### Table 4.3: Top-down bid comparisons

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<th>Year</th>
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**Total subsidy requirement**: $750,000

**Total 10 year government revenues**: $55,091

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**Total subsidy requirement**: $645,000

**Total 10 year government revenues**: $87,990

* discount rate of 10% applied

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<th>Roll-out</th>
<th>Year 2</th>
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<td>250</td>
</tr>
<tr>
<td></td>
<td>Year 4</td>
<td>250</td>
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“Top-down” – fixed subsidy

4.15 This is an alternative to our recommended “Top-down” approach. In the fixed lump of subsidy approach, government makes clear that is has a certain amount of subsidy available to support a given concession opportunity. Bids will be assessed purely on the number of connections generated by the subsidy. The benefit of such an approach to government is that it pushes the technical thinking on to the bidders who have to decide how to deliver a number of connections. In practice, however, such an approach is likely to be less attractive than that above in the case of opportunities where there is a relatively low level of interest amongst potential bidders. A further limitation is that it is more difficult to incorporate other financial criteria in a single and combined decision rule. However, it might be used in situations where there is private sector interest in a region, but where government does not wish to provide bidders with a full-roll-out profile.

“Bottom-up” - minimum subsidy per connection vs fixed subsidy per connection

4.16 A subsidised connection scheme is applicable to solicited challenge scheme approaches. Again, the key choice is whether to fix the number of connections or subsidy. This choice is largely determined by what government wishes to influence through the scheme; either the scale of projects (in terms of numbers of customers) or else the amount of subsidy employed for a given number of connections.

4.17 Whilst either can be adopted we have opted for a least subsidy per connection scheme. This should be subject to a minimum qualifying number of connections (to avoid having to look at too many small projects) and subject to a cap in terms of maximum subsidy per connection (to avoid either gold-plated or highly marginal schemes). In other words it encourages larger schemes which can exploit economies of scale. We would suggest a minimum of 250 customers and a cap of $1,000, although as shown in the financial analysis, customer numbers may need to be well in excess of this to realise any meaningful economies of scale.

4.18 Subsidy costs per connection are calculated by dividing total eligible capital costs by numbers of customers connected. We would suggest that the connection subsidy relate to the costs of medium and low voltage distribution, as well as the connection to house, basic ready board and meter (including more expensive pre-payment meters)\textsuperscript{14}. We would suggest that the capital costs of generation and those associated with house-wiring be excluded from the scheme.

4.19 We now turn to a more detailed explanation of how such a bottom-up challenge scheme would work.

\textsuperscript{14} Prepayment meters are important to promote energy efficiency. Moreover, households typically buy alternative energy products such as batteries when they have cash available.
How a rural challenge fund would work

4.20 As set out, we recommend that a “challenge-based” approach be set up to incentivise PSP schemes. It would work as follows.

- Donor funds and financial resources provided by GOM (through, for instance a tax levied on those with existing grid access) are placed in a fund, the “Modern Energy Challenge Scheme” (MECS). An idea might be for donors to provide funding as a given multiple of funds raised by GOM itself, so as to incentivise GOM contributions.

- A proportion of total funds, say 50%, is split between up to four geographic areas (comprising different Provinces), perhaps on the basis of population (although this could be adjusted to award more to areas that include Provinces with lower income levels). Feedback from the field trips has underlined the importance of this. However, the remaining funding should not be tied, so as to reward the most attractive schemes.

- A competition for grant subsidies to contribute towards the capital costs of connecting new customers is organised on a six-monthly or annual basis. The basis of the competition would be as follows:

  - The MECS would be open to bids where the total number of new connections is greater than 250.

  - Promoters in each province would develop their proposals in the form of business plans which should:

    - demonstrate the availability of a power source (as per the models set out above) and its costs;

    - identify who will be under-taking the required operational support (and the competence of any organisation to which this might be out-sourced); and

    - demonstrate evidence of an ability to pay through signed customer agreements with an agreed price and service offering.

  - Following any necessary approvals; for instance, health and safety, permission to operate a concession, etc the bid would be submitted to the MECS.\(^\text{15}\)

\(^{15}\) It is essential that the solicitation serves as the public tender (concurso público) so that the award of the concession is only made after successful selection.
The MECS would evaluate qualifying bids by ranking them according to least subsidy per connection within defined area, thus encouraging Promoters to come forward with bids of a scale that makes them worthwhile evaluating, yet encouraging them to keep costs down.

Funds will be granted to each bid in decreasing magnitude of subsidy per connection, as shown in **Figure 4.2**, within the available financial envelope.

Bids which fail to receive funding will be ranked again, this time on a national basis, as shown in **Figure 4.3**, with the remaining untied funds being utilised in the same way.
Figures 4.2 and 4.3

**Area 1 Competition**

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Subsidy required per connection</th>
<th>No of connections</th>
<th>Subsidy required</th>
<th>Remaining Balance</th>
<th>Result</th>
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<tbody>
<tr>
<td>1</td>
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<td>6</td>
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<td>7</td>
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<td>2,200</td>
<td>1,540,000</td>
<td>Entered into national competition</td>
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<tr>
<td>8</td>
<td>715</td>
<td>1,000</td>
<td>715,000</td>
<td>Entered into national competition</td>
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</tr>
<tr>
<td>9</td>
<td>730</td>
<td>499</td>
<td>364,270</td>
<td>Entered into national competition</td>
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</tr>
<tr>
<td>10</td>
<td>850</td>
<td>300</td>
<td>255,000</td>
<td>Entered into national competition</td>
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Subsidy dispersed USD: 4,007,000
Carried forward to national competition: 993,000

**National Competition**

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<th>Ranking</th>
<th>Subsidy required per connection</th>
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<th>Subsidy required</th>
<th>Remaining Balance</th>
<th>Result</th>
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<td>750,000</td>
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<tr>
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<td>700</td>
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<td>1,000</td>
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<td>4,942,754</td>
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<tr>
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<td>730</td>
<td>499</td>
<td>364,270</td>
<td>4,578,484</td>
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<td>Rolled over to next competition</td>
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Subsidy dispersed USD: 9,796,516
Carried forward to next competition USD: 203,484
Bids failing to receive funding can be entered in the next funding round competition, although promoters may wish to revise them, that is through decreasing their cost, so as to improve their chances of qualifying for funding in the next round.

4.21 Ideally, the promoter should not receive any grant funds until installation work has been verified to be of an acceptable standard. This would involve the promoter securing short term bridging finance to finance the connections in the first instance. The ability to secure such finance, however, is very much based upon the creditworthiness of the promoter. The finding of the fieldwork, that creditworthiness is determined by physical collateral, is likely to militate against such an approach. In reality, therefore, it is likely that a proportion of funding will need to be made on a milestone basis rather than left until the installations are complete.

Issues and refinements

Envisaged scale of opportunities

4.22 The field-work has suggested that the scale of opportunities, at least in the beginning, is likely to be relatively small. It would be hoped, however, that as the MECS becomes more understood it would grow. Large schemes are more desirable as they have more impact in terms of addressing GOM’s access objectives. Hence, should it be desired, it would be possible to prioritise schemes above a certain scale, say 1,500 connections as long as the subsidy required were below a certain cost, say $500 per connection.

Crowding out

4.23 Whilst in principle the scheme could act so as to “crowd out” private sector lending, the shortage of available finance reduces the likelihood of this. Moreover, one off grants, competitively bid for, are likely to be much less likely to distort the market than low cost subsidised credit.

Hybrid schemes

4.24 One way of increasing the number of people with access within an area would be hybrid schemes. These might focus on providing full connections to those households and businesses with the highest demand, whilst households with lower requirements might be supplied with lower cost solar alternatives.

Required roles and institutional arrangements

4.25 There are a number of roles involved in undertaking the above:

- **promotion** of the scheme; in terms of ensuring that local administrations (DPREME, District Administrators), promoters and customers are aware of the scheme’s existence and how it would work;
• **concession design;** whereas in the MECS this would be proposed by the promoter and authorised by the granting authority (see below), in top-down approaches design and roll-out requirements would be addressed separately;

• **granting/authorisations;** all concessions as such have to be granted although the power to do so can be delegated to the local level;

• **authorisation of bids;** bids going forward into the competition should be approved by a competent, technical local authority (so as to ensure that the provisions are technically robust);

• **competition and granting of subsidies;** the bids will need to be assessed by an impartial entity who will have responsibility for awarding grant funds;

• **monitoring of implementation;** the funds, however, will only be awarded once it has been determined that households have indeed been connected; and

• **provision of technical support;** technical support, for instance, in the training of engineers and technicians could help in making more proposals viable; help may also be required with the preparation of business plans.

4.26 We now turn to who might be responsible for each of these roles.

**Concession design**

4.27 We would recommend that DNE have responsibility for concession design. Any “top down” schemes should have first call on subsidy funds available, due to their larger scale, which means they would reduce the amount available to the MECS. The grant provider would need to stand ready to provide any required subsidies to such an initiative.

