that compromise the viability of the projects; the creation and preservation of jobs and the transfer of skills to Mozambican workers and management; its potential contribution to the development of national capital markets; the inclusion of Mozambican partners in all undertakings; establishing partnerships between PPPs, and small and medium-sized Mozambican firms, as well as the transfer of know-how to these firms; and the requirement that PPPs should establish programs, projects or actions that promote social development in the local communities where they are located (Article 4 of the PPP Law).

⁸The Ministry of Planning and Development was part of the Ministry of Finance, which used to be the Ministry of Finance and Planning. In 2005 this Ministry was split into the current two Ministries.

The Law provides for the Ministry of Finance to establish a unit that centralizes the economic and financial evaluation of PPP projects, in coordination with the sectoral ministries. This unit should monitor the equitable distribution of the benefits, while reducing the risks associated to the investments.

In legal terms, a PPP is conceived as a contract between the government and a Single Purpose Vehicle (SPV). The object of most PPPs is the efficient provision of public goods to users, but there are other PPPs which are conceptualized as adding value to national resources, including the land required to carry out the project. This land is temporarily transferred to the PPP via a *Right of Land Use* (DUAT), but the resources remain the property of the State. In many respects, PPPs should follow the general rules applicable to public procurement contracts.

The awarding process can take three forms: (i) bidding by pre-qualified firms for simple projects; (ii) a two-stage procedure for complex projects where pre-qualified firms participate in the final design, before the bidding stage; and (iii), in special cases, and as a last resource, in the case where there are no bidders, the government can contract a firm by direct negotiation.

The Law admits the possibility of unsolicited proposals, and if they are accepted, the proponent has a 15% advantage in the bidding stage, but no compensation for the costs incurred in preparing the proposal. The law divides the responsibilities for the risks of the business, according to the principle that the party (private party or government) that is best equipped to control those risks is responsible for them. The law enumerates these risks, which in the case of government include the risks involved in the land transfers, among others. The government will compensate the private party for the ensuing costs derived from these risks. In the case of *force majeure* events, the law specifies that the costs of mitigation should be shared among the two parties to the contract.

The private party must provide surety bonds at different stages of the PPP process, but these can be replaced in some cases by a bond offered by the PPP itself, if this is accepted by the Ministry of Finance. In the case of projects that are welfare increasing but not privately profitable, the government is allowed to provide subsidies or guarantees, or to facilitate access to multilateral agencies or donor countries. These guarantees or subsidies should be registered by the Finance Ministry, which should track both the individual and global level of these commitments, and include them in the accounts.

Under the law, PPP contracts can take various forms, from BOT (Build, Operate and Transfer) to ROT (Rehabilitate, Own, Operate and Transfer). It is important to observe that in case of contract renegotiations, the procedures are the same as those established to approve the PPP in the first place. The transfer of the PPP contract to another private party requires government approval (it is not automatically granted).

Contracts can have lengths that depend on the type of infrastructure. Greenfield infrastructure, up to 30 years; rehabilitation of an existing project, 20 years; and 10 years if it is an operational contract. However, the length can be extended up to ten years for special

projects (due to size or technological characteristics). Contract renegotiation that requires additional investment by the private party can be repaid by lengthening the life of the contract. Term extensions can also be granted if the government lowers the user fee, or after *force majeure* events. Finally, at the end of the project, and only if the infrastructure is sound, the original participant has a 5% advantage over other bidders in a renewed franchise.

The contract must describe the specific conditions for termination of the contract and the mechanisms for compensation in case of termination. Nevertheless, the law sets out some general conditions under which the contract can be terminated: serious noncompliance with the contract, abandonment of the contract, transfer of the contract without consent, nonpayment of taxes or other contracted sums, etc. The law does not require that the contracts be published in their entirety, only that its main aspects appear in the *Boletim da República*.

According to the law, PPPs should split the benefits from the project among the contracting parties, considering in that division aspects such as the contribution of each party, the risk facing each party and the responsibility of each party in the success of the venture. A fraction of the shares of the PPP should be assigned to the Mozambican stock market (no less than 5% but no more than 20%). Each PPP must pay an adjudication tax, plus other periodic taxes. The PPP must offer positions to Mozambican workers as well as training programs, in addition to local programs of social responsibility.

2.1.2 An evaluation

The law provides a framework for PPPs, though it suffers from what appears to be excessive discretion for the government in negotiations with the firms. This is the case in paragraphs 3 and 4 of Article 13 regarding the assignment of a PPP (though the law considers this possibility only for exceptional cases). Even in the normal situation described in paragraph 2 of article 13, the two-stage awarding procedure requires negotiations between the bidders and officials.

Moreover, the PPP program has possibly too many objectives (as described in article 4 and others): to attract capital; socio-economic benefits; revenue for the government; training and employment of Mozambican personnel; creating a stock market, etc. Observe that these multiple objectives can be assigned weights discretionally in the scoring function of PPP bids. This flexibility in deciding the scoring function is risky, since it can lead to corruption of the bidding system. Given the civil law tradition in Mozambique, the law should incorporate more contractual conditions and not leave them to be decided in each individual contract. The latter feature increases the cost of entry into the Mozambican PPP system as contractual conditions can change from contract to contract and are not standardized. This provides an advantage to incumbents, which are already experienced with the PPP system and can influence specific aspects of future contracts.

The Law also suffers from the lack of general methods of conflict resolution, and thus

entrants face increased risks (which incumbents may have already incorporated). Moreover, there are no detailed regulations on how to deal with unsolicited proposals, which can lead to conflicts with firms presenting proposals, or to the government having to incur the cost of evaluating unviable unsolicited proposals.

Other weaknesses, in our view, are the limitations on transparency (only the main aspects of the contract are published), which, when combined with the institutional fragility of the bureaucracy, can lead to the possibility of corruption of the system (as defined in Article 36 of the PPP Law). In addition, the Present Value of Revenue (PVR) mechanism – especially appropriate for tolled roads and bridges – appears to be implicitly excluded by some of the articles of the draft law⁹. Moreover, by providing too much flexibility, which is more appropriate for common law legal environments, the law could lead to judicial uncertainty, which can deter investment. Finally, when conditions for the private sector are too favorable to be sustainable, leading eventually to be modified in response to political pressures, they may affect the investment reputation of the country.

3. Principles of a well-designed PPP program

A well-designed PPP program should select projects that increase social welfare, that do not provide excessive rents to the private party –because these rents come either from the government or the public–, provide good service and maintenance, and should have the ability to adapt to changes in conditions. Of course, as a precondition, projects should be financially viable *ex ante*, though this does not mean that they should be profitable *ex post*¹⁰.

Achieving all these conditions is difficult, and in some countries it is not clear if PPPs have provided any benefits beyond those that could have been obtained by the government at lower cost. In this section we describe conditions that tend to ensure that these results are obtained.

3.1 Motivations for PPPs

One of the basic roles of government is to provide public infrastructure, or rather, its services. Public infrastructure include roads, tunnels, bridges, airports, (some types of) seaports, hospitals, jails, public buildings and other types of equipment that cannot be easily provided by the private sector. We have excluded certain services such as telecoms, electric power and provision of water and sanitation, which can be provided by private regulated utilities and therefore need not fall within the public framework¹¹.

Insofar as scarce government resources are involved in infrastructure projects and these

⁹See section 3.13 for a description of the PVR mechanism.

¹⁰Otherwise profits would be guaranteed and there would be no risk transfer, and therefore no incentives for efficiency and for project appraisal by the private parties.

¹¹The case of railways is complex and PPPs are often unsuccessful, see section 3.3 below.

investments are sunk, it is vital to choose correctly which projects to carry out. In general, governments are subject to political pressures to allocate resources to certain infrastructure projects even when that may not be their best use.

Developing and developed countries are dotted with failed projects, representing lost public funds. Some countries try to avoid these mistakes by only approving projects whose social rate of return exceeds a hurdle rate, thus limiting the misallocation of funds (away from their best possible use)¹². This evaluation trades off the social impact of the project against its cost in terms of public resources. As we show in section 3.2, a PPP project always involves potential public funds and therefore PPP projects must also be evaluated using this methodology.

Moreover, operating and maintaining any project requires additional funds. Traditionally, infrastructure has been provided directly by the government, which awards the construction of the project to a private firm, and then assumes responsibility for operation and maintenance. It is important to note that in this instance the contract with the private firm is a short term relationship which ends when the project is commissioned.

The traditional approach has problems beyond project choice. Since there is no link between the construction and the operational phases, the design often does not minimize the life cycle costs of the project, rather than just the costs of building the project. Moreover, and specially in developing countries, for reasons of political economy, maintenance is usually spotty or nonexistent, with the result that the project deteriorates quickly and provides bad service. Eventually the project has to be rebuilt at a much higher cost than the costs of continuous maintenance. This is one of the main reasons in favor of PPPs (or concessions) for highway projects¹³.

