

Public-Private Partnerships for clean energy investment in developing and emerging economies: Allocating risks and sharing rewards

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Abstract. *Clean energy investment such as geothermal and hydropower projects tend to be large, capital intensive and with long repayment periods. These projects are challenging, especially in developing and emerging market countries that are in transition and sometimes characterized by a changing and unpredictable political situation and unfavorable business environments. Public-Private Partnerships (PPPs) enable pooling of public, private and donor funds for clean energy investment in developing and emerging market economies. Those economies are also eligible for support from international financial institutions (IFIs) such as the World Bank Group and regional development banks⁽¹⁾. A well designed PPP can be a venue for scaling up funding for clean energy internationally and thus contribute to the battle against climate change. The focus of this article is on PPPs; potential benefits and challenges for host governments and various partners (including the private sector, bilateral donors, multilateral institutions), allocation of risks as well as sharing of rewards. When disputes occur between the private sector and host governments International Financial Institutions can play an important role in resolving disputes and help ensure the fair sharing of the risks and the rewards of the PPP for all the parties involved.*

Keywords: clean energy projects, public-private partnerships, international financial institutions.

JEL Classification: F30, G22, P18, Q40.

Introduction

Clean energy investment such as geothermal and hydropower projects tend to be large, capital intensive and with long repayment periods. These projects are challenging, especially in developing and emerging countries that are in transition and sometimes characterized by a changing and unpredictable political situation and unfavorable business environments.

For geothermal projects, several models can be used to mobilize capital and cover the resource risks. These include, for example: (i) an enterprise in public ownership, (ii) a private company developer and (iii) a public-private partnership (PPP). In the first model, a public sector company would typically undertake the whole project, including the resource risks. This could be a combination of national and municipal authorities such as in the case of Iceland. In the second model a private sector developer might be a large company with a strong balance sheet as in the case of Chevron in the Philippines. In this case the private company has the financial capacity to undertake the whole project. In the third model the public and private sectors work in partnership, i.e. a public-private partnership (PPP).

PPPs enable pooling of public, private and donor funds for clean energy investment in developing and emerging economies. Those economies are also eligible for support from IFIs, such as the World Bank Group and regional development banks. A well designed PPP can be a venue for scaling up funding for clean energy internationally and thus contribute to the battle against climate change. Thus a potential global benefit exists in using this arrangement. The focus of this article is on PPPs: potential benefits and challenges, host government cooperation with the private sector, allocation of risks as well as sharing of rewards.

Among the sources of evidence used for analysis in this article is secondary data, including analytical reports and scholarly literature. Direct observation also plays a role as the authors draws on his home countries experience, Iceland, that has made a transition to clean energy for space heating and electricity production utilizing geothermal as well as hydropower energy. The author also draws from his experience as a staff member at the World Bank from for 12 years working in three continents, Africa, Asia and Europe. Furthermore, the author has also for several years as professor interviewed various staff of the World Bank as well as regional development banks on the challenges of clean energy projects in developing and emerging countries.

Public-Private Partnerships – some definitions

What exactly is a public private partnership? Many different definitions are used for PPPs by different individuals and institutions. One definition is “any public sector service provided partially or wholly by the private sector” (Delmon, 2009, p. 601). Another definition is “co-operative institutional arrangements between public and private sector actors” (Hodge and Greve, 2009, p. 33). The World Bank has defined PPPs as “the transfer to the private sector of investment projects that traditionally have been executed

or financed by the public sector” (World Bank, 2008, p. 93). The Organization for Economic Co-operation and Development has defined PPPs as “long term contractual arrangements between the government and a private partner whereby the latter delivers and funds public services using a capital asset, sharing the associated risks” (OECD 2012, p. 18). Notably, the Organization for Economic Co-operation and Development and World Bank definitions mention capital investment by the private sector. The other definitions are more general, highlighting service and cooperation.

Possible benefits from using public-private partnerships in developing and emerging countries

Why would governments of developing and emerging market economies want to cooperate with the private sector under a PPP arrangement? The answer is: for several reasons. A PPP can be a feasible option for governments because in most developing and many emerging countries the government has limited capacity to mobilize funds. This means that a partnership with the private sector can help the government obtain much-needed long term capital. The private sector may also possess technical knowledge that the public sector does not have and be a more efficient operator of power plants. In this case a public-private partnership can be formed to allow for a sharing of the risks and rewards from the project.