**Grant provider**

4.28 FUNAE should be the body responsible for running the challenge scheme and determining the ranking of bids. In undertaking such a role, however, a number of changes will need to be made to FUNAE’s constitution, as set out in **Section VII.**
Authorisation/granting of required authorities, technical assessment and monitoring of implementation

4.29 As a representative of both provincial administrations and MIREME, the DPREME representative is ideally placed as a link between central and local administrations. Authorising powers to grant a concession or authority at least below 1MVA can be delegated to the local administration, who would need to involve DPREME, particularly on technical issues. This is likely to be applicable to most schemes. As an engineer, the DPREME representative will be able to assess the technical, particularly safety merits, of each proposal. DPREME would need to authorise a bid being entered into the competition from the province in question. The representative could also check that connections were made to an acceptable standard before grant funding was allocated.

Promotion and technical support

4.30 The challenge scheme will need to be properly promoted if it is to become a success. The form of promotion will need to be both general (through advertisements in newspapers, TV, radio etc) and specific, in terms of explaining it directly to those who can benefit from it and those who will be required to help to undertake it. We do not believe that any of the existing institutions are well placed to do this and that a separate contract should be let for this role. As we have set out previously, it is important to keep the role of promotion separate to that of evaluation and grant award.

4.31 The successful contractor would be responsible for liaising with DNE, FUNAE, both local DPREME representatives and District Administrators. These latter two could play a secondary role in promotion of the scheme. A further task would be the development of a toolkit to help promoters put their bids together.

4.32 The consultancy contract could have two other elements. The first of these would be a capacity to help promoters put bids together in an acceptable fashion. This might be organised through workshops and regular “doctors’ surgeries” at which the consultants could give advice on the quality of bids (for instance, market assessments, cost assumptions, financial projections etc).

4.33 A further element would similarly involve teaching electrical and other associated skills, particularly such things as diesel generator maintenance. The objective of this would be to widen the pool of operational support for such schemes.

Conclusions

4.34 Our recommended strategy for isolated and flexible solutions is based around “top-down” and “bottom-up” approaches, involving subsidy contributions for the provision of new connections. The recommended competitive dynamic in both cases involves promoters bidding on a least subsidy per connection basis, although in the former case other financial considerations (such as payments for existing assets) can also be included.
4.35 Whereas in the top-down scenario (such as the current Inhambane concession) promoters bid for the same opportunity for which a roll-out programme will have been designed, promoters need to design their own project in the “bottom-up” scheme. We recommend a six monthly or annual competition in which bidders compete for subsidies from the MECS, which we recommend has at least half its funds spread between a number of areas to assist in the delivery of more equitable solutions.

4.36 We recommend that DNE manages the competitions in any “top-down” schemes, with FUNAE supplying the required subsidy funds. FUNAE, however, should manage the “bottom-up” competitions.

4.37 Although we have shown the role of a concession fee for completeness we do not believe that the opportunities are attractive enough to warrant one being paid (never mind an uncertain one).
V Strategy for grid intensification

5.1 The Diagnostic Report noted that while some 80-90% of the urban and peri-urban population is reached by the grid only around 20% of urban households are connected. Given that Mozambique's urban/peri-urban population is estimated as some 25% of the total, an increase in connections in these areas will have a big impact on the overall electrification rate of Mozambique and should be relatively inexpensive to achieve. More importantly, from the perspective of this study, there are also likely to be attractive opportunities for the private sector, as evidenced by private sector involvement in water supply – see Box 5.1.

**Box 5.1: The Water Sector**

We have undertaken a number of interviews with participants in the Mozambican water sector; the regulator (CRA); subsidy provider (FIPAG) and operator (Águas de Mozambique) to gain an understanding of the pertinent issues.

PSP has been introduced in the sector through the so-called Five Cities project. This involves leasing all water assets within Maputo through an affermage contract, with management contracts for services being established in the cities of Beira (Sofala), Nampula (Nampula), Pemba (Cabo Delgado) and Quelimane (Zambézia).

In developing the structure it was decided that it was only Maputo that was attractive enough for the private sector to bear full revenue risk, this is being minimised in the management contract arrangements operating in the other cities. The lease in Maputo is for 15 years with the management contracts running for five.

A fund – FIPAG – was established at the same time, backed by the World Bank and a number of bi-lateral donors to fund rehabilitation and network expansion. Although the results are a marked improvement on what was before, there have been a number of problems:

- the envisaged expansion programme has been curtailed by the floods of 2000;

- the management contracts do not incentivise the concessionaire to connect more customers, moreover, World Bank procurement procedures are difficult to apply within a thin market (especially outside of Maputo); the contractor having no real incentive nor ability to increase the supply of water services;

- even in Maputo, where there is an incentive to connect more customers, the main constraint to connecting more customers seems to be the capacity of the system in terms of bulk water supply and treatment plants, which it is difficult to privately finance and takes a long time to procure using public funds;

- the devaluation of the MZM has caused problems as the tariff is not fully indexed to the exchange rate; its impact being more pronounced where most demand is from domestic households rather than industry;

- whilst the lessor is exposed to payment risk, investment risk remains largely with FIPAG.
PSP models

5.2 The water sector has opted for two different PSP\textsuperscript{16} models according to the different circumstances concerned. This is a useful starting point for considering the full range of options that are available, keeping in mind that grid intensification will inevitably require some existing EDM assets to be placed under the management of the private sector.

5.3 We have considered three potential models, which we believe illustrate the range of options and allow their relative advantages and drawbacks to be highlighted. Mixed models are also possible. One model could also be used as a transitional step towards another.

5.4 The three models are:

(a) management contract: in which the private sector is given day to day management responsibility for a specific operational area (not necessarily corresponding to an existing EDM operational area) and is asked both to manage the existing business and expand the number of connections according to an agreed plan. Remuneration would be through some form of incentive based fee. The private sector would not however take revenue or investment risk;

(b) leasing arrangement or affermage contract: as above but here the private sector leases or rents the assets and is responsible for revenues, operating costs and the provision of working capital (but not investment finance, which continues to be provided by the public sector). But new investment would be implemented and operated by the private sector. Remuneration is primarily as a percentage of revenues, thus incentivising the private sector to both collect money from existing consumers and connect new ones; and

(c) full concession: an area is defined as above but in this case the private sector is given responsibility for financing investment, as well as for revenues and is remunerated in the form of the profits of the business, or its share of profits depending on its shareholding, which may be obtained by a capitalisation (issue of new shares). Assets formally remain part of the public domain and revert to the state on expiry of the concession. In this model the private sector bears the most risk but has the possibility of earning the highest rewards.

5.5 In practice mixed models are often implemented. Thus, most leasing arrangements will transfer the same management functions to the private sector as a management contract but the method of remuneration is different. It is also not uncommon for a concession company to be a joint venture between public and private sector, but with the private sector shareholder having a separate management contract with the concession company. In this latter option the private sector receives a return on investment, in the form of dividends, and remuneration under the management contract.

\textsuperscript{16}PSP is private sector participation - the attention of Portuguese speakers is drawn to the fact that participation in English refers to any form of involvement and not only to a holding of shares.
5.6 We now consider in more detail how these models might be implemented in Mozambique. The points to be examined include:

(a) definition of the business in which the private sector is to play a role;
(b) legal and regulatory issues;
(c) specific features of each of the options, including subsidy mechanisms;
(d) risk allocation;
(e) how the opportunities would be awarded to the private sector; and
(f) evaluation of advantages and drawbacks.

**Business definition**

5.7 Significant preparatory work will be needed to define a business in which the private sector is to participate so that the respective duties of the private sector and the public sector are properly defined and the risks are transparent (and, where appropriate, mitigated).

5.8 We think that to ensure transparency and clarity, it is desirable to structure the business as a separate concession, even in the case of a management contract. This would also facilitate evolution of the arrangement. In the case of the management and leasing contract options, the concession would be held by EDM.

5.9 The business definition should include the following:

(a) **scale**: in order to attract foreign private investors, the business would need to be, and or have the prospect of being, significant in scale. We suggest 5000-10,000 customers, now or in future, is the scale that is required. To obtain this scale, it will be necessary to include in the business one of more of EDM's existing operational areas; for example Chimoio or Chimoio and Beira which together make up the central region; possibly including connections at present supplied by CFM as a reseller;

(b) **customers**: the most likely definition of customers is all those served at 33 kV and below, the legal definition of distribution voltages. This implies that EDM would retain full responsibility for HV customers served directly from the transmission grid;

(c) **service standards**: the standards of technical and commercial service will need to be defined in such a way as the private sector's performance can be measured objectively. These standards will include network availability, restoration times in
the event of network failure, network voltage levels, waiting times for new connections etc etc

(d) **load forecast and new investment**: the scope for new connections and additional consumption by existing consumers will need to be estimated and the investment for meeting the need, in terms of network re-inforcement, network extension and service drops and meters (credit or pre-paid) will need to be assessed. This will in turn require some understanding of what those in the service area can afford relative to supply costs, given likely levels of subsidy - the level of deposit (caução) required before connections are made will also be critical;

(e) **bulk supplies and tariffs**: given the load forecast derived above, the adequacy of bulk electricity supply allocations will need to be verified. We have assumed that EDM would remain wholly responsible for generation or wholesale energy purchases and for selling the energy at a bulk supply tariff; for example, the short or medium utilisation AT tariff;

(f) **losses**: the expected level of technical and non-technical losses and the scope for reducing losses in future; and

(g) **retail tariffs**: since the business will encompass an existing EDM supply area, it will be very difficult to apply tariffs that are different to EDM tariffs, at least in the short term. However, the tariff formula must allow full recovery of the cost of wholesale electricity and a return on distribution and supply assets (except where these are bought with subsidies). It will also be essential to act on the findings of the KPMG tariff study in respect of any cross-subsides between HV and other consumers, given that the business as defined excludes the former.