Against the advantages of PPPs in terms of better maintenance, we must set its disadvantages. As John Kay has described in a column in the *Financial Times* of February 15th, 2011:

“PFI [Private Finance Initiatives] contracts are inflexible. Schools and hospitals are locked into agreements that may last 30 years or more. This follows from insistence on bundling finance, capital procurement and facilities management into a single contract. Any change in requirements during that period must be negotiated with a monopoly provider who generally has little incentive to be economical or accommodating, as George Osborne, the Chancellor of the Exchequer, discovered when faced with a quotation for a

¹²Note however that social-cost benefit evaluation, even when it exists, can be trumped by sufficient political pressure.

¹³See Engel, Fischer and Galetovic (2012), *op.cit* for a more detailed analysis. An argument for PPPs is the possibility that they bring into the country new techniques or know-how. However it is unlikely that a PPP in highways or in bridges brings forth human resources or new technologies that would not have arrived in a standard construction project (as different from a mining operation, or other types of projects that are not covered in this document).

Treasury Christmas tree so exorbitant that he went out to buy one himself.”

3.2 Financial aspects of PPPs

This section examines the public finance considerations involved in PPPs. Contrary to a commonly held belief, PPPs do not provide access to new financial resources and thus should not be a consideration when deciding whether a project should be built using the PPP mechanism.

At first sight, a PPP seems to provide a new source of resources for revenue-constrained governments which have limited access to loans in international financial markets. PPP is viewed as an alternative mechanism through which a given infrastructure (eg. road) is supplied, working as a form of credit that has to be repaid by giving up the rights to collect tolls fees for a period of time. While some developing countries are credit constrained, PPPs seem to be a way of obtaining public investment that is unattainable with the country's resources.

However, this reasoning is incorrect and strictly speaking, PPPs do not represent a net addition to the ability to capture resources for development¹⁴. The reasoning can be seen through the following two examples.

Consider first the extreme case of an infrastructure project that is contracted using availability payments (as in the case of the UK's Private Finance Initiative – PFI). In this program, a successful bidder builds, operates and maintains the infrastructure and is remunerated with an *availability payment*, contingent on the project performing according to predefined standards. Hence, from a financial point of view, the government incurs a debt –in fact at a higher cost, because it uses the private firm to arrange financing, rather than doing it itself. Thus, if the government is credit constrained, which is not the case of the U.K., there are no additional resources to be gained from this type of arrangement.

Consider now the alternative: a PPP that is capable of being self-financing such as a tolled highway that generates enough revenue to pay for itself. Does offering this road as a PPP increase the resources available to the credit constrained government? Observe that the government could have built the road itself and operated the tolls, obtaining exactly the same revenue as the PPP. Therefore, the credit-constrained government could in principle have asked for a loan against this stream of revenues. It is probable that the government would need to set aside the toll revenue in a special trust fund, kept isolated from general government revenues, in order to obtain the loan from foreign sources, or otherwise it would

¹⁴The Basic Public Finance of Public-Private Partnerships”, E. Engel, R. Fischer and A. Galetovic, *J. European Economic Association*, forthcoming.

face the original credit constraints. If this capability of keeping a separate trust fund seems unlikely to be credible given the country's institutional constraints, and the government is likely to divert the funds in the future to the general budget, lenders would anticipate this and it would not receive the loan and remain credit-constrained. But if that institutional fragility exists (i.e., that it is able to breach its contractual obligation of a separate fund), there is no reason to believe that its institutions will protect the toll revenues in a PPP setting. Hence, in this case, PPPs also do not increase access to international credit for public infrastructure investment.

It is for situations such as these that multilaterals (World Bank, African Development Bank) can be helpful in alleviating the credit constraint. When multilaterals participate in lending to an infrastructure project, they can provide an additional guarantee that the funds are not redirected towards the general budget –or at least that they have the highest priority in repayment–, and if this guarantee is credible, the country ceases to be credit-rationed in these projects¹⁵. Similarly, when affiliates of a multilateral (such as the IFC of the World Bank) participate in a project, they provide an equivalent guarantee that the project's tolls revenues will not be appropriated by the government. Again however, there is an equivalency in the effect of the multilaterals acting directly by participating in the loans for the project and the multilateral acting through its private investment arm as a partner in a PPP.

There is one case in which the previous analysis of the equivalence between the access to credit markets of PPPs and traditional provision by government may need to be modified. In some countries a private toll road may earn more revenue than a public tolled road, because it is less subject to political pressures, and moreover, it is protected by a contract which, if broken, has a costly reputational effect. However the evidence (of Argentina, for example) shows that high toll revenues can lead to populist pressures for expropriation of the PPPs, overturning this argument.

While there are no funding benefits even in the case of a greenfield self-financed tolled highway project, at least a PPP ensures proper project selection, avoiding white elephants. Assuming that there are no negative externalities from the project, the fact that private firms are willing to invest in the project means that it is privately profitable (*ex-ante*), and therefore socially profitable. Thus the major problem of project choice is solved automatically¹⁶.

¹⁵For details of the argument, see Engel, Fischer and Galetovic (date), "The Economics of Infrastructure Finance: Public-Private Partnerships versus Public Provision", *European Investment Bank Papers*, (15)1,40-69.

¹⁶See below however, for how this conclusion could be overturned by unrestrained contract renegotiation. And the welfare benefits do not necessarily follow in the case of Brownfield projects, because it is necessary to compare welfare under the original and the new project. Moreover, firms sometimes fail the problem of project choice because of the cost and/or complexity of the required due diligence, and their subjective assessment of political risk and unintended consequences when underestimating the latter, such as the need to modify the project concept or its execution to mollify political pressure.

3.3 Suitable sectors for PPPs

The problems Kay describes are relatively more important in developed countries, where the public system operates fairly well, and therefore, on a net basis, the disadvantages of PPPs become more important. In developing countries, the ability of PPPs to provide services by operating and maintaining the infrastructure –in contrast to the deficiencies of the services provided by the public sector– may overwhelm these disadvantages. This is specially the case in highways, because it is fairly easy for the public to monitor quality, and if the public has to pay a toll for a private road with potholes, the pressure on government to act against the private firm is immediate. Thus PPPs provide incentives for continuous maintenance, so long as the road is profitable or has the perspective to become so after the ramp-up period.

In the case of public hospitals or jails, the advantages of PPPs are smaller, because normally users do not pay (certainly not in the case of jails), and therefore they feel less empowered to complain. Moreover, the problems associated to contractual rigidity that are one of the banes of PPPs become more important with the complexity of the project. Nevertheless, if public sector inefficiency is very significant, even in these cases PPPs may be preferred.

Railway concessions are often unsuccessful. Normally, a successful line appears to be one which is either dedicated – cargo, high speed or airport link– or independent of its users and mainly focused on cargo. A key finding of a recent review of 27 railways PPPs contracted globally¹⁷ was that “optimization of risk management explains two major trends: (i) [...], (ii) moral hazard, incomplete contracts and strategic behaviors create an incentive for concessionaires to make over-optimistic ridership forecasts and explain why most traffic-based concessions failed.” (p. 1). It concluded that “it is not clear whether the global outcome of rail PPPs is rather positive or negative. Many mistakes were made, with naivety by governments and investors deserving much of the blame” (p.12)

Ports have fewer problems, especially in the case they have sufficient size to be divided into areas which can function independently (with operators owning both the quays as well as temporary stacking and storage areas) and in direct competition. Airports can have more problems, because of the complexity of their operations and the lack of alternatives for users. However, since airports serve both passengers and airlines, and the latter can defend their interests, the interest of passengers is partially protected, at least indirectly.

3.4 When should infrastructure projects be offered as PPPs?

It is hard to decide the conditions under which a PPP is preferable to conventional provision of infrastructure. In the past, the UK has popularized the method of Value for Money (VFM) to compare traditional versus PFI provision of infrastructure, and has used this methodology to guide its decisions on whether to offer a project as a PPP. This methodology has been adopted by many countries. However, there is no evidence that VFM is

¹⁷Dehornoy, Julien; “PPP in the rail sector - A review of 27 projects.” MPRA Paper No. 38415, April 2012.

a mechanism that leads to correct decisions, because too many variables can be assigned arbitrary values. In an extensive report on the performance of the PFI initiative, the UK National Account Office has concluded that:

“There is no clear data to conclude whether the use of PFI has led to demonstrably better or worse value for money than other forms of procurement.¹⁸”

Even though VFM does not provide quantifiable evidence of the advantages of PFI, there are some rules of thumb that can be helpful in selecting the types of projects that can be offered as PPPs.

First, tolled roads are good candidates for PPPs, because monitoring service quality is easy and unsatisfied toll-paying users can be the quality watchdogs. Hence, the big advantage of PPPs over traditional provision, i.e., the bundling of construction and life cycle costs, does not lead to a worsening in service quality¹⁹. In fact, one of the advantages of PPPs in the road sector is continuous maintenance, versus the costly, sporadic maintenance typical of traditional provision of infrastructure in developing countries²⁰.

Similarly, experience shows that sea ports can be successfully developed and maintained under PPPs arrangements, especially if there is competition among operators of a given port or among ports.

In contrast, the experience of many projects shows that PPPs in the railways sector are often unsuccessful, with exception of the cases of High Speed Trains or point-to-point railways, such as links to airports²¹.