PPP can be a favored model in developing and emerging markets and be beneficial if well designed and if risks and rewards are shared fairly. However, little point exists in forming PPPs if, for example, the private sector partner captures most or all the benefits, or if the government keeps changing the rules of the game resulting in a non-viable project.

With pressure on physical infrastructure and limited resources, governments of developing and emerging countries may want to cooperate with the private sector via a PPP to help finance, build, and/or operate public projects. While doing so, the government could at least in theory: (1) utilize the better skills and better management from the private sector that may lead to increased efficiency for the project in a competitive environment, (2) access private sector funds to undertake more projects than would be possible with public funds alone – this can contribute to fiscal stabilization, and increase investment and growth, (3) provide more affordable and better services to end-users, and (4) share risks with the private sector (see, for example, Leruth, 2009; de Palma et al., 2009; Estache, 2005).

Developing and emerging economies on the one hand and high-income economies on the other may have different reasons for participating in public private partnerships. As Hart points out, “Policy makers frequently argue that PPPs are good because the private sector is a cheaper source of financing or insurance than the public sector.” Furthermore, he emphasizes that “This thinking is strange for an economist since it is hard to imagine an agent that is more able to borrow or to provide insurance than the government (with its enormous powers of taxation)” (Hart, 2003, p. c75). Leruth also argues “the government is often able to borrow at [an] almost risk-free rate (no credit risk), which gives it an advantage” (Leruth, 2009, p. 230).

These arguments may well be true in countries that enjoy strong creditworthiness (e.g., via AAA or other high credit rating status). The countries discussed in this article, however, are developing and emerging countries. They often have large unutilized energy resources and strong medium- or long-term demand for energy, but their creditworthiness is limited. Their nationals often have limited ability to pay for the services rendered to them and the government has weak capacity to force them to do so through taxation. Such governments can be risky partners for the private sector in a PPP. In this situation, efficient and effective risk allocation is the key to success, and the international community can play a constructive role, for example, through participation by IFIs, which can involve a variety of funding and mitigation instruments as well as technical assistance.

When discussing green infrastructure finance, the World Bank states that “the international community has recognized that the majority of new investment financing will need to come from private sources” (World Bank, 2012, p. 16). The World Bank’s focus is on developing and emerging markets. This means that some sort of public-private partnerships will need to be formed for a large share of clean energy investment in those markets in transition. This is a major challenge not only for the private sector, but also for participating developing and emerging countries. Moreover, as the World Bank has stated, “developing a framework for improved collaboration between public and private sectors could greatly benefit green infrastructure financing mechanisms” (World Bank, 2012, p. 6).

Interest in PPPs is growing among Asian countries, including a notably prominent market in China. The Association of Southeast Asian Nations (ASEAN) for example recently stated that “PPPs are seen to be beneficial in meeting ASEAN infrastructure needs, estimated by the Asian Development Bank at USD 60 billion per annum. Private participation in infrastructure provision can enhance existing public capacity in providing economic (e.g. transport, telecommunication, power, water and sanitation) and social (e.g. health and education) infrastructures” (ASEAN, 2014). Great need is also present in other developing and emerging regions such as Africa and Latin America.

Some challenges using public-private partnerships in developing and emerging countries

According to the Public-Private Infrastructure Advisory Facility⁽²⁾ countries using the PPP model need to have: strong institutions, legal systems and rule of law, high standards of public and corporate governance, transparency, competition, protection of investments, enforcement of laws, and dispute resolution mechanisms (World Bank, 2015). This is an impressive list, but some would argue that it is unrealistic even for developed high income countries. If international financial institutions insisted that those criteria be satisfied before an investment could take place using the PPP model, very few places in the world would receive any private finance. This would especially be a challenge in developing Africa.

Because of this challenge, key international organizations such as ASEAN, the European Union, the International Monetary Fund, the United Nations, and the World Bank have

formulated and displayed substantial policy documents on PPPs. A recent paper on PPPs shows that international organizations use roughly the same categories and conceptions of stages for what is needed to establish effective PPPs (Greve, 2015).