5.10 Using the above data, it will be possible to assess the likely financial performance of the business in terms of its ability to earn a return on assets or need for subsidy. The issue of financing and subsidy mechanisms is specific to the role to be played by the private sector and is discussed further below. We envisage that some form of output-based subsidy would be made available based on the number of new connections made.

**Legal and regulatory issues**

5.11 There are a number of legal and regulatory issues which are common to all of the options:

(a) **concession**: we think that it would be helpful to create the business defined above as a concession, even in the case of a management contract. This would then be a concession held by a subsidiary company of EDM and would formalise the existing implicit concession for the area concerned. Existing assets would be valued and be transferred into the concession in return for shares. A concession company would then exist, making it possible, in the short or medium term, to invite the private sector to participate in the concession. In this case, the
competition to select the private partner would also serve as the concurso público (public tender) for the purpose of concession award;

(b) **role of municipal and district authorities in the concession**: the experience in Northern Inhambane demonstrates the importance of giving an opportunity to local authorities to play a role in the concession, other than as consumers, even where the granting authority is MIREME (which will always be the case for grid intensification). This could be done through some form of consultative committee or by way of a convention with central government delegating some of the responsibilities for performance monitoring;

(c) **concession fees**: there seems little purpose in paying distribution concession fees to the granting authority in a sector which is not profitable and which is likely to continue, in many instances, to require subsidies in order to increase access. In Section VI we explain how the Council of Ministers could use powers given to it by the 1997 Electricity Law to set concession fees to zero. Concessionaires would still be liable to provide a security to ensure that they fulfil their concession obligations;

(d) **legal basis for management and leasing contracts**: in contrast to the water sector, our legal interpretation is that the current legal and regulatory framework for electricity does not formally recognise these forms of private sector participation and, if selected, measures to make the legal framework compatible with them would be needed;\(^{17}\);

(e) **tariffs**: private sector participants would want to be certain that changes in the bulk supply tariff would be fully passed through in final consumer tariffs and that no significant cross-subsidies existed between different categories of consumers used for tariff purposes. It will also be very important to both public and private sector that the real value of the tariff is not allowed to be eroded by inflation and/or depreciation of the exchange rate;

(f) **geographical cross-subsidies**: in some areas of Mozambique it is possible that investment subsidies linked to new connections will not be sufficient to make businesses viable using EDM tariffs. In this case, the options are to allow tariff differentiation, which is difficult for existing consumers, or implement some form of geographical cross-subsidy. For example, a levy could be applied to the value of electricity bills in urban areas and the proceeds used to support cost in non-urban areas - this maintains the appearance of uniform tariffs whilst permitting underlying prices, excluding the levy, to differ. Some of the benefit of such a levy could be channelled to all or part of a business as defined above, according to a clearly defined formula; and

\(^{17}\) In this respect, we understand that the current management contract arrangements in N. Inhambane are regarded as a special case and have been accepted on a transitional basis with a concession to be awarded when the contract expires in November 2002.
(g) **market share and diversity:** to ensure that the grid intensification business is not monopolised by any single party, we suggest that as part of the rules for their award to the private sector, no single party (or a party in which a company has more than 50% of the equity) is eligible to control electricity distribution representing more than 30% of the total to be offered in this manner.

**Specific features of each option**

5.12 We now consider the key characteristics of each option in turn.

**Management contract**

5.13 The main features would be as follows:

(a) **commercial framework:** EDM would continue to hold the concession but would sign a contract with the private sector to manage it. This would give the private sector full operational control of the business but not the full risks;

(b) **new investment and additionality**\(^\text{18}\): although EDM would remain responsible for financing new investment, use of a distinct concession with private management would be expected to attract some additional sources of finance from donors, although the World Bank has indicated to us that its policy is now to focus financial support on initiatives which involve private capital. EDM would also have to provide all working capital. The private sector would be responsible for implementing investment projects (but not for financing them) under an agreed fee arrangement with EDM;

(c) **subsidies for new connections:** under present thinking this option would not be eligible for subsidies for new connections from donors wishing to link provision of such subsidies to availability of private finance;

(d) **remuneration:** although a management contract is intended to insulate the private sector from many of the risks, it is only right that remuneration under a contract be structured so as to incentivise good performance, where the results are under the control of the private sector. Therefore remuneration could be structured as a fixed fee plus or minus incentive payments linked to revenue collection, working capital requirements, control of losses, new connections (where funding is made available) and quality of supply (reliability etc); and

(e) **duration:** typical duration would be 5 years.

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\(^{18}\) By the term additionality we refer to the additional investment or finance that would not have been available without implementing the option.
5.14 It is important to stress in this option that although the private management contractor is billing clients and collecting payments, it does so as an agent of the concessionaire and not as principal. In other words, the contractor is only liable for payment default insofar as he is incentivised to collect payment in his contract. Similarly, any profit or loss if for the account of the concessionaire and not the contractor.

**Leasing contract**

5.15 The main features would be as follows:

(a) **commercial framework**: as above, EDM would continue to hold the concession but would sign a lease contract with the private sector, in return for rental payments on existing and new assets\(^{19}\). The private sector would have full operational control of the business and would also provide the working capital needed to run it, which would tend to increase as load grows;

(b) **new investment and additionality**: EDM would remain responsible for financing new investment but not the associated working capital. The same comments made above on sources of capital also apply to this option. It is conceivable that something similar to FIPAG in the water sector could be established, but this does not appear to be contemplated at present by donors;

(c) **subsidies for new connections**: under present thinking this option would not be eligible for subsidies for new connections from donors wishing to link provision of such subsidies to availability of private finance;

(d) **remuneration of private sector**: traditionally leasing contracts are based on the private sector remuneration being expressed in terms of a percentage of revenue collected, from which operating costs must be recovered. The balance of revenue is paid to the asset owner to recover depreciation and financing costs in the form of the rental payment. It will be important to ensure that the tariffs are subject to an adjustment mechanism that protects them from erosion by inflation and/or exchange rate depreciation. It would be possible to provide additional incentives to encourage new connections by altering this arrangement so that the applicable percentage is slightly higher for revenue collected from new consumers; and

(e) **duration**: a typical duration might be 15 - 20 years.

**Concession**

5.16 The main features would be as follows:

(a) **commercial framework**: the concession would initially be held by EDM's subsidiary. Initially, EDM would own all of the shares in this company. A private

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\(^{19}\) Such rental payments would be linked to the depreciation and capital charges on the assets transferred to the concession.
sector company would then participate in the concession through a subscription for new shares (capitalisation shares) in the concession company, the defined payments for which would be coupled to the pace of investment in the concession. The private sector would have control of the company from the start;

(b) **new investment and additionality**: the defined investment programme would be financed by a combination of payments for capitalisation shares and borrowing. Given management control and private equity, lenders such as IFC or the Africa Private Infrastructure Financing Facility (APIFF) would be prepared to offer funding to such a venture and, over time, the business could build up an adequate record to attract bank debt.

(c) **subsidies for new connections**: this option would likely to be eligible for subsidies for new connections since private finance is involved (although there are also likely to be conditions on private majority ownership and control).

(d) **remuneration of the private sector**: the private capital would be remunerated through dividends from the concession company; and

(e) **duration**: this is a function of the decree which states that distribution concessions will have a 25 year duration. At the end of this period, assets that were not fully depreciated would be taken over by the granting authority in return for a compensation payment, as envisaged by the concession decree.

**Risk allocation**

5.17 The risk allocation that flows from the different arrangements is shown in Table 5.1.

5.18 We note that, with certain safeguards, payment risk from EDM can be mitigated by allowing the private sector to set off amounts due under a management or leasing contracts against the sums owed to EDM for supply of bulk power. Safeguards are, however, needed to ensure that this does not lead to poor performance - the safeguards take the form of ensuring in all options that the private sector carries some of the risk for non-collection, losses exceeding target levels and so on.