In general, highly complex infrastructure projects, such as prisons, hospitals and similar services are more likely to run into trouble with PPPs. However, in countries where the public sector is inefficient, the problems of PPPs in these sectors must be weighed against the difficulties facing traditional provision. It is possible that there are relatively more advantages to complex PPP projects in countries with inefficient public sectors rather than in countries with efficient ones. However, we still lack the evidence that would fully justify resorting to PPPs in these circumstances..

3.5 Competitive bidding and rents

Given that the government should strive to achieve the desired service standards at a minimum cost, it should attempt to ensure there are small or no (expected) rents –adjusted for risk–

¹⁸UK National Account Office Report: “Lessons from PFI and other Projects”, 28, April 2011, Key Findings 11.

¹⁹A worsening of service quality can be one of the outcomes of bundling in PPPs, see Bennet, J. and E. Iossa, “Building and Managing Facilities for Public Services”, *Journal of Public Economics*, 2006, 90, 2143-60.

²⁰The sporadic maintenance associated to traditional provision of infrastructure has political economy foundations. See Engel, E., Fischer, R. and Galetovic, A. “On the efficient provision of roads.” GDN Working papers No. 12. New Delhi.

²¹Dehornoy, Julien, “PPPs in the rail sector - A review of 27 projects” MPRA Paper No. 38415, April 2012.

in any specific PPP project.

One way to ensure that there are no rents is by having open international competitive bidding for the project, while providing full information and predefined qualification criteria to all potential participants. In general, in developing countries, it is preferable to separate the technical phase from the economic phase, rather than having a project decided on the basis of both economic and technical scores simultaneously. In this two-stage approach, there is a first stage in which firms and their proposals are evaluated and assigned a score. Any firm that attains a predefined minimum score can proceed to the next bidding stage, in which the decision is made solely on the basis of economic parameters.

The alternative is to have a single score that combines both technical and economic aspects into an index and the firm with the highest value is the winner. This system is more likely to result in better projects, if there is no corruption or error in the weights of the economic and technical variables. Unfortunately, it is easy to corrupt this scheme, because the values assigned to design variables –which are difficult to verify independently– are weighed against dollars. Moreover, the weights can also be manipulated to favor one particular bid. This is not so much of a problem in the case of the two-stage procedure, because the firm is only required to pass the threshold to get onto the next stage. In this stage the comparison among bids is simple, and in the best of cases, it reduces to comparing the values that are bid, one for each bidder.

So while the joint procedure may work better in countries with low levels of corruption, the two-stage procedure is best in most countries, and if applied across the board on projects, will lead by itself to a reduction in opportunities to corrupt the system.

3.6 Project selection

When a greenfield project is *ex-ante* self-sustainable, and it is believed that there will be no future renegotiations that would raise *ex-post* the profitability of a loss-making PPP project, and there are no negative externalities, the project is in principle welfare increasing²². In the case of brownfield projects, private profitability is an insufficient metric, since the original infrastructure also provided services and therefore the two projects must be compared in terms of social cost benefit analysis.

When the project requires subsidies, or it is remunerated through availability payments, it is necessary to determine if this is a good use of public funds, i.e., the project should pass a hurdle rate in social cost-benefit analysis, as in the case of projects that are fully funded by government resources.

3.7 Renegotiation

Nearly all projects may end up being renegotiated, because conditions change over time,

²²There is a caveat: a monopoly project may not be the optimally designed, but it will still be profitable.

and PPP contracts are very long lived. However, in renegotiations, the government faces a firm which has to be paid to accept the changes (if the modifications are desired in order to achieve better service under changed conditions), and this means that in general the benefits from the modifications of the project are going to be split among the two parties. Thus, renegotiations are expensive, and provide (*ex post*) rents to the private party.

Moreover, renegotiations pose an additional problem, since they can be used to increase the profitability of a project. Thus they are prone to corruption, because the agreement that divides the benefits is the result of a negotiation between a private firm and a government representative(s). When renegotiations provide rents to the firm, especially if renegotiations occur during the construction phase, the system is perceived to be unfair by the losing participants in the bidding process. Some countries (such as Colombia), guarantee the profitability of projects by always renegotiating contracts that lose money. In a study for Chile, we have shown that the number of project renegotiations –even in the construction stage– are too high, and can only be explained by the incompetence of the Public Works Authority (PWA) or by a desire of aiding the private party.

An approach to minimize the extent of the problems arising from contract renegotiation is to establish the rule that the present value of the project cannot change due to the contract renegotiation. This means that renegotiations cannot favor either party. In the case of highways, and perhaps airports, PVR contracts²³ can reduce the scope for conflict during renegotiations by providing a fair price for the government to buy back the PPP project in case no agreement can be reached. The project can then be re-auctioned under the new conditions.

3.8 Transparency

Good rules and equal treatment of foreign and domestic firms helps to ensure that there are multiple qualified participants in the bidding process for a PPP, which leads to better results in the bidding process. This also requires a PPP law that sets a framework for the use of PPPs and its basic norms, which should be complemented with a more detailed set of operational rules. The PPP should also be subject to general regulation in the sector.

An important part of the law should be to ensure transparency in all stages of the process, because this creates trust among participants in the auction and because it makes it less likely that the process gets corrupted. This implies that all original PPP contracts as well as contract renegotiations should be easily available to the public in the web. There are no reasons to keep contracts of this type away from public perusal²⁴. The fact that the details are published can be a deterrent against corruption and opportunistic renegotiations. In this respect, Article 23 of the Mozambique PPP Law is insufficient as it only requires that some aspects of the contract be published.

²³See section 3.13 below.

²⁴In the case of competitive sectors, where there may be good reasons to hide commercial secrets, the private sector is preferable to PPPs.

3.9 Structure of Governance: a centralized PPP division?

One question that arises in the administration of PPPs is whether to have a centralized system, with one PPP unit, or for each government department (i.e., education, health, transport, etc) to operate its own system. On the one hand, when each department develops their own PPP projects, there are more sectoral-specialized interactions with the potential bidders. A disadvantage is that there is much less learning on how to contract PPPs than when there is a central PPP unit that designs, in conjunction with the sectoral departments, the various PPPs, but always having the last word on the conditions of the project. The centralized approach is a more efficient use of scarce qualified human resources, since it does not require that each department start its own PPP unit. It can also apply its experience across sectors, which is useful. However, it can lead to conflicts with the sectoral Ministries.

In general, it seems appropriate to have a specialized unit –perhaps within the Public Works Authority or any other division of government that is an intensive user of PPPs– that develops, designs, evaluates and gets bidders for PPP contracts, at the request of sectoral Ministries. This centralizes the scarce human resources with experience on the specific characteristics and problems that arise in PPPs, while responding to the demands of the different sectors. The specific sectors should supervise the operational performance of the PPP as in Article 5 of the current PPP Law (but see section 3.10 on independence of the supervisory duties). Given that this central PPP unit will have a tendency to be generous in contracts, because it will be evaluated according to its success in PPP deals, any contract should have the explicit approval of the Finance Minister, which should have a small specialized unit dedicated to analyzing their contingent financial implications.

3.10 Structure of Governance: Independence

One common problem in sectoral projects is the lack of separation between the agency in charge of planning, promoting and procuring projects, from the agency that should supervise the performance of the project, in terms of meeting the contracted service and quality standards, both during construction as well as during the operational phase of the project. This also applies to PPP projects and to the PPP unit. The lack of separation between the functions of promotion of the PPP sector and the supervision of PPP projects means that usually the supervisory objective becomes subordinate to the objective of having more PPPs, because the success of the agency is usually measured by its ability to attract investment and to have new PPPs rather than by the performance of existing projects.

It is thus common that penalties for lateness in construction or for non-performance are not applied because they may undermine the objective of attracting private firms in future PPPs. In turn, this reduces the service quality and may eventually jeopardize the overall PPP program, as it does not deliver the advertised improvements in quality. The recommendation is to assign the two objectives to different agencies, with the supervisory agency being legally separate from the sectoral authorities responsible for PPPs. It is not clear if article 5 of the

Mozambique PPP law achieves this.

3.11 Conflict resolution

In any relationship among two parties with opposing interests, as should happen within a government–PPP relationship, conflicts will arise. This means that the contract or rather, the PPP legislation should include well-defined mechanisms for conflict resolution. In general, if there is no pre-specified and clear system for conflict resolution, firms that are good lobbyists will have an advantage.

There are various approaches to conflict resolution, but in general it is better to have a national standard embedded in legislation, rather than mechanisms that change from contract to contract, because having to perform a legal analysis of the rights of each party in case of conflict for every contract adds to the costs and risks of participation.

In general, the conflict resolution mechanism should be perceived to generate fair, independent and effective outcomes. One possibility is to use commercial arbitration, but this can be expensive, and it is not clear that it is easy to find commercial arbitrators with the required experience. Using the legal system is usually only appropriate for developed countries, where the justice system is fairly efficient. Another option is to have a permanent and independent commission of experts on the various aspects of PPPs to decide on the merit of the parties in the conflict.