Multilateral as well as bilateral financial organizations can at least in theory be a catalyst in supporting PPP projects, including in the clean energy sector. Institutions such as the World Bank Group and regional development banks can, via their policy dialogue, assist governments when undertaking reforms needed for effective use of the PPP model. IFI support can be important because developing and emerging countries often have limited capacity to negotiate with multinational enterprises. Since the Public-Private Infrastructure Advisory Facility is a multi-donor technical assistance facility, financed by 17 multilateral and bilateral donors, it can play an important role here.

But, as mentioned before, using the PPP model and working in partnership with IFIs and bilateral development institutions can also come at a cost. A recent book published by the World Bank, entitled “Public Private Partnerships in Europe and Central Asia – Designing Crisis-Resilient Strategies and Bankable Projects”, comments very cautiously that “working with these institutions may also lengthen the project development process, given specific requirements in terms of environmental and social safeguards requirements and stringent procurement procedures” (Cuttaree and Mandri-Perrott, 2011, p. 59). Another book also published by the World Bank entitled: “Doing a dam better: the Lao People's Democratic Republic and the story of Nam Theun 2 (NT2)”, is more critical when discussing World Bank cooperation with the private sector. The authors simply state that: “The bad news is that the World Bank is seen as a high-cost/high-hassle partner of last resort. There is therefore a critical need to reduce the costs the private sector incurs for doing business with the World Bank. Doing so will require the World Bank to better understand the constraints under which the private sector works” (Porter and Shivakumar, 2010, p. 22). These comments are especially notable given that the authors have both served as World Bank country directors. Shivakumar, for example, played an important role in enabling the Nam Theun 2 hydropower project in Lao.

The challenges of host government cooperation with the private sector

PPPs are not only a challenge for the private sector. Cooperating with private enterprise can also be a serious challenge for host governments in developing and emerging market economies, especially during times of economic and financial crisis. In their book, *Making Foreign Investment Safe – Property Rights and National Sovereignty*, Wells and Ahmed (2007) document a dramatic dispute between CalEnergy, an entity founded as a consulting and service company for geothermal power in North America, and the Indonesian government. This dispute resulted in a claim under official political risk insurance filed by CalEnergy and paid by the US government agency, the Overseas Private Investment Corporation. Less dramatic, but still consequential, was the dispute between Enron, then a private power developer, and the Indonesian government, that ended with the Multilateral Investment Guarantee Agency (MIGA), the insurance agency of the World Bank Group, paying out its first claim ever.

As Wells and Ahmed state: “The Indonesian experience with official political risk insurance has not been the only one that has made developing countries a bit wary. From the point of view of host countries, the new property rights system was not being very constructive. The moral hazard associated with the insurance surely had encouraged some investors to avoid renegotiation when economic crisis hit Indonesia and other countries. And Indonesians saw themselves as having few rights when CalEnergy filed a claim with [the Overseas Private Investment Corporation] or when [the Overseas Private Investment Corporation] sought reimbursement from Indonesia” (Wells and Ahmed, 2007, p. 246). Insurance can thus under certain conditions put the host government in a very difficult position vis-à-vis a private sector investor who is insured, in this case with the powerful US agency Overseas Private Investment Corporation. Moreover, Wells and Ahmed also criticize the public agencies providing guarantees as follows: “Further, and unlike many private insurers, public agencies appear to pay little attention to actual or potential moral hazards. If [the Overseas Private Investment Corporation] would insure only a smaller percentage of the equity, forcing more of the risk onto the investor, one aspect of moral hazard ought to decline. Second, allowing [the Overseas Private Investment Corporation] to seek something less than full reimbursement from host countries would reduce the perception that it faces no loss if it decides to pay claims” (Wells and Ahmed, 2007, p. 246).

In the case of the Enron dispute in Indonesia, MIGA paid Enron in the end. MIGA then demanded reimbursement from the government of Indonesia and got it. A good relationship with the World Bank Group, which MIGA is part of, must also have been considered important for the government of Indonesia because of other projects and programs that could be jeopardized in the event of an unresolved dispute. It is, however, questionable whether the World Bank Group should use its leverage in this way.

While the tensions between the government of Indonesia and MIGA did not run as high as in the case of the Overseas Private Investment Corporation, both were costly for the government of Indonesia in terms of money and international relations. In their concluding chapter, Wells and Ahmed raise doubts about whether the international system of property rights can accomplish its goal of encouraging foreign investment that is helpful for the host country. Nevertheless, and in spite of the serious problems that a host government can experience, they recognize the need for public private partnerships when they state that “Meeting the huge infrastructure needs for development will surely require a mix of private investment, state investment, multilateral lending, hybrid arrangements, and very substantial aid money” (Wells and Ahmed, 2007, p. 283).