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20 APIFF is a new long term senior debt fund, dedicated to lending to private sector majority owned and controlled infrastructure projects and companies in Sub-Saharan Africa. It should become operational in 2002.
### Table 5.1 Risk allocation by option

<table>
<thead>
<tr>
<th>Option</th>
<th>Revenue risk</th>
<th>Working capital risk</th>
<th>Losses</th>
<th>Operating costs</th>
<th>Inv</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management contract</td>
<td>Limited exposure from incentive framework</td>
<td>Limited exposure from incentive framework</td>
<td>Limited exposure from incentive framework</td>
<td>Limited exposure from incentive framework</td>
<td>Nonsensical</td>
</tr>
<tr>
<td>Leasing contract</td>
<td>Strong exposure via remuneration formula</td>
<td>Yes - full exposure</td>
<td>Strong exposure via remuneration formula and payment obligations</td>
<td>Strong exposure via remuneration formula</td>
<td>Nonsensical</td>
</tr>
<tr>
<td>Concession/capitalisation shares</td>
<td>Strong exposure from link to profitability</td>
<td>Yes - full exposure for its share of equity</td>
<td>Full exposure in terms of profitability and indirectly via incentives</td>
<td>Full exposure in terms of profitability and indirectly via incentives</td>
<td>Expensive</td>
</tr>
</tbody>
</table>
Basis for award

5.19 The basis for the award of the first two options could be relatively straightforward:

(a) **management contract**: lowest annual fee required based on a set of declared, normative performance levels;

(b) **leasing contract**: given the duration of this contract, the most appropriate award criteria would be the lowest present value of the remuneration stream, given a declared set of financial projections and performance levels, and a given discount rate.

5.20 The third option is more complex since it requires award of a concession. It also offers private finance, which in turn should make it feasible to obtain subsidies from donors. The number of shares to be allocated to the private sector should be pre-defined as should the initial payment but there is likely to be some discretion over the timing at which capital is paid in. We understand that Mozambican law requires 10% of partly paid shares to be paid on issue.

5.21 The precise basis of award would need discussion when a specific project is defined in detail. One obvious option would be the lowest net present value, at a declared discount rate, of the subsidy requested given an obligation to implement the development plan for the concession and to finance all investment costs not covered by subsidy. This assumes that the concession fee is zero and that any payment in respect of existing assets are identical for all proposals.

Evaluation of benefits and drawbacks of different options

5.22 We now bring together our assessment of the benefits and drawbacks of the different options.

5.23 With regard to **management contracts**, the main benefits are:

(a) the potential for greater efficiency through private sector management disciplines; and

(b) the relative ease with which it should be possible to attract the private sector, given limited risk exposure.

5.24 The main disadvantages of management contracts are:

(a) the limited transfer of real business risk to the private sector;

(b) the lack of private finance for working capital or new investment;

(c) the need to make the existing legal framework compatible with this option;
the likelihood that degree of private sector participation would not be considered sufficient to permit allocation of output based subsidies from donors like the World Bank.

5.25 The assessment of leasing contracts is quite similar. There is greater risk exposure and a greater dependence of remuneration to the private sector with the success of the business. There is also some private finance for working capital, but this seems unlikely to be enough to permit investment subsidies to be made available by donors under present policies.

5.26 In the case of concession with capitalisation, it is possible to obtain the benefits of management contract with additional advantage of private equity finance, thus meeting all of the conditions for investment subsidies. Concessions are also fully compatible with existing legislation. The drawback is the greater complexity of structuring this arrangement and the challenge of attracting the private sector to invest capital.

5.27 Our conclusion is that providing there is confidence of private sector interest, then the concession option is preferred as it should increase efficiency, attract both private finance and subsidy funding, and maximise the number of connections obtained for a given level of financial support.

5.28 In practice, we think that the private sector are most likely to be most attracted by a combination of the two options:

(a) a shareholding in the concession company achieved by capitalisation which would lead to profitability in the medium-term albeit for bearing a greater share of risk; combined with

(b) a management contract with the concession company which would lead to some remuneration from the start and would be relatively low risk.

5.29 A number of precedents exist for such arrangements in Latin America eg the Cartagena water concession in Colombia and the participation of Mirant in the electricity concession in Minas Gerais in Brazil.

Suggested strategy

5.30 Although a number of options are possible, there are clear advantages in pursuing full distribution concessions, with the successful concessionaires being able to utilise connection-based subsidies provided by IDA and other donors. The strategy should be to identify a suitable concession and to test the degree of private sector interest. The experience to be acquired with N. Inhambane should be very helpful, although this concession is much smaller than that needed for grid intensification in our view.
VI Strategy for large projects

6.1 The Terms of Reference suggest that we be interested in the larger projects for two principal reasons:

- to ascertain whether they provide an opportunity for the private sector to become more involved in distribution activities; and
- to see whether there are ways in which GOM approaches to these opportunities might be improved.

6.2 In reviewing this, the aim is not to develop a solution for each project but to draw lessons that might be applied more generally. In this section we therefore consider:

- the different types of PSP model that are relevant to the large project opportunities and how connection subsidies might be utilised; and
- the suggested strategy to be adopted in realising the objectives set out above, including the role of “pump priming” subsidies.

PSP models

6.3 The models might be split into two broad types:

- those in which energy provision is a key component or facilitator of high economic impact projects, of the type often associated with Mozambique’s spatial development initiatives (SDIs); and
- those in which energy provision is a product in itself, typically for the wider southern African regional market.

Multi-sectoral initiatives

6.4 A number of major large-scale projects are set out in Table 6.1.

Table 6.1: Selected project financing opportunities

<table>
<thead>
<tr>
<th>Infrastructure project</th>
<th>Sector and type</th>
<th>Estimated cost ($m)</th>
<th>Anchor project</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motraco</td>
<td>Electricity transmission</td>
<td>$130m</td>
<td>Mozal Phase I</td>
<td>Operating</td>
</tr>
<tr>
<td>Pande pipeline</td>
<td>Gas</td>
<td>$600m</td>
<td>Sasol’s petro-chemical plant in RSA</td>
<td>Being implemented</td>
</tr>
<tr>
<td>Cotraco</td>
<td>Electricity transmission linked to Corridor Sands</td>
<td>$40m</td>
<td>Corridor Sands Titanium smelter</td>
<td>Being implemented</td>
</tr>
<tr>
<td>Infrastructure project</td>
<td>Sector and type</td>
<td>Estimated cost ($m)</td>
<td>Anchor project</td>
<td>Status</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------------------------------</td>
<td>--------------------</td>
<td>---------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Rail rehabilitation</td>
<td>Chibuto-Maputo rail link</td>
<td></td>
<td>Corridor Sands Titanium smelter</td>
<td>Being implemented</td>
</tr>
<tr>
<td>Sena-line rehabilitation</td>
<td>Beira to Moatize (580 km); Inhaminga-Marromeu (88 km spur line off the main Sena line)</td>
<td>$342</td>
<td>Moatize coal</td>
<td>Feasibility</td>
</tr>
<tr>
<td>Moatize thermal power station</td>
<td>Generation</td>
<td>$1,000+</td>
<td>Beira hot bricketed plant</td>
<td>Feasibility</td>
</tr>
<tr>
<td>Lilongue – Nacala</td>
<td>Railway upgrade</td>
<td>$250</td>
<td>No one project</td>
<td>Feasibility</td>
</tr>
</tbody>
</table>

6.5 Most of these potential PSP projects involve the following components:

- a **mineral concession**; for example, Corridor Sands, Moatize Coal, and/or energy intensive **industrial processing** of primary products (for example Mozal (aluminium), Maputo Iron and Steel Project (MISP));

- a grid-connected **source of power** supplied via a capital-intensive **transmission** link (eg Motraco (Mozal); Pande pipeline extension (MISP), Cotraco (Corridor sands);

- a rail link and port export route typically requiring some form of expensive rehabilitation eg Moatize coal (Sena line and Beira port), Corridor sands Chibuto-Maputo line rehabilitation.

6.6 Moreover, these projects overlap with state sponsored SDIs such as Zambezi Corridor (Sena line/Beira); Limpopo initiative (Corridor Sands) and the Nacala Development Corridor.

6.7 The challenges of these projects are:

- To marry differing private and public sector objectives; the former looking to maximise returns and minimise risks; and the latter looking to maximise the development potential of each.

- To structure the projects in such a way that the interdependencies that exist between them can be satisfactorily addressed particularly as regards risk mitigation, which is essential to address if they are to be privately financed. Whilst in the Diagnostic Report we set out the importance of the so-called anchor projects in establishing the initial commercial feasibility of many of the projects identified, there are likely to be further dependencies, particularly as regards rail or road links and suitable port facilities in determining the feasibility of the mineral or other concession.
- Where public financial interventions are required; that is, development subsidies, to try to ensure that their impact achieves maximum leverage and additionality.

6.8 These challenges would be considerable in a highly developed economy, they are more so in Mozambique. Added to this is the complexity of relying on donors for direct credits to help finance any GOM obligations. Not must projects meet the specific public policy covenants of individual multi-lateral and bi-lateral donors, but donors can be uncoordinated and in the worst extreme, competitive with one another.