3.12 Unsolicited proposals

It is common for private firms to submit their own projects, hoping that they get to build them. Most countries have had problems with this type of private initiative. While assigning the project to the proponent without inviting other firms to bid for the project means that the government would face a monopoly provider, accepted proposals can be valuable contributions and the proponents should receive a reward. Design the terms of this reward is however a challenge. In some countries, the proposing firm is given an advantage in the bidding process. However, this can be troublesome because other firms, knowing that they are competing with a firm that has an advantage in the bidding process, may be discouraged from participating, leading to less competition and higher project costs .

On the other hand, it would be unwise not to take advantage of private sector ingenuity in designing new projects. One appealing approach is to separate the conceptual stage from the project stage, by having each set period (every two years, for instance), a competition for best PPP projects. In each contest, the best say five PPP projects –selected under the same criteria and by the same institution that chooses to accept unsolicited proposals under current schemes – would receive a substantial monetary prize and an additional, larger, amount if the project is ever built. The advantage is that by separating the idea stage from the PPP process, all bidders for the project compete under the same conditions, and moreover, society does not have to incur such a high cost for the advantage (which can reach 15% of the economic bid in

some countries). Notwithstanding its appeal, this proposal has not been implemented in any country and in general it faces the opposition of firms involved in PPPs.

3.13 Present Value of Revenue (PVR) contracts

In the case of many tolled projects, demand is uncertain and therefore, by having a fixed date of termination of the PPP, the private party faces risk. This risk can be decreased by using the PVR method, in which the firms bid on the basis of the discounted toll revenue they request by the end of the concession²⁵. This means that if the projected demand is smaller than expected, the duration of the project is longer, while if the project faces unexpectedly high demand, the length of the contract shortens.

Since the firm will have a higher degree of certainty that the project will eventually pay the requested amount (in discounted value) when the franchise length is variable than in a PPP of fixed franchise length, there is less risk under a PVR contract. This means that firms should pay lower finance charges, leading to lower costs to society (because eventually users or the government pay for the project)²⁶.

PVR has other advantages, apart from the reduction in risk. It allows the government to adapt tolls to changed conditions –for example it can raise tolls if there is congestion– without penalizing or favoring the private party. Moreover, in renegotiations, if there is no agreement and the government wants to take over the project, there is a fair value that can serve as the basis for compensation. The sum that still remains to be collected, minus the cost of operations and maintenance is a fair compensation to the firm.

The approach can also be used in projects that need a subsidy, when it is expected that user charges will not be sufficient to pay for the project. In that case the government provides an ex ante subsidy and lets the bidders compete under standard PVR.

The problem with PVR is that it cannot be used in projects in which demand management is essential, because the private parties have few incentives to exert effort to increase demand for the project, given that they are guaranteed the amount that they requested. However, in some instances it can be used to reduce the risk while still providing incentives. Consider an airport that receives revenues both from passenger's fees and airplane landing fees as well as from rents and other payments from tax-free shops and other commercial activities. If the PVR bids are applied just to airport fees (in those countries where there is no airport competition), the firm still has incentives to increase demand for its other services, while facing less risk in terms of user fees by having a PVR.

²⁵See for instance, Engel, E.; Fischer, R. and Galetovic, A. "Least-Present-Value-of Revenue Auctions and Highway Franchising", *Journal of Political Economy*, 2001(109), 993-1020.

²⁶To be more precise, in general legal constraints imply that there is a maximum length to a PPP contract established by law and the PVR contract extends maximally up to that length. Note in addition that if the project is a white elephant, i.e., a waste of resources, it will never recoup the requested value. This leads to some risk in PPPs, but it is desirable that bidders face this risk, since it is a market test of the private, and hence of the social value of the project.

4 Cases

In this section we examine some cases of PPPs in Mozambique and use them to derive conclusions that will help frame the recommendations.

4.1 AdM

In 1999, the government, with the support of the World Bank, created the Conselho Regulador de Aguas and FIPAG, the Mozambique Water Authority²⁷. The objective was to respond to the financial collapse of the public sector by attracting private sector participation in the water distribution sector. In particular, FIPAG leased Aguas de Mozambique (AdM) to a consortium led by an international private operator with significant experience - SEUR International. Other members of the consortium were Aguas de Portugal (AdP) and Mazi-Mozambique (a group of five Mozambican private investors). In this arrangement, large investments in water distribution and disposal were still the responsibility of FIPAG, while AdM took over management and revenue collection.

After the huge floods of 2000, SAUR withdrew in 2002 and AdP was left with 73% of the company and the contract was renegotiated in 2003. The contract for AdM was a full commercial concession for 15 years, covering the water demands of a large fraction of Maputo. There are independent providers (IWP) in areas which AdM does not reach or does not have the concession (about 20% of Maputo households are not in the AdM concession area)²⁸.

One of the problems that explains the commercial strategies followed by AdM is that the Umbeluzi river –the main source of water for the city– is close to the extraction limit of 10.000 m³/hour. This means that expansion of the coverage requires a reduction in water losses of various types. Otherwise, water would have to be bought from far away, at a large investment cost.

According to the lease contract, AdM was in charge of operations and management, new connections and medium and small repairs to the distribution service, while all larger interventions were the responsibility of FIPAG. In 2006, AdM had around 80% of the household connections in Maputo and somewhat less than 70% of the 113.000 standpipes in the city, the rest being provided by IWPs²⁹.

In 2006, the water losses represented 58% of total water produced by AdM, of which the

²⁷Much of the background information from Pedro Cunha Serra, "Facing the Issue of Non-Revenue Water, a Prerequisite for Improving Water Services in Water Constrained Areas: The Maputo Case Study", www.w-e-x.com/downloads/Pedro%20Serra.pdf.

²⁸For various political reasons, it was important not to antagonize the IWPs needlessly.

²⁹These operate in areas with groundwater close to the surface.

losses in transportation (through main ducts) were 29%, with an additional loss of 40% in the distribution system. Since the physical loss was 52%, there were also commercial losses. In response, AdM introduced water meters and started removing illegal connections, while FIPAG made US\$ 16.1 MM of investments in physical plant that were required to decrease water losses. The effect was a reduction in water losses to 50% in 2009, which was further expected to fall to 39% by 2014, which, while not good by developed country standards, represents a substantial improvement. By 2014, AdM should have an additional 14MM m³/year that could be distributed to connect an additional 60 thousand households³⁰.

Despite these optimistic predictions by AdP, in December 2010 FIPAG (Mozambican government's Water Supply Investment and Assets Fund) bought out AdP and took complete control of the water company. According to the Chairman of FIPAG, the original objectives of the PPP had been met, by providing capital and know-how, and by then AdM were mostly staffed by Mozambicans. Nevertheless, the company is far from full cost recovery, perhaps because it still faces 50% water losses and the sector depends on donor financing³¹. Nevertheless, according to a case study published by the World Bank in 2009, "... most problems had been overcome and the foundations for sustainability had been established."³²

Very recently, however, there was a new change of policy and FIPAG was again relegated to its role of financing and managing water assets³³. It is important to realize that when it cancelled AdP's contract in 2010, FIPAG had to compensate AdP for foregone profits during the remaining three years of its contract and it had to assume its debt. Thus, in less than two years there has been a complete *volte face* in policy related to water distribution. It must be remembered that attitudes towards a PPP in distribution were never popular among the unions in the sector, and these changes in policy may have been due to different political views becoming ascendant in government, which adds risks to the PPP model³⁴.

4.2 TRAC

This road is an essential component of the Maputo Corridor, which is a major import and export route for Northeast South Africa, connecting the South African and Mozambican border with the Port of Maputo. The corridor also comprises a railway, and the Maputo and Matola port terminals.

As mentioned, this concession was awarded under South African PPP procedures, which is somewhat reasonable given that of the 630km of highway from Pretoria to Maputo, only 90

³⁰The major gains would come from improved system management, the reduction in commercial losses and the removal of illegal connections, with 40% arising from additional investment.

³¹Observe that in rural areas, the water tariffs are set too low to pay even for operations and maintenance.

³²PPIAF-World Bank, "Delegated Management of Urban Water Supply Services in Mozambique

³³June 2009. 31AllAfrica.com, "Mozambique: Government relaunches Water Supply Privatization", 4/4/12.

³⁴For the unions' opinion of the water PPPs, see Horácio Zandamela, "Lessons from Mozambique: The Maputo Water Concession", 2001, www.citizen.org/documents/Lessons%20from%20Mozambique.pdf.

km lie in Mozambique, and that at the time, Mozambique had no experience nor legislation (except the decrees 31/96 and 38/97) concerning PPPs. The firm invested US\$ 400 MM at the time, with a similar amount to be invested in major and minor maintenance during the life of the operation, i.e., during the 30 year duration of this BOT concession. Almost a third of the original investment was spent on the Mozambique side of the PPP.