IFIs are well placed to mitigate risks at competitive prices. As Wells says, “official insurance can be priced low, since the threat of sanctions by the organizations backing the insurance sharply reduce the chances of the events being insured against occurring” (Wells, 2005, p. 91).

Regional and global economic crises, such as those that struck Asia in 1997/98, Argentina in 2001, and the whole world in 2008/09, can pose significant threats to the international investment regime. As Salacus (2010) states, “Countries under great stress, faced with potential social and political upheaval as a result of rapidly declining standards

of living, often seek radical solutions and are impatient with international investment rules that may restrict their latitude of action. For example, during times of economic crisis, governments may be unwilling to grant national treatment to foreign investors, to avoid changing regulations in the name of “fair and equitable treatment,” and to refrain from seizing vital national resources held by foreigners simply because they have made treaty promises not to expropriate. Thus Argentina, to cope with one the most serious economic and financial crisis in its history in 2001-2002, took a series of measures that foreign investors believed violated their legal rights and economic interests, resulting in the initiation of numerous investor-state arbitration claims” (Salacuse, 2010, p. 471). International financial institutions can play an important role in resolving disputes between host governments and foreign investors during economic and financial crises and they should make efforts to facilitate settlements that are fair for all parties involved. It should be a last resort action to pay out a claim to the private investor and then use the leverage of the IFI to force reimbursement from the host government.

Public-Private Partnerships – allocating risks and sharing rewards

In spite of the many potential problems and issues that can be associated with public-private cooperation and in operating public-private partnerships, PPPs can be a feasible platform to fund infrastructure development and to increase the efficiency of public sector service delivery in developing and emerging economies. The PPP becomes a venue for the public and private sectors to cooperate on a project that would traditionally have been in the public domain. Infrastructure projects in the clean energy sector are often large, capital intensive and long term. Repayment periods are also often long. It can take a private investor 10 to 30 years to recover the investment and project returns. It is often challenging to maintain a good working relationship within a PPP for such a long time, while the local, regional and global environment may change dramatically during this period.

The private sector has for years been recognized as a significant financing source for meeting developing country investment requirements. However, financial markets remain largely untapped for this purpose and have yet to live up to their potential (Asian Development Bank, 2006). PPPs are one platform worth considering for the private sector to engage in infrastructure projects, including geothermal and hydropower projects. Private capital, bilateral and multilateral donor support, including IFIs, and public funds can be combined in a PPP project. A well designed policy and institutional framework for PPPs offers the opportunity to leverage and combine all three sources of financing and expertise without crowding out private investment. By forming a PPP both public and private sectors can share the risks and rewards of infrastructure projects.