Attracting private investment into Mozambique’s spatial initiatives

6.9 As set out, the private initiative is often the major component within the spatial initiative, which also has to drive it given the limited availability of public funds. If this cannot be made to work, the overall spatial initiative is likely to fail. It should be remembered that very few, if any, of the initial development corridor concepts are actually new.

6.10 For instance, it might be argued that the Witbank-Maputo toll road was the key driver of the Maputo Corridor spatial development. This was workable because the project economics were very much in its favour; for instance, the tolls raised in RSA were enough to finance the whole project; that is, the promoters and lenders were not reliant on a more risky MZM earnings stream\textsuperscript{21}.

6.11 Other initiatives have less attractive economics, particularly as regards the scale of the infrastructure financing requirement. The success of the Zambezi Corridor initiative will be highly dependent upon the success of the Sena line rehabilitation, a vital but very expensive pre-requisite. The private sector interest is based around developing the Moatize coalfield in Tete province and transporting the coal down the Zambezi valley to Beira, where it can potentially be either exported or else used to produce hot iron brickets (another energy intensive anchor project), as well as sugar from Marromeu and to a lesser extent limestone from Muanza. The transport of the coal provides the major commercial load factor for any private sector rail operator and/or investor of the line\textsuperscript{22}. Indeed, as regards wider development potential, the transport component is key as it has the greatest positive externalities, given its potential to provide access to new international markets for local businesses.

6.12 The rehabilitation of Beira port is another potential link in the Zambezi Corridor/Sena Line rehabilitation chain, although this is also connected to the Beira Corridor initiative. This is highly dependent on Zimbabwean traffic, the Beira Corridor being land-locked Zimbabwe’s route to the sea in the same way that historically Maputo was always Johannesburg’s port of choice.

\textsuperscript{21} This was the first strictly project or limited recourse financing to have been undertaken in RSA. Despite traffic flows failing to reach target, it remains a robust project with no breach of its financing covenants.

\textsuperscript{22} We understand that intermediate private sector solutions for transport of the coal are also being considered, such as using barges to transport the coal, although this is technically difficult because of the strength of the current on the Zambezi river, particularly during the rainy season.
6.13 The Nacala Corridor initiative project is even more challenging, particularly from the perspective of attracting private investment. This is a joint initiative between Mozambique, Malawi and now Zambia aimed at providing improved access to the port of Nacala for landlocked southern Malawi and north-east Zambia. It has been much more difficult to identify a specific anchor project in this case which reduces reduces its attractiveness to private sector investors.

6.14 A key problem facing all of these spatial initiatives to resolve is what aspects the private sector should and is able to finance and what aspects the public sector should, or needs to, provide. Unlike in wealthier countries, the ability of governments to raise funding for infrastructure is more limited and it is essential that any donor funds are used in a manner that maximises additionality. In other words, it is best to use them only where it is not possible to use private funds.

6.15 Issues to be decided include:

- whether projects/concession components should be tendered individually (for instance, when there is a component that the private sector will simply not fund) or whether they should be bundled together so as to increase their attractiveness to the private sector (through reducing the risks associated with project interdependencies);

- the extent to which the public sector may have to accept some market risk (particularly on transport projects) to facilitate a project, remembering that the private sector is best placed to handle other commercial risks such as performance risk;

- what responsibilities, with high economic impact, the private sector is prepared to take on, which are over and above the strict private benefits arising from the project, such as provision of energy access to communities in close proximity.

6.16 All of the above will vary by project. The key challenges are to:

- structure the projects in a way that maximises their attractiveness to the private sector; and

- use scarce public funding judiciously in a manner that maximises the overall economic impact of the project.
Developing distribution opportunities

6.17 There are already examples of GOM attempting to use the leverage arising from large project opportunities to push the private sector into actions which have beneficial economic impacts, such as in regional development. For instance, rather than the titanium sands of the Corridor Sands project being transported to Maputo for smelting, GOM insisted that the processing take place at source – Chibuto – in order to help develop the area. This resulted in the need for the Cotraco transmission concession, with GOM hoping that this would provide a means by which to connect Chibuto to the grid.

6.18 Indeed, it is possible to see how such a connection would help create a virtuous circle. Household incomes in the area are bound to increase through both direct employment at the plant and indirectly through the need for provision of ancillary services. The latter are also likely to create a high demand for services in their own right; for instance, high quality hotels that will be developed for visiting business executives.

6.19 “Piggy-backing” a distribution requirement onto the transmission can, however, often be one component too many when negotiating multiple and interdependent concessions. In most instances, the local distribution load is likely to be fairly low, particularly if initially it is largely domestic. Whereas, an energy intensive process can require, say 800MW, the local load in the case of Chibuto is unlikely to be even 1% of this. The costs of transforming high voltage (required by the plant) to low voltage is likely to be prohibitively expensive for such a small load, with any private sector concessionaire (of the transmission company) being unlikely to find this an attractive opportunity\(^\text{23}\).

6.20 If over time the load becomes greater, there are also likely to be concerns on the part of the anchor project concession over security of supply. As the project is ultimately financing such a transmission link through the payments for power, it will not want to have to compete for power should the system’s capacity be exceeded because of the demand from local businesses. These issues need to be taken into account when seeing what risks the private sector will be willing to bear. The only way to assess whether such approaches are possible, however, is to indeed test them when designing a given concession.

Energy projects

6.21 The other model observed in Mozambique’s large project portfolio, is that of stand-alone generation opportunities as shown in Table 6.2. In these examples, there is typically no single anchor project that can provide a base load. Rather, they are dependent on a utility to purchase the power, either through a power purchase agreement (PPA) or else as part of an electricity power pooling arrangement, namely the embryonic Southern Africa Power Pool (although such merchant projects are still regarded as risky).

\(^{23}\) Indeed, the costs of transforming high to medium/low voltage is a major issue in increasing electricity access in Mozambique, the widely dispersed communities lying along the routes of the main Transmission network being relatively low volume users of electricity.
Table 6.2: Generation projects

<table>
<thead>
<tr>
<th>Project</th>
<th>Cost</th>
<th>Capacity</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cahora Bassa II</td>
<td>$1.5 billion</td>
<td>2 GW</td>
<td>Feasibility</td>
</tr>
<tr>
<td>Mepanda Ncua</td>
<td>$1 billion</td>
<td>1.2 GW</td>
<td>Feasibility</td>
</tr>
</tbody>
</table>

6.22 Examples of such projects include the second stage of Cahora Bassa and Mepanda Ncua, both of which seek to harness the vast hydro potential of the Zambezi River. The fundamental problem facing both of these projects at the current time is the lack of demand in both Mozambique and South Africa for the energy output. This is generally recognised, with a time-frame for the projects being in the next five to ten years when Eskom’s existing power surplus is expected to have dissipated. More projects of the scale of Corridor Sands and Mozal II could also quicken the need for additional generating capacity.

6.23 As described in the Diagnostic Report, the purchaser of this energy would need to be creditworthy, whether this be an anchor project company (eg Mozal, Corridor Sands etc) or else a national utility. Whereas Eskom has enjoyed a high credit rating, EDM is not creditworthy. Any PPA signed by EDM would be unlikely to be credible and would need to be supported by a sovereign guarantee, perhaps probably counter-guaranteed by a creditworthy entity such as a major multi-lateral.

6.24 The only way that they can be developed in the short term is through large-scale, energy intensive anchor projects, in which the power provider signs a PPA with the power user. Otherwise, a key pre-requisite for these projects, is the further development of the regional electricity market.

6.25 Hence it is important to recognise that these projects, each of which is likely to cost more than a billion US dollars are considered carefully, not least because of the potential obligations which would be placed on GOM.

Institutional issues

6.26 The above models represent considerable challenges and as previously noted, it is only a relatively small proportion of projects that have been successfully privately funded. Current institutional arrangements are a further impediment to the successful undertaking of such projects.
6.27 There are a number of problems. Projects that GOM would like to see developed by the private sector are often developed in the near absence of private sector input. It is important that GOM has a sense of what the private sector is and is not prepared to do as projects which do not incorporate these aspects will be very difficult to fund. In other words, whilst a project may be technically feasible it is not necessarily bankable. As a result of this, other projects are unsolicited (that is, they are proposed by the private sector rather than by government). This in itself is not a problem, indeed GOM should actively encourage a dialogue with the private sector over potential projects, the issue is how GOM deals with these approaches.

6.28 First, as discussed in the Diagnostic Report, it is generally preferable, where possible, for concessions to be bid competitively, irrespective of whether government solicits approaches or whether an initial approach from the private sector is unsolicited and government responds by bidding out the opportunity. This helps to ensure value for money (for instance, in maximising concession fees and/or ensuring that the specified service takes account of GOM requirements) and provides a framework for the detailed negotiations with the private sector that typically follow the tendering of a project. Failed bids can provide a useful benchmark for government in its negotiations with a preferred bidder.