Funding for the concession came from equity of the promoters of the PPP (20%). The lenders include South Africa's four major banks and the Development Bank of Southern Africa. Moreover, the debt was jointly guaranteed by the two countries and even equity was guaranteed under certain restrictions. In general, these extensive guarantees are not a good idea, but in this case there was considerable uncertainty about risks. For instance, would vehicles in Mozambique pay if there were free –but far worse–alternatives? There was little experience with toll roads in Mozambique and no experience on user behavior when faced with user fees for the highway. However, rates in Mozambique were subsidized by the user fees in South Africa and there were discounts for public transportation that may have allayed some of these problems.

On the Mozambique side of the concession, the results have been better than expected. From 2008 to 2011 the number of vehicles passing through the Moamba toll increased from 2,250/day to 8,000/day and in the case of the Maputo toll, from 27,690 to 44,000 daily. These traffic levels imply that the Maputo section of the concession has become an urban highway. One of the reasons for the increased traffic –apart from growth in both countries and the increased availability of inexpensive, used Japanese car imports– may be due to the fact that even though contractually tariffs are supposed to be adjusted annually according to the changes in the Consumer Price Index, this never happened until recently, so the real cost of tolls was falling over time³⁵. This may also be an explanation for the fact that road conditions in the Mozambique side are worse than in the South African side.

According to TRAC the Mozambique government has not complied with several contractual requirements, apart from the non-adjustment of tariffs. First, the government has not set up the emergency and ambulance services required under the contract. Second, there has been invasion of the land assigned to TRAC for future expansion, both by the municipalities and by individuals³⁶. Since the contract specifies expansion of the road but the reserved area has been invaded by construction, there is a strong possibility of conflicts with the government, given the traffic increases. Finally, on the Mozambican side there is slack monitoring of lorry loads, which can cause the rapid deterioration of the road.

TRAC has to pay 5% of toll revenue to the government (which goes up to 10% once loans are repaid), in addition to VAT and corporate income tax. Moreover, TRAC pays a 100% tax on all revenue exceeding a preset limit. However, as the government has no independent monitoring

³⁵On March 1st, tolls in Mozambique were scheduled to rise by between 10-15%. Nevertheless, tolls for passenger transport remained unchanged, at a discount of 50%.

³⁶The population living adjacent to the road steal the median mesh separating the lanes, to enable them to cross the road and avoid walking to the elevated pedestrian bridges, raising the accident rate.

system of traffic flows, it is not clear if this clause can become effective. Finally, TRAC is contractually obligated to keep reserves for periodic major maintenance.

TRAC provides a service of good quality, somewhat marred by increased traffic. There is good signaling, which is up to international standards, and repairs are timely. In principle – i.e., without congestion – the trip from Maputo to Ressano Garcia takes one hour, in comparison to the 2:30 hours it took before the concession. It employs 100 Mozambicans directly and has service agreements with 39 small and medium scale firms. Costs are estimated to be \$ 900,000 annually. These include direct operational costs (47%), rehabilitation (16%), maintenance (9%), taxes and payments to the government (7%). Note that TRAC is in a sense regulated by South Africa, since it is so important to them and also because most of the investment lies on the South African side. All in all, TRAC seems to have been successful in achieving its objectives.

4.3 Sena and Machipanda Railroad

In 2002, the government put management of the whole Beira rail system (both the Sena Line and the Beira-Zimbabwe line) out to tender. The tender process was supervised by the World Bank. There were five bids, assessment of which resulted in the awarding of a contract to the Indian companies Rites and Ircon International, who then formed the consortium Ricon. Caminhos de Ferro do Beira (CCFB), the Beira Railroad Company, was then set up, with 51% of the shares held by Ricon and 49% by Caminhos de ferro do Moçambique (CFM – the state railway & harbours). The contract stipulated that the entire system should be rehabilitated by January 2009, and that Ricon would not only manage CCFB, but would be the main contractor on rebuilding the Sena line, including its bridges³⁷. The contract began in 2004³⁸. The award was based on lowest loan amount required by the Concessionaire at soft terms³⁹.

The Machipanda line was operational but required rehabilitation at the time. The Sena line was not operational and required full rehabilitation. The World Bank provided support with a US\$ 105 MM IDA credit lent to the concessionaire, plus other support for feasibility studies, guarantees and safeguards. There was even the prospect of an IFC loan to the concessionaire for a Sena line upgrade to transport large scale shipments of coal from the Moatize coal mining area to the port of Beira, which could be expected to reach 6 million tons by 2012⁴⁰. The sources of finance from the project are given in Table 1.

As time passed, “the performance of Ricon left much to be desired. The most visible evidence was lack of maintenance on the line to Zimbabwe, failure to observe technical standards, and lack of dialogue between the concessionary company and the users in order to agree on

³⁷More specifically, the contract specified that rehabilitation of the Machipanda line should be complete by December 2006; in *Jornal do Pais*, December 8th, 2011, “Problemas que reverteram Sena e Machipanda”.

³⁸Following Decree No 41/2004 of 29 of September.

³⁹Examples of the World Bank Group Support in Promoting Public-Private Partnerships in Transport Projects in Africa and Lessons Learned”, Anil S. Bhandari, GCC Transport And Railways Conference, October 18-19, 2011, Doha, Qatar.

⁴⁰A.Bhandari, *op.cit.*

transport tariffs.⁴¹”

Table 1: Project Financing

Category	Subcategory	US\$ million
Equity	Rites & Ircon (51%)	10.07
	CFM (49%)	9.67
	Subtotal	19.74
Debt	IDA	104.5
	Gov. India-LOC	22.62
	Commercial debt	2.82
	Subtotal	129.94
Internal Cash	Machipanda cash flow	2.78
TOTAL		152.46

Source: A. Bhandari, *op. cit.*

In 2008, the government demanded urgent corrections to work on the Sena line. It agreed to extend Ricon’s deadline by a further six months, recognizing severe floods during 2007 and 2008 in the Zambezi valley as contributing to the delays. Performance did not improve however and in July 2008, President Armando Guebuza sent a special envoy to the Indian government (which owns both Ricon and Ircon), warning that it might be necessary to cancel the contracts. Some “minor improvements” in management followed, but the main technical problems continued, most notably defects in the concrete sleepers, in the drainage system and in the bridges. In late 2009, Ricon’s contract to manage CCFB expired, with the Sena line still far from complete.

The government tried to switch the management of CCFB to CFM, but Ricon used its majority on the CCFB board to block this. When President Guebuza made a state visit to India in 2010, he discussed the transfer of management from Ricon to CFM. The Indian government agreed, according to Transport minister Zucula, but Ricon still objected. Finally, in December 2010 the Mozambican government decided to rescind the contract with Ricon, though this did provide for a “last chance” of completing the work within 90 days, i.e., by 24 March 2011. On 31 January 2011, Ricon announced it had completed work on the Sena line. CFM chairman Rosario Mualeia decided to inspect the line personally, and in early February declared “not a single kilometre can meet the standards laid down in the contract”⁴².

⁴¹Transport Minister Zucula, personal communication.

⁴²In addition to the delays, CFM cited as evidence for the termination of the contract the uneven and non-level ballast, leading to the risk of derailment. The drainage in the line did not work, posing additional dangers during the rainy season. Another example of noncompliance was that of the promised 20 new or rehabilitated railway stations, in only two work was even begun.

It is important to note that this is not solely a Mozambican opinion on the performance of Ricon: the 2011 World Bank assessment of the rehabilitation project and its results is negative, having rated the project results as unsatisfactory⁴³. In the project, the costs were estimated as given in table 2.

Table 2: Cost of the components of the Beira Railway Project

Component	Cost
Rehabilitation of the Sena Line	127.50
Rehabilitation of the Machipanda Line	25.00
Institutional strengthening	5.50

Source: The World Bank, Implementation Status and Results Report on the Mozambique Beira Railway Project, 2011.

The report itemizes the Baseline state of the railways and the End Target, as well as the Current state. It is interesting to note from the World Bank's report that the percentage of tracks under temporary restriction had increased from 10% to 16.6% on the Beira Railroad system, as compared to the 2% targeted in the project. In fact during the period of the report, no work was done on the rehabilitation of the Machipanda line, according to the report. The link to Malawi was never established and the traffic from Zimbabwe, that was supposed to increase by 30%, actually decreased over the period. On the other hand, 99% of the IDA funds of the loan earmarked for the project were disbursed, likely an outcome of supervision and monitoring failures, and the difficulty the government had in coming to a fair and effective resolution of the conflicts over project execution and early operations. All the evidence indicates that the PPP was a failure.

After the takeover by CFM, the railroad started operating on August 2011 and the refurbishments required to upgrade the line to 6 MM tons of coal will be completed by early 2013, at an expected cost of US\$ 80 MM.

4.4 Ressano Garcia railroad

The Maputo corridor offers the shortest rail links between the industrial and commercial heartland of South Africa and a deep water port, according to the Maputo Corridor Logistics Initiative (MPLI). At present, the Ressano Garcia railroad in the Maputo Corridor is operated by CFM and South African's Spoornet national rail company. However, the negotiations between the two partners broke down several times before a permanent agreement was reached.