6.29 In Mozambique, however, it is not uncommon for unsolicited projects not to be competitively bid, with the benefits of competition being lost. There are, of course, situations in which it is difficult or impracticable to hold a competition, for instance where it is not possible to generate enough interest. Such situations demand even more careful attention than those where there is the potential for competition.

6.30 A particular problem arises where GOM is dealing with two separate unsolicited approaches for different yet competing projects, that is, if one is undertaken the other cannot be. This is compounded when different parts of government (sometimes even within the same ministry) are dealing with each separately without knowing that there is another competing proposal. Although for reasons of confidentiality we cannot provide precise details, we have heard that this is currently taking place on an initiative within one of the development corridors.

6.31 Another example of this concerns Cahora Bassa II and Mepanda Ncua. Both will supply electricity for the same market and presumably at the expense of each other unless the market expands considerably. It should be remembered that all will require some form of public support, whether this be from Mozambique’s limited own financial resources, or else from donors.

**Suggested strategy**

6.32 We now turn to how these issues might be addressed.
Distribution

6.33 As set out, whether there is indeed an opportunity for distribution will very much depend upon the specifics of a given opportunity. A number of possible opportunities exist:

- along the gas pipelines such as Pande;
- close to any new generation opportunities – for instance, Mepanda Ncua; and
- along new privately financed electricity transmission lines.

6.34 It is unlikely that the promoter seeking to build any of the above will want to become involved in local distribution, as it is likely to represent a small, yet disproportionate distraction when compared to the main activity (eg transmission) being undertaken\(^{24}\).

6.35 As has been shown by Pande, in which GOM has secured itself a number of royalty points along the route, it should be possible to secure some wider advantage if the right approach is pursued. GOM will be more likely to maximise the benefits from such an opportunity if it is competitively bid. In such a scenario, say for example in the case of a new transmission link to a mineral processing operation, GOM would first market test the opportunity for both transmission, bundled with some local distribution, with possible project promoters. If these consultations were to suggest that there were a market appetite for it, then the Tender documents should reflect this; that is, if the appetite were very strong then any bid omitting to cover local distribution would be non-compliant. In such a situation transmission promoters without the ability to undertake distribution would need to form a consortium with distribution entities.

6.36 It is, of course, very possible that the market response would be negative towards such an opportunity. For instance, promoters might claim that the additional risks would undermine the economics of the venture. However, even in this situation, it should be possible to establish a fall-back position, in which bidders were required to provide several step-down facilities along the route of the transmission line. This could then form the basis for the connection subsidy schemes described in Section IV.

6.37 In the case of the “top-down” opportunities identified, this would be on the basis of a pre-developed roll-out plan. Indeed, in the market testing of the opportunity, the bundled and separate transmission/distribution opportunities should ideally be presented with connection subsidies being available for both. A fully developed roll-out plan would be more likely to attract the attention of bidders than something less specified. Where the opportunities are smaller or less well defined, these could form immediate or future opportunities for the MECS initiative.

\(^{24}\) Assuming other risks such as payment were acceptable to the promoter.
6.38 It should be noted that the current Electricity Law stipulates a requirement for third party access of any private network. Hence, such a requirement would be entirely consistent with existing laws. Finally, it should be remembered that government's ability to generate desirable and affordable solutions is very much less in the case of untendered opportunities.

Multi-sectoral projects

6.39 The discussion in the sub-section above illustrated the considerable difficulties faced in addressing the interdependencies between many projects and the need to avoid wasting public resources on competing projects. At the moment, large projects are often approached by establishing a committee comprising representatives from the key ministries with responsibility eg MIREME, Transport etc. The Zambezi Corridor Development Agency, for instance, includes representatives of most ministries, excluding social ministries such as health and education. This reports directly to the Prime Minister. Whilst this helps co-ordination of approaches, a number of problems still remain:

- it is not clear that these arrangements always have the necessary authority to move projects quickly enough;
- we understand that they do not always include the necessary type and level of skills to help realise optimal solutions, especially when complex financing issues are being dealt with (we have heard that sometimes the Ministry of Finance is not even represented although not in the case of the Zambezi Corridor).

6.40 In our view, therefore, current arrangements, although along the right lines, do not go far enough. We believe that there is a strong case for establishing a permanent secretariat, or Technical Unit staffed with GOM's most able officers, supported where necessary by private sector expertise. The skills required would be financial, economic, legal and engineering. We believe that this would:

- concentrate scarce skills within one institution, allowing it to benefit through repeat transactions;
- provide much greater visibility both within and between projects and transactions;
- provide bidders with greater confidence in GOM’s capability to deal with such complex projects, providing a single point of focus rather than a series of bilateral points; and

25 The UK's approach to the Private Finance Initiative (PFI) which has had to deal with similar public-private issues, was not seen to work effectively in the beginning. It became more successful once a powerful Treasury Task Force was established, comprising civil servants from the Treasury (the UK's Ministry of Finance equivalent) and finance specialist from the City of London. It is important to note therefore that projects were often driven by those outside the ministries with direct line responsibility; that is Health, Education and Transport. Once a number of pathfinder or demonstration projects had been undertaken centrally, the responsibility for undertaking them was once more devolved to the line ministries.
• would be flexible in terms of its ability to second relevant ministry staff into a transaction when appropriate to address specific project aspects.

6.41 Such an institution would be highly strategic in terms of its power and would therefore need to report into a powerful body. There are two possible bodies to which such an entity could report, either the Ministry of Finance, or else direct to the Council of Ministers. In many countries, the former would be seen to be the appropriate approach. However, in Mozambique, it is likely that only the Council of Ministers would provide the required authority and would be acceptable because of pan-ministry representation.
VII Required regulatory and institutional changes

Introduction

7.1 In this section we turn to a number of cross-cutting issues associated with implementing the strategy from a regulatory and institutional perspective.

Regulatory

7.2 The cross-cutting issues with regard to the regulatory framework for PSP in the provision of modern energy can be categorised as those relating to:

- concessions; and
- the regulation of small scale and non-electricity PSP models.

7.3 There is a large range of issues regarding Concessions and these are discussed below.

Concession award

7.4 As noted in our Diagnostic Report, the Electricity Law (No 21/97) requires that electricity distributors, regardless of scale, obtain a concession through a public competition. A key legal issue is whether the MECS approach we have proposed in Section IV of this Report is compatible with this legal requirement for electricity projects. According to our proposals, promoters will be competing against each other for connection subsidies but promoters will not always compete for the right to supply any particular area or provide any set of defined distribution assets.

7.5 Our preliminary legal review suggests that the Council of Ministers need to intervene to make the existing legislation compatible with the details of the scheme under the powers granted to it by Article 6c) of the Electricity Law.

Concession fee

7.6 Another issue relates to Article 21 of Decree 8/2000 which states that a concession fee of up to 10% of revenues per annum is payable by concessionaires. Sadelec have noted this matter with regard to their work on concessions in Inhambane, particularly its:

- uncertainty – concessionaires face the risk that the percentage can change since the law provides for it to be set by a government regulation rather than being fixed in the concession contract; and
- absolute level, which can be high in relation to the benefits received by the concessionaire.
7.7 Where concession fees are to be employed it is best to set them for a number of years in advance. Any changes to the applicable fee should be determined by formula or at a minimum through an independent regulator such as CNELEC.

7.8 In situations where it is unlikely that a given concession will be attractive to the private sector without subsidy, payment of a concession fee could act as a major disincentive. This is certainly true of those opportunities associated with the MECS and for this reason we would recommend that no concession fee is applied for such concessions. It should also be noted that Article 26 of the Decree requires concessionaires to provide a guarantee equal to 3 months of revenues and this therefore provides some measure of security for performance.

7.9 Article 28 of the Electricity Law gives the Council of Ministers the power to set a fiscal regime specific to the supply of electricity. One possible solution to the issue of concession fees may be for the Council of Ministers to use this Article to exempt the MECS projects from paying concession fees and, for larger projects, to provide certainty over the level of the fees during the whole concession as noted above.

7.10 We also note that this Article could be used by the Council of Ministers to introduce measures (such as accelerated fiscal depreciation of assets) that may make investment in smaller concessions more attractive.

**Exclusivity**

7.11 The law imposes and obligation on concessionaires to supply consumers within their concession area, subject to payment of the necessary charges, and this implies that the concessionaire has effective exclusivity (unless he is unable to supply). However, to ensure that non-electrified areas are not closed to new proposals by inclusion in a concession, we suggest that the area of a concession should be restricted to a short distance, say 100m, from the network covered by the proposal submitted for subsidy. The concessionaire could later seek further support for expansion of the concession but electrification of such areas could be contested.

**Step in rights**

7.12 The Electricity Law requires prior approval from the Ministry to transfer the concession and notes that a further public competition may be required for this purpose.

7.13 In practice we understand that prior approval to transfer to lenders can be included in the concession contract and this arrangement will need to be implemented. An additional measure that has been applied to give lenders security is to apply for a Special License for use of the land required for the concession. Rights to this licence can then be assigned to the lender.
Concession proposals and signatories

7.14 There are a number of issues with regard to the process for obtaining a concession and its appropriateness for small scale projects. In each of the cases noted below, it may be necessary for the Council of Ministers to exempt smaller projects from the full concession process.

7.15 Firstly, we note that Article 9(3) of the Electricity Law requires prior authorisation for carrying out studies related to a project for the supply of electrical energy. This provision may inhibit sponsors from formulating proposals, particularly with regard to small scale electricity related projects.

7.16 We further note that the concession proposal requirements for small projects outlined in Article 16 of the Decree may place considerable demands upon sponsors that will also apply to the MECS. This could be overcome through a combination of:

(a) The challenge scheme ensuring that its information requirements contain all the information required by the Concessions Decree;

(b) The challenge scheme providing sponsors with an application kit and standard forms and spreadsheets covering the entire information requirements (for the MECS and for concession proposals); and

(c) Providing support to sponsors in preparing concession and MECS proposals via the donor funded initiative discussed below.

7.17 Another issue that requires consideration is the process for approving concessions related to the MECS. According to the Decree, the Ministry has 30 days (15 days for small projects received by local authorities) to give a copy to CNELEC for review. CNELEC has 45 days to comment. A public consultation is also required whenever the concessionaire acquires the right to use of land.

7.18 CNELEC’s opinion is to take into account national and regional plans and we understand that these are not always in the public domain. The private sector may perceive that there is a risk that CNELEC could reject projects on these grounds and therefore be reluctant to make proposals.

7.19 These provisions seem overly elaborate for the small electricity concessions that are applying for subsidies through the MECS and we therefore recommend that the Decree be amended to allow local concession granting authorities to by-pass the Ministry and place concession applications directly with CNELEC. In this regard, we envisage a process whereby:

(a) CNELEC should ensure that plans or planning criteria that it will use in its review are published in advance;
promoters would apply for a grant from the MECS via DPREME (or via the local authority for projects under 1 MVA but working with the support of DPREME);

c) DPREME/ the local authority would review applications and pass those meeting the requirements to CNELEC for comments;

d) DPREME/ the local authority would put forward the grant applications to the MECS;

e) DPREME/ the local authority would issue a concession to the promoters that were successful in their grant application.

7.20 A final issue is that Article 17 of the Decree requires concession contracts to be signed by a commercial company. This precludes consumer associations from obtaining a concession. This could also be amended by decree.

Regulation of small scale and non-electricity PSP models

7.21 As noted in our Diagnostic Report, the regulatory provisions of the Electricity Law have been designed with large-scale projects very much in mind. While in that Report we noted some issues with regulation of large scale projects (particularly the lack of detail on the tariff adjustment process) overall the Law provides a sensible framework for regulating large projects on the understanding that further detail will be contained in the concession itself.26

7.22 The main challenge of the regulatory framework relates, however, to the regulation of the small-scale electricity projects that receive subsidies through the MECS. Some consideration is also required as to whether it is necessary to regulate the non-electricity projects that receive funding from the MECS.

7.23 Having given this issue further thought our proposal is that tariff regulation is based on the contract that the customers sign with the project promoter. This would involve:

(a) DPREME providing potential promoters with standard outline contracts. These standard outlines might vary a little depending upon the technology used (solar, electricity etc) but are likely to contain sections relating to:

(i) a definition of the service that will be provided to the customer;

(ii) a definition of the service standards and technical standards that will be met;

26 In this regard, we support Sadelec in recommending that concessions for grid intensification projects and for the other “top down” electricity projects noted in Section IV contain a tariff adjustment methodology, for example a price cap formula. This approach will improve the certainty regarding revenue paths that these concessionaires require.
(iii) the level of payment required;
(iv) payment terms and conditions;
(v) method for adjusting the level of payment;
(vi) a description of the complaints process with contact details. It may be appropriate for DP REME to be involved in receiving complaints that have not been satisfactorily addressed by the promoter;

(b) promoters receiving assistance in drawing up draft contracts (for discussion with potential customers) from the donor initiative noted below;

(c) promoters submitting the detailed contracts that have been agreed to in principle by customers to DP REME. These contracts will:

(i) support the revenue projections in the business plans submitted by the promoter; and

(ii) provide an opportunity for DP REME to review the suitability of the terms and conditions in the contract as part of the proposal assessment process;

(d) in the case of an electricity project, the tariff and service quality terms contained in the contracts being reflected in the project’s concession contract.

7.24 We recommend that with regard to electricity projects, it may be appropriate for the granting authority to reject proposals that rely upon tariffs above a pre-agreed ceiling. Similarly, it may be appropriate for DP REME to require tariff adjustments to be based on one of a number of particular methods, for example an adjustment in line with inflation or an adjustment in line with fuel price changes. We also recommend, that the granting authority assesses the proposals with reference to “fit for purpose” technical standards rather than those used by EDM.

7.25 These proposals would need to be reflected in a Decree to regulate small electricity projects.

7.26 With regard to projects not subject to the Concession laws, such regulation is not required. However, it is still appropriate for DP REME to review proposals with reference to the terms and condition norms from similar successful projects and with reference to adherence to any minimum safety standards applicable to the technology in use.

7.27 It should be stressed that the contracts would not be assessed as part of the challenge scheme allocation process, but merely used by DP REME in assessing the proposals to be submitted to the MECS.
Institutional

FUNAE

7.28 FUNAE's existing charter is extremely wide-ranging encompassing both promotional activities, as well as a range of financial roles ranging from grant provider, lender, guarantor and investor. In our view, this mandate is too extensive and inconsistent with the role that we have set out for it as manager of the MECS.

7.29 It is very difficult for the same entity to be both a promoter of and/or investor in a specific opportunity and an impartial grant provider. The credibility of the competition would be undermined if opportunities that FUNAE had promoted or invested in were to be evaluated by FUNAE alongside opportunities it had no association with.

7.30 Even as regards FUNAE's role as a financial institution there are a number of conflicts. Again there is an in-built conflict in evaluating credits where the same organisation is an investor. Lending decisions are best made in the absence of such conflicts, particularly where the organisation concerned is still relatively embryonic.

7.31 It is not clear how an institution with such a limited capital base could be an effective guarantor of loans, unless it had the full backing of GOM. This would expose GOM to a number of contingent liabilities, which we think is unwise. As a pure grant provider, FUNAE would not have such liabilities.

7.32 One of the clear advantages of a grant-based approach is its simplicity. Unlike investments or credits, the amount of post disbursement monitoring is much less, being based on an assessment of the benefits generated by the grant rather than continuous assessment of credit quality. As set out above, provision of one-off competitively bid grants, is likely to be less distortionary than low cost, subsidised credits.

7.33 Taken together, FUNAE's wide ranging brief, together with the conflicts of interest inherent in its proposed operations could be detrimental to donors providing the large-scale funding required to fund it to a meaningful extent.

7.34 Given the above, we would suggest that in the near term FUNAE restricts itself to the activities set out in Section IV.

Suggested changes to governance

7.35 Our understanding is that FUNAE's present Board largely comprises representatives from within MIREME. We would recommend that in future at least one third of Board members come from the private sector and that provision for donors or their representatives also be made. Again this could be up to one third, depending upon the extent of donor funding.
Promotional and other support

7.36 In order to minimise costs and the time required to implement it, we sought to try and attach the support arrangements to the MECS to an existing programme, such as the World Bank’s PoDE programme. We did not find a good fit and therefore propose that this be established as a separate donor initiative comprising the following components:

- **promotional** support to the MECS;
- on-going business plan preparation training and **advice**; and
- **training** programmes in modern energy services.

7.37 This should be a separate programme, at arm’s length from MIREME and FUNAE although, reporting to a steering committee comprising, both institutions, donors and private sector representatives.

Implementation

7.38 This will require the development of a full terms of reference with inputs from donors interested in supporting it.

CNELEC

7.39 As discussed in the Diagnostic Report, the role of CNELEC should be strengthened to provide it with a core role in the economic regulation of electricity activities. This would involve CNELEC determining the tariff adjustment methodology that should be included in the concession documents. Our recommendation is that CNELEC should have this responsibility with regard to the large electricity projects, while the concession granting authority, DPREME, should continue to regulate (in the light handed manner noted above) the small electricity projects funded through the MECS.\(^{27}\)

7.40 Currently, tariffs related to large electricity projects are set and adjusted by the Council of Ministers or the Ministry, depending upon which body issues the concession. The scope for political interference in this process is likely to undermine private sector interest in grid intensifications or other larger scale electricity projects.

7.41 In order for CNELEC to be effective as an economic regulator it will need a staff containing specialist accountants, economists and engineers. Its allocated budget will need to be adjusted accordingly, although it may be possible to obtain donor funding for CNELEC if Government demonstrates a willingness to establish CNELEC as an economic regulator.