In December 1997, Spoornet led a consortium that was the preferred bidder to operate

⁴³The World Bank, Implementation Status and Results Report on the Mozambique Beira Railway Project (P082618) No ISR5543, 25/09/11/.

the concession, but negotiations broke down in 1999. A new agreement for a 15 year concession was reached in 2002, with an international consortium led by New Limpopo Bridge Project Initiative, as well as Spoornet and CFM. The project was supposed to invest US\$ 10 MM to rehabilitate the line so that it would increase its capacity from 2.9 MM tons per year to 6.8 MM tons per year. However, the agreement broke down in 2005, and the Mozambican government decided to have CFM as its sole operator. However, relations with Spoornet improved and a new cooperation agreement was signed in 2006⁴⁴. The rehabilitation project, which involved US\$ 20 MM in infrastructure and US\$50 MM in rolling stock, was fully completed at the end of 2008 with a design capacity of 15 MM tons per year. The line is used by 42 trains per week at the end of 2011⁴⁵.

Despite these improvements, there have been recent complaints about the expense of sending cargo by rail. According to the Mozambican Transport Minister⁴⁶,

“What is happening is that the mining companies in South Africa pay high fees to use the railway to Ressano Garcia, which is intended to persuade them to use the port of Durban rather than Maputo. Rather than pay that price, they prefer to come to Maputo by road, which is cheaper”

The result is that SA mining operators are sending their cargo by road to Maputo, reducing the useful life of roads, and leaving the Ressano Garcia line with surplus capacity of 2 MM tons per year, that is 25% of the total capacity⁴⁷. Currently, there are negotiations to eliminate these distortions. Overall we may consider the case a belated PPP success.

4.5 Nacala Railway

The Nacala corridor runs for 800 km from the deep water Nacala Port to the provinces of Nampula and Niassa close to the Malawi border. It comprises a railway, with a spur to the coal bearing areas of Moatize and a road network in poor condition. A 2010 report describes the quality of the road network as unsatisfactory, leading to high transport costs⁴⁸. In 2010, the same report states that track conditions were poor in 39% of the 872km network, with only around 20% in good condition. Utilization of the line is low, even though it has high potential, especially because the capacity of the line, if it were in good conditions, is 9.3 MM tons/year, a volume which could increase after upgrading.

In the early 2000s, the Nacala line was concessioned for 15 years to the Corredor de

⁴⁴For this see <http://www.mcli.co.za/mcli-web/mdc/rail.htm>.

⁴⁵MCLI presentation, “The Maputo Corridor :Supporting Cross Border Opportunities”, Tuesday 27 March 2012, CSIR Conference Centre Pretoria.

⁴⁶Quoted in “SA-Mozambique railway sidelined”, SA *The Star*, 23 April, 2012.

⁴⁷There are differences regarding the capacity of the line. According to the South African *The Star*: it is 8 MM/ton year, whereas in an MCLI presentation, it is described as 15 MM ton/year. The difference could be due to one informant considering only the coal carrying capacity while the other considers the total capacity of the line.

⁴⁸USAID-Agrifuturo, “Nacala Corridor Assessment: Strategy-Based Transport Logistics and Supply Chain Efficiency”, 30 April 2010.

Desenvolvimento do Norte (CDN) consortium, that included CFM and the Railroad Development Corporation (RDC), an American company that managed railways in Malawi. RDC was interested in the seamless operation of trains with exports from Malawi to the port of Nacala. In 2003 the concession received a US\$ 29.6 MM loan from the Overseas Private Investment Corporation (OPIC), which was intended for the rehabilitation of the stretch of line between Cuamba and the Malawi border, which was in bad shape⁴⁹. Nevertheless, the project was never implemented.

The concession started operations in 2005, but because the line was not improved, cargoes did not increase and in fact fell to half of what they were in 1995. DC left the consortium in 2008, selling its interest to a local group (Insitec) and the line was left under the control of CFM. This means that CFM became both the operator and regulator of the line, a risky and unwanted combination which has already adversely affected the Sena Railway PPP.

In 2011, Vale acquired 67% of the CDN consortium. The company has been hampered in its needs of coal transportation by the cargo limitations of the Sena line -Beira port corridor and plans to invest significant amounts in the rehabilitation of the Nacala Line, a new spur connecting the Moatize coal fields through Malawi to the Nacala Line, and a coal terminal in Nacala port⁵⁰.

4.6 Maputo Port

Maputo Port is part of the Maputo Port Development Corporation, which is a partnership between CFM, Gringrod and DP World. This was not the original consortium exploiting the port. In 1998 Merseyside Docks and Harbour Company was named the preferred bidder to form a consortium with CFM as a minority partner. However, there were protracted negotiations, specifically because the success of the venture and the possibility of attracting capital depended on the state of the Ressano Garcia Line, so the initial concession agreement only became operational in 2003. Other partners in the 2003 consortium were Skanska (Sweden) and Liscont (Portugal) which shared with DP World the controlling interest in MPDC. CFM had 49% of the shares in MPDC. Due to difficulties during the protracted contract negotiations, the fixed fee was not paid during the first years, leading to conflicts in the relations between CFM and the private parties. Eventually, the 51% ownership changed to the present partners and relations improved⁵¹.

This partnership received the concession of Maputo Port for 15 years. In 2010, the con-

⁴⁹World Trade Organization, "Revamping the Regional Railway Systems in Eastern and Southern Africa", an Aid-for-Trade Case Story, 31st January 2011.

⁵⁰M. Chimwala, "Vale to rehabilitate rail line as Moatize coal project advances", Mining Weekly, 25th November 2011.

⁵¹Alan Harding, "Review of the Effectiveness of Port and Port Terminal Concessions", USAID Contract No. 690-M-00-04-00309-00, Gaborone, Botswana, March 2009.

cession was extended for 15 years from that date. The port operates every hour of the year and volume has grown from 43kteus to 143 kteus in 2010, more than the designed capacity of 120 kteus (200 kteus in 2012 with yard expansion and modal changes from reach stacker operations to rubber tyre gantry) and the 2010 projections were of a volume of more than 170 kteus for 2011.

Unfortunately, Maputo Port currently has only one berth appropriate for Panamax container ships, but it is equipped with 5 ship-to-shore cranes⁵². Container movements per hour are improving and tending to international standards. Similarly, truck turn-around times are improving and were less than 25 minutes by April 2011, below the target time. DP World believes that containerized cargo can reach 550 kteus by 2021 which will require investments to add additional capacity by adding two berths and a larger stacking area, increasing the quay length to 600 meters at a cost of US\$110 Million. Cargo through the port, such as coal (though a newly expanded terminal with a 6 MM ton per annum capacity, potentially expandable to 20 mm ton per annum), sugar and others have increased from 5 MM tons in 2003, to almost 9 MM tons per year in 2010, with almost 12 MM tons expected in 2011⁵³.

All in all, all the components of the Maputo Corridor: Maputo Port, the Ressano Garcia line and Trac seem to have achieved a successful arrangement that has led to increased capacity, investments and transshipment with a good growth prospects.

4.7 Beira Port

Beira is a port on the Pungue River, about 20 km from the sea. It is connected by a channel that must be deepened in order to attract vessels. Only recently has the port been dredged (previously lastly done in 1992) so the capacity was severely limited. The dredging was completed in 2011, and the port can now receive ships of Panamax size. Nevertheless, having a berth length of 700 meters, only one appropriate berth and limited equipment, has limited the port to 100 kTeus⁵⁴. Dwell times are excessive by any standards, with reported waiting exceeding 20 days, which is the main reason for the limited capacity of the port⁵⁵.

The dwell times at Beira are due to various administrative and logistic deficiencies, especially in customs, by allowing containers to be stored at the terminal and because of a general unfriendly attitude by Customs and the Port Authority. Among other deficiencies, Cronje, *op.cit.* mentions unreliability of container handling equipment, delays in the documentation process, the use of the terminal for long term storage, overbooking, physical

⁵²DPWorld Presentation, Port of Maputo Master Plan conference June 01, 2011.

⁵³Note however that Maputo port handled 17 million tons in 1972. Maputo Port Master Plan 1.06.11 presentation.

⁵⁴Ifollow Thys Cronje, "Trade Facilitation Interventions Port of Beira", August 2011, USAID, <http://www.satradehub.org/trade-facilitation/trade-facilitation-interventions-port-of-beira>.

⁵⁵According to a 2010 World Bank-PPIAF report of August 2010. The port of Valparaiso, in Chile (admittedly with deeper waters) achieves 850 Kteus with the same berth length, by limiting the dwell times and charging steeply increasing fees for dwell times longer than three days.

escorting of bonded cargo by custom officers, an outdated customs clearance system, and clearance of cargo only once landed.