\(^{27}\) This latter proposal is made in order to decentralise the “regulation” of these small projects. There may, however, be a residual role for CNELEC in advising MIREME on matters such as the tariff ceilings that should be used by DPREME.
Large Projects Unit

7.42 As discussed in Section IV, we believe that there are a number of benefits associated with constituting a Technical Unit with a specific mandate to support GOM in processing large projects. This would report directly to the Council of Ministers and would comprise:

- a leader with substantial public and private experience, preferably with a financial background; and

- a team of up to 10 lawyers, economists, bankers and engineers, ideally with a mix of Mozambican and international experience.

7.43 International support can be sought from donors either on a project by project basis or as part of a full programme of support. The latter might involve the establishment of two to three consortia providing a mix of the above advice on a call-down basis. In any event, subject to appropriate quality, we would recommend that the Large Projects Technical Unit work with the same groups of advisors over a period of time.
VIII Conclusions and next steps

8.1 In this section we summarise our major conclusions before moving on to discuss our suggested next steps as regards project completion. We will need detailed feedback from GOM on our suggestions so that our work can be tailored to the desired strategy.

Potential for increasing access to modern energy services

8.2 Building on the work undertaken in the Diagnostic Report, the Strategy Development phase of the project has analysed the potential for PSP solutions in three distinct areas as discussed below.

Isolated and flexible solutions

8.3 We have demonstrated the difficulties of PSP solutions as regards small-scale, isolated and flexible solutions, especially given the challenge of affordability in a country with very low per capita incomes. Given high fuel costs and an assumption of low customer numbers with limited demand, the tariffs required to generate an operating profit are very high compared to EDM’s. These costs are, however, not out of line with what households are currently paying for an inferior service. Moreover, the inclusion of a few commercial customers would greatly improve viability. Hybrid schemes might also improve viability.

8.4 Of the PSP models examined, the most promising as regards fixed connections appears to be green-field grid—connect which would bring terms of access to an EDM bulk tariff. Although rehabilitation would benefit from existing assets, a major challenge would be the cost of diesel. Indeed, the analysis provides a strong case for businesses operating PSP energy schemes to be able to reclaim duty payments. This would help reduce the inequitable distortion between those who are lucky enough to be connected to cheap hydro-power and those who are not and have to pay high energy taxes. Alternatively, a more level playing field could be created by increasing the EDM tariff rate and commensurately reducing duty on hydro-carbon fuels. The opportunities arising from auto-generation are likely to be fewer and to arise where industrial or agricultural concerns wish to contribute to the local community, or where there is a significant enough collection of local businesses to create an incentive for an entrepreneur.

8.5 Given the low levels of ability to pay and low population densities, which create highly unfavourable network economics, solar solutions could well be the most appropriate given energy use patterns. Whereas a full solar home system would be more expensive, solar lanterns could provide a much more cost-effective solution for observed basic lighting and entertainment (radio) needs than batteries and kerosene.
Grid intensification

8.6 As we have previously stated, our view is that the greatest potential in raising levels of access lies in grid intensification of the existing EDM distribution areas, where there are much more favourable economies of scale, than the small-scale opportunities discussed above. There are a number of ways in which this might be achieved, but the analysis supports full establishment and concessioning of distribution opportunities, following on from the accounting separation work currently being undertaken.

Large projects

8.7 The analysis demonstrated the difficulties of developing distribution opportunities from large project initiatives, but how as a minimum, appropriate concession design might be used to create grid extension opportunities of the type identified above. More widely, the challenge of constructing large-scale, multi-sector projects, including private financing, needs to be more recognised, with a more “joined-up” approach from the institutions involved. A high powered Large Projects Unit, reporting directly to the Council of Ministers might be one way of fast-tracking such projects. A partial precedent for such an approach was the UK Treasury’s role in the Private Finance Initiative.

8.8 We do not believe that those high-risk projects relying on major increases in demand within Southern African markets should be prioritised at this time if they require high levels of GOM financial support.

The role of connection subsidies

8.9 The analysis shows how connection subsidies can be used in all three of the segments identified above in providing incentives to create higher greater level of access. This can be addressed either through top-down schemes with GOM taking the responsibility for determining the scale and design of concessions, or else through a challenge scheme, in which promoters develop and bid for concessions and subsidies on a least subsidy per connection basis.

8.10 Where other forms of subsidy are required, it is essential to undertake proper assessment of the opportunity to ensure that economic and other benefits are clear and that the use of public or donor money is justified.

Institutional and regulatory implications

8.11 Along with the recommended Large Projects Unit, the most significant institutional change is the suggested role of FUNAE, which would be the effective manager of the MECS. To avoid a number of conflicts involved in this role, we recommend that FUNAE limits itself to being a grant provider, rather than investor and/or lender/guarantor. We believe that the promotion of MECS be undertaken by a specially contracted, private sector consultancy which would provide ongoing technical support to the scheme.
8.12 The role of local DPREME representatives would also be enhanced as guardians of the scheme and authorisers of concessions. The full legal implications of these recommendations do, however, need to be addressed as set out below.

Next steps

8.13 The main next step now is the development of a draft final report – the Action Planning Report. This report should set out:

- clarification of the objectives and priorities to be pursued by GOM in its Energy Sector PSP strategy;
- the strategies to be pursued in each of the energy market segments identified;
- the implementation arrangements for each, including activities, responsibilities and time-scales; and
- the enabling documentation required to facilitate the chosen options.

8.14 As such, based on existing knowledge and GOM’s commitment to each of the options, it should be as actionable as possible. We would suggest that it should be written from the perspective of GOM, rather than that of the consultant in order to clarify ownership. Moreover, in addition to setting out GOM’s strategy the role of the report would be to facilitate the attainment and co-ordination of donor support.

8.15 It is therefore extremely important that GOM agree beforehand which strategies it wishes to pursue.

8.16 We would recommend that the strategy paper is relatively succinct, with any additional information being provided in supporting appendices.

Objectives and priorities

8.17 Given the sensitivities associated with PSP it is important that the rationale for the programme is spelt out fully in GOM’s strategy paper. This would set-out the benefits of PSP and the implications of pursuing such an approach.

Strategies

8.18 The strategies to be set out would be GOM’s approach to:

- PSP opportunities outside EDM’s distribution areas, particularly the MECS;
- PSP partnerships with EDM within EDM’s existing distribution areas; and
• Large PSP projects, particularly institutional facilitation of multi-sector projects.

MECS

8.19 This would set out the objectives and rationale for the scheme in terms of its role in increasing access to appropriate modern energy services within Mozambique outside of the EDM areas.

EDM distribution

8.20 This would set out EDM’s future policies regarding the role of the private sector in this area, within the context of other major issues affecting EDM and the sector more generally (for instance, EDM restructuring).

Large projects

8.21 The suggested strategy as regards large projects might address two major objectives:

• the development of distribution opportunities (whether this be a developed top-down opportunity, or else design aspects to offer future opportunities for bottom-up schemes); and/or

• the greater involvement of the private sector in PSP project development, which ideally should be supported by a Technical Unit which would facilitate the tendering of large-scale, multi-sector opportunities.

Implementation

8.22 We suggest that detailed implementation focus on the MECS scheme. This reflects the fact that it is a stand-alone initiative and the fact a separate commission is considering PSP in EDM. The activities that need to be undertaken by government as regards the establishment of MECS include:

• drafting of enabling documentation (see below);

• training of those involved in the operation of the scheme including, DNE and FUNAE personnel and all regional DPREME representatives; and

• the development of terms of reference for technical assistance support for other aspects of the scheme.
Enabling documentation

8.23 The enabling documentation would be based around the MECS, although it would also be relevant to other types of concessions. In the course of their work on the north Inhambane concession, Sadelec will have to produce a concession contract, a consumer agreement and other agreements that are also completely specific; for example, the gas supply agreement. They will also have to produce a form of tariff formula.

8.24 As it is important that the Sadelec and PricewaterhouseCoopers work do not conflict and given that Sadelec are slightly more advanced in their work, we would suggest that in these areas we use their work as a starting point, but ensure that our "model" documents are more broadly applicable.

8.25 We will provide additional documentation in three forms:

- **draft instruments** required to enact the scheme;
- **outline documentation** that supports operations; and
- **draft terms of reference** for any supporting technical assistance requirements.

Draft instruments

8.26 The **draft instruments** that are required are principally:

- amendment of **FUNAE Charter** to remove promotion and to legitimise FUNAE’s role in subsidy delivery; and

- amendment to the **Concession Decree** to allow streamlining and concession award based on open tender; that is the award is not specific to an area but to winning a subsidy.

Outline agreements

8.27 We will develop outline agreements, where there is either a major need for input from other parties, or where the exact nature of the content is, as yet, unclear. These will include:

- a general agreement to be signed by FUNAE and donors governing distribution of subsidies (although in practice this will need considerable involvement by the donors);

- an agreement between FUNAE/GOM/donors and the Trust Agent holding the subsidy funds.
On **contracts**, in addition to those tasks mentioned above which Sadelec will need to undertake, there will be a need for a draft subsidy award agreement to be signed with successful promoters.

**Terms of reference**

The terms of reference will need to cover requirements for wider scheme support set out in the Section VII.