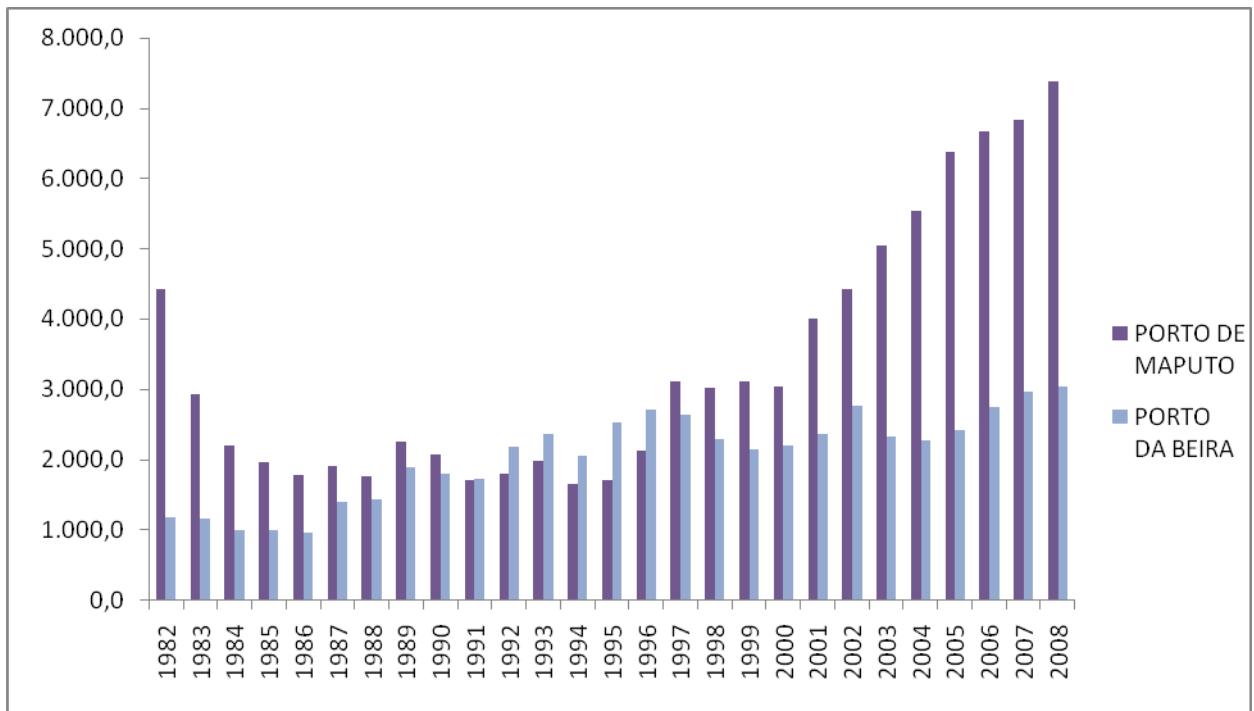
The concession was awarded non-competitively to a consortium including Cornelder of South Africa with 70% and CFM with 30%, for a period of 26 years, in 1996. Ownership comprises only the Container and General Cargo Terminal, and does not include other facilities, still in hands of CFM. CFM remains the Port Authority (in contrast to Maputo Port), again replicating the dual role as operator and regulator⁵⁶. According to the contract, CFM should ensure the dredging of the channel to designed depths, but this depth was not maintained until recently.

The first coal shipments were made by Vale from Moatize in the following month after the dredging of the river bed in 2011. In March 2012, two telescopic ship loaders were installed for Vale Mozambique's coal terminal in Beira, with a capacity of 11 MM ton pa. Nevertheless, coal cargo is limited by the capacity of the Sena Line.

The actual performance of the Beira port compared to Maputo in terms of cargo loading is seen in Figure 1. It shows that during the 1980's the volume of traffic through both ports of Maputo and Beira declined significantly. War destroyed most of the infrastructures, and traffic from hinterland countries was diverted to South African Ports (in particular Durban) due to security problems. Moreover, the political crisis reduced significantly the Zimbabwean imports and exports contributing to lowering the traffic through Mozambican ports.

Graph 1: Maputo and Beira total cargo handling volume in 10³ tons -

⁵⁶Alan Harding, *op.cit.*, recommends separation of these functions.



Source: CFM

After the peace agreement and the economic reforms begun in 1987 cargo handling initially did not change much until 1997, when cargo through Maputo Port started increasing (except in 2000 due to the floods in South Mozambique) while Beira traffic did not change much during the period considered. Although this increase in traffic in the Maputo port may be a corollary of the PPP concession, there are a number of other factors that may have contributed. For example, the end of the war and of Apartheid in South Africa increased economic integration between Mozambique and South Africa, and also Zimbabwe and Swaziland.

4.8 New PPP Proposals

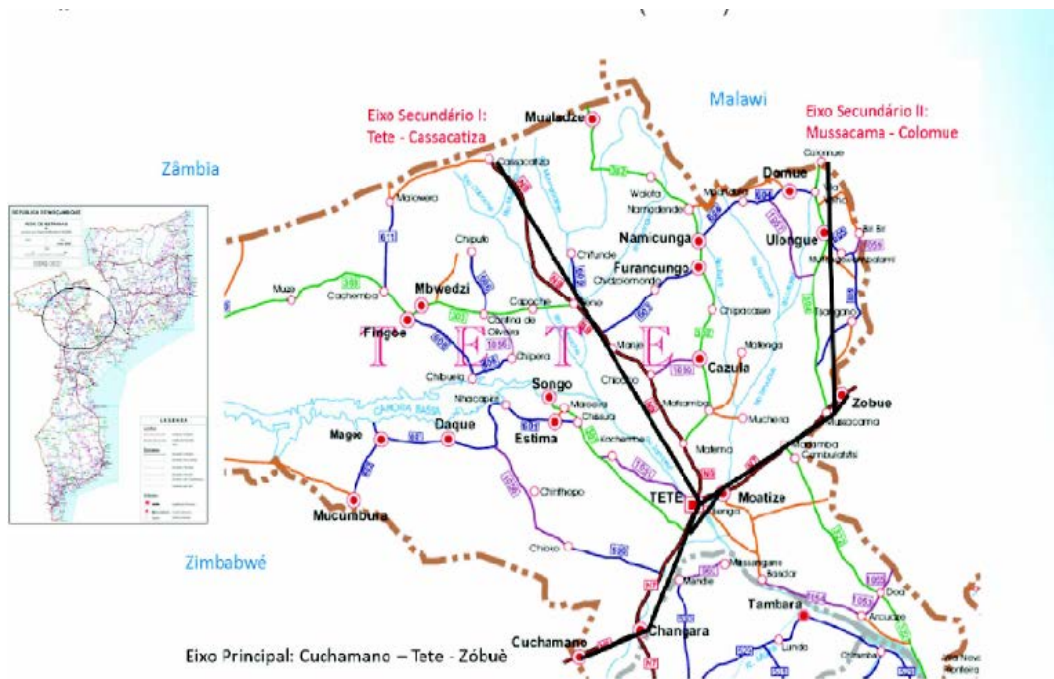
The Ministry of Public Works is planning a series of new road concessions. Perhaps the most advanced proposal concerns the Tete province, with its rich deposits of minerals and coal. An unsolicited proposal from a consortium formed by Mota-Ascendi, Soares da Costa and Infra to the Administração Nacional de Estradas (ANE) proposes to build a new bridge over the Zambezi river for heavy traffic, leaving the existing Samora Machel bridge for light traffic. The new bridge is also vital for commercial traffic originating in Malawi, Zambia and Zimbabwe for the ports of Nacala and Beira.

The proposal consists of the a 30 year concession for the design, construction, financing, operation and maintenance of the new 2 km bridge and 14 km highway access as well as the

rehabilitation, financing operation and maintenance of 260 km of the N7 and N8 roads between Cuchamamo - Tete -Zobue. The proposal also provides for routine maintenance of the 156 km N304 road between Colomue and Mussacama and the operation and routine maintenance of the current bridge in Tete. See figure 1⁵⁷.

The revenues for the project during the construction phase would come from road taxes and the currently existing tolls on the Samora Michel Bridge. During the operational phase the revenues would come from tolls on both bridges and other tolls on the N7 and N8 roads. The project was signed on June 2010 and the financial close was on April 2011, when the new Bridge construction started.

Figure 1: Location of unsolicited proposal for Tete Bridge



Furthermore, the proposed PPP for the operations and maintenance of the 470 km Maxixe-Maputo N1 road is in the prequalification stage. The government has prequalified the consortium Edifer-Tecnovia for the same purpose on the N6-N7 operations and maintenance concessions.

⁵⁷ Ascendi, "PPP's Concessionaire's Perspective", 14/11/2011, http://www1.ifc.org/wps/wcm/connect/2721398049541356813fad849537832d/2_1_Procurement~Issues~in~PPPs~Unsolicited~Bids~A~Concessionaires~Perspective~Jorge~Valeriopdf?MOD=AJPERES.

4.9 Conclusions from the case studies

The evidence of these cases shows a variety of results for PPPs in Mozambique. In the Maputo corridor, the results appear to be good, with all the concessions in operation and with coordinated expansion plans as installed capacity is reached. In the case of the Nacala and Beira ports and the associated railways, the results are not as good, with long dwell times and little dredging at Beira. Moreover, *it is clear that the double role of CFM as regulator and participant has not led to good outcomes.*

In part, the failures of the Beira and Nacala corridors appear to stem from the initial choice of private party (in the case of the Beira railroad) or in difficulties in managing the relationship between the private parties and CFM (the case of Nacala). In any case, the assessments of most railway PPPs in Eastern and Southern Africa is negative. According to the WTO report mentioned before, these failures were due to the tardiness of the concession process, with no provisions for funding in the interim, the quality of the contracts and the poor choice of concessionaires. Concessions operate in a conflictive environment with the local regulator, the investments are not carried out and the contracts are non-performing.

This does not mean that this will always be the case, but the first wave of concessions seems to have been mostly failures⁵⁸. This is in line with the experience of railway concessions worldwide, as mentioned in section 3.3.

In ports, the worldwide experience is far better, and Maputo Port seems to be another example. The fairly poor experiences of Beira and Nacala have a lot to do with the delays in the railroads, which meant that cargoes that were supposed to arrive did not. There are also management problems in those ports, as mentioned in section 4.7, the case study of the port of Beira. Whereas Maputo has been increasing the truck turnaround times and improving the container dwell times, in the other ports the dwells times and the waiting times for trucks are much higher than is standard.

As a conceptual issue, the role of CFM in many of these concessions is complicated. Being at the same part a shareholder in the regulated firms and the regulator goes against current thinking about the division of responsibilities in regulated sectors. Could it be that this dual role has some relation to the difficulties of the Beira and Nacala ports?⁵⁹ We have mentioned in section 3.10 the risks of low service standards when there is no separation of these roles, as in the present case.

Another serious problem in PPPs are the drastic changes in policies in short order. Consider the case of AdM, in which the leading firm in the consortium left for unexplained reasons after only a few years into the concessions. Later the private party (AdP) was bought out four years before the end of the concession, again for unexplained reasons. Finally, in another doctrinal switch, the government very recently has decided to set up PPPs in the water sector

⁵⁸World Trade Organization, *op. cit.*

⁵⁹It is perhaps significant that CFM dislikes the arrangement in Maputo Port –which is successful– and approves of the one arrangement in Beira where it has more control even though results have been far worse.

once again. The lack of a steady environment increases the risk of PPP bidders and this should be reflected first, on the types of firms that are willing to participate in PPPs in Mozambique and second, on the profitability conditions they require for participation in Mozambican PPPs.

5 Recommendations

Mozambique would face a number of problems implementing an optimally designed PPP program contingent on the availability of highly qualified personnel, as their scarcity still does not allow a significant diversion of such resources to the PPP sector. Moreover, in view of the fact that Mozambique suffers from a severe lack of infrastructure, it is possible that getting the infrastructure in place early on through PPPs is the only feasible option. It is also important to note that procedures that are appropriate for countries with a common law background may be inappropriate to a country with a civil law history. And finally, Mozambique – as many other countries – has certain institutional fragilities⁶⁰ which have to be taken into account in the design of a PPP program.

The example of TRAC and the railway concessions shows that there is significant scope for conflicts between the private and government parties. In some cases, it is the private party that fails, as in the paradigmatic case of the Sena and Machipanda lines. On the other hand, in the case of TRAC, the government has not complied with the terms of the contract in several important dimensions. Similarly, in Beira, CFM did not fulfill its contractual dredging duties until recently. There can be good explanations for non-compliance by the government, but it will eventually lead to conflict, and without a reasonable conflict resolution mechanism, the end result could be unfavorable to Mozambique, in terms of its reputation for future PPPs and foreign investment.

The perceptions that can be derived from interviews are subjective, but it appears that many government cadres are extremely sensitive about a potential loss of sovereignty associated with PPPs (for example, in the Maputo Port). There is also a belief that PPPs should generate resources for government, rather than having the welfare of users as one of the main objectives.

The preliminary recommendations are fairly straightforward and do not suggest creating elaborate systems.

The following are key points to take into account in the design of a PPP in the Mozambican context:

⁶⁰In Transparency 2010, the perception of corruption in Mozambique gets a value of 2.7, 116 among all countries. Moreover, according to the 2005 USAID Corruption Assessment Report, Mozambique has high levels of corruption.

1. Transparency: this means the publication of everything related to the contract and its modifications in a permanent web page.

The advantage of complete transparency is that the possibility of exposure leads to more careful wording of contracts and also deters corruption. Moreover, it may lead to a better selection of bidders given the publicity of the contractual arrangements. Though there may be exceptions to full transparency in cases where commercial secrets are involved, in many PPPs (roads, hospitals, bridges) these do not apply and therefore there is no reason not to publish this information for easy public access. Currently, contracts are not publicly available.

2. Preference for open competition (with requirements for firm participation) with separation of technical and economic stages. Pre-qualification only in selected cases.

Open competition with a two-stage procedure has the advantage of promoting participation and therefore can lead to greater welfare gains. The technical stage should be sufficiently strict so as to eliminate firms that are unable to provide the necessary quality standards. This may have been the reason for some of the problems at the Sena and Machipanda railroads. The separation of stages reduces corruption and favors the participation of firms that have little lobbying ability (but may have high technical capabilities). This may have been one of the problems that explain the failures at the port of Beira, where there was no open competition.

3. Risk transfer.

In order to provide the correct incentives to the private party in a PPP project, this party should face risks, especially for aspects under its control. The current Law, in articles 15, 16 and 17, seems to be appropriate. Nevertheless, these articles must be enforced, and therefore renegotiations of the contract that tend to either raise or reduce the risks facing one party at the expense of the other should be avoided. This requires compliance with the terms of the contract, and a fair and efficient conflict resolution mechanism (see below).

4. Quality standards based on easily identifiable and observable variables.

When performance standards are easily quantifiable, there is less space for conflicts, because parties know that the conflict resolution mechanism will have little trouble in deciding whether non-compliance occurred. Moreover, it is easy for users to pressure both the PPP and government agencies when standards deteriorate if these are based on readily identifiable variables.

5. Predefined conflict resolution mechanisms at a general and not contractual level.

There are various mechanisms for conflict resolution: commercial arbitration, appeal to the legal system, international arbitration, the use of expert panels, etc. Generally speaking, having a conflict resolution system that is more efficient (and less open to

corruption) than the legal system of a developing country under civil law reduces the costs of conflicts and tends to attract more national and international firms to the sector. If the conflict resolution mechanisms are particular to each contract, the transaction costs are higher than if such mechanisms are defined in the PPP law.

6. PPPs in infrastructure should not be considered as important sources of revenue

Some CFM officials believe that the Beira Port concession, which was awarded through direct negotiation, but in which little development has taken place, is a superior model to the Maputo Port PPP, which was awarded competitively. The reason seems to be the more regular payments from the private party in Beira (US\$2 MM annually to CFM), than in Maputo Port. This is a myopic approach, since the object of port PPPs is not to generate resources for CFM, but rather, to reduce the costs of national exports and of imports. In the case of exports and imports of transit goods, the Mozambican government should charge a royalty. In the case of Mozambican imports and exports, the benefits that derive from lower transport costs and the associated development in the neighborhood of the port outweigh the benefits from high cash payments under a PPP. The argument is the same as the one used for trade liberalization, which tends to increase efficiency. Moreover, by imposing a high charge only on seaborne trade, it discriminates against the most efficient method of transporting goods into and out of the country.

7. Use of PVR (for roads and bridges among others).

PVR contracts have the advantage of lowering the avoidable risk which implies lower cost overall. It also facilitates the provision of fair compensation to the private party for contract termination in case of conflict, etc. They were used in all recent highway PPPs in Chile.

8. Charges (even when small) to empower users.

When users believe that it is their user charges which provide the service, they will be more likely to complain to their representatives when service quality deteriorates. This means the both the PPP and the sector regulator are under pressure to ensure good service quality.

9. Less complex projects first: roads, bridges, airports, seaports.

Complex infrastructure projects (hospitals, for example) are prone to design errors that require renegotiation and the contracts themselves are more complex than those of simpler projects. Therefore it is better to engage in complex infrastructure PPP projects only after gaining experience with the simpler projects. So far, Mozambique has followed this strategy, with the exception of railroads (which are more complex than the other types of projects), where results have not been good.

10. If guarantees and subsidies are used, the Finance Ministry should develop a contingent obligations index.

Contingent subsidies (for example, minimum demand guarantees) can become active just at times in which government finances are weak –after an economic crisis– so it is a good idea to quantify their expected costs under conditions of stress. Otherwise, government financial data do not contain all the relevant information to make good decisions. The current approach of only considering the yearly contingencies is too shortsighted for the design of good policies.

11. Compliance with the terms of the contract.

A good reputation for contract compliance is key to attract participants for PPPs, and therefore the short term gains from failing to honor the contract can become costly in the long run. Moreover, non-compliance makes it easier for the private firm to renegotiate the contract in its favor. In that sense, multiple changes of direction at AdM, for instance, are not conducive to confidence in the Mozambique PPP system by bidders.

12. Division of roles

The government agency that is charged with regulating a sector should not participate directly in the sector. Otherwise, the role of the regulator and that of the shareholder might get into conflict leading to poor regulation or inefficient operations. For example, the government could set up a new regulator for the transport sector, and this regulator should be an independent actor, supervising compliance with the rules and regulations in the sector. Clearly, some of the problems at Beira port stem from the dual role of CFM as port authority and operator.

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