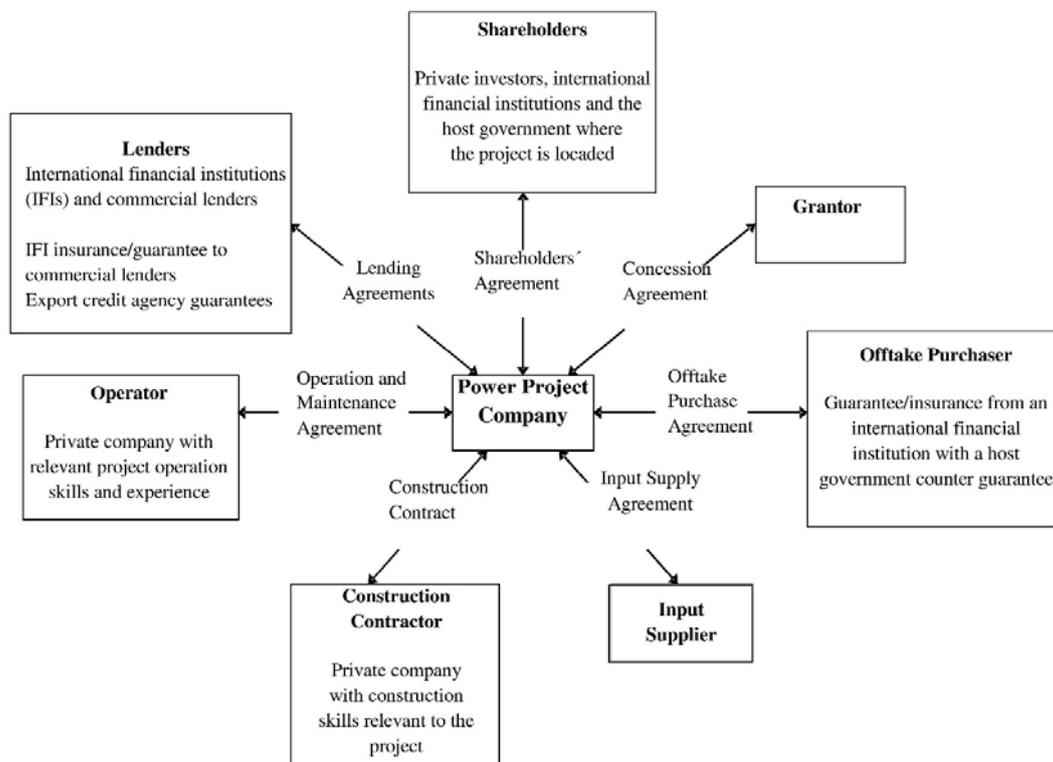
Private sector funding and participation in clean energy projects is a challenge for various reasons. Among them is that the host government is often the only buyer of the electricity or hot water produced i.e. it is the so called offtake purchaser⁽³⁾. Many developing and emerging countries with large clean energy potential have limited creditworthiness. They have low per capita income and are often going through economic and political transition.

Developing and emerging countries can also be vulnerable during regional and global crises. In such cases the sponsors⁽⁴⁾ of a project may hesitate to inject funding because of uncertainty with the income stream from the investment. Lenders, including commercial investment banks, would also often hesitate to provide loans to such projects because of uncertainty whether the project company, whose income stream is at risk, can service its loans. Sponsors may also hesitate to provide equity capital.

To engage in cooperation, the public and private sectors can employ several different schemes⁽⁵⁾ including the so called BOT, i.e. Build-Operate-Transfer (International Monetary Fund, 2004). In BOT projects the private sector is responsible for financing, constructing and operating the project. Under this arrangement the host country grants a concession⁽⁶⁾, i.e. the right for a private firm to undertake a public sector project and operate it over an agreed period. When the concession expires the ownership of the project is transferred back to the party granting the concession.⁽⁷⁾

The partners typically involved in a BOT project are: the project company that undertakes the project, the host government (that can also be the offtake/power purchaser and guarantor), the shareholders, the lenders, the grantor, the construction contractor, the operator, the offtake purchaser/power purchaser, and the input supplier. Figure 1 below shows a typical PPP BOT contractual structure.

Figure 1. Typical PPP BOT contractual structure



Source: Constructed by the author.

The project company uses the income stream from the project to service its debt and to pay returns to its investors.⁽⁸⁾ The lenders to a BOT project might, for example, be commercial investment banks, IFIs and bilateral agencies. The IFIs could also serve as guarantors e.g. for payment to the lenders, including commercial investment banks. National institutions such as export credit agencies, which support trade finance (goods and services), can also play a constructive role in reducing the risks taken by private sector investors see e.g. Dinh and Hilmarsson (2012a, 2012b, 2012c and 2013).

The lenders would typically be keen to manage their risks⁽⁹⁾ and would receive a fixed margin on their loan whereas the shareholders⁽¹⁰⁾ maximize the profits on their equity investment. In addition to obtaining funding for the project, the project company procures the design and coordinates the construction and operation of the project in line with the requirements of the concession agreement. Project company shareholders often include firms with construction and operation experience, and with offtake purchase capabilities (Delmon, 2009, p. 98).

The offtake purchase agreement secures the project payment stream. The offtake purchaser will be looking for guaranteed long term output from the project. The credit risk associated with the offtake purchaser will be of particular concern to the project company and the lenders. This is where guarantees from host governments or IFIs, including the World Bank, become important.

Critical to the design of PPPs is the way risks are allocated between the partners in the PPP. In fact, effective risk allocation is key to success in any PPP. A general principle is that risk should fall on the party that is abler to do something about it. Risks in PPPs tend to be allocated on the basis of commercial and negotiating strength. The stronger party will allocate risk that it does not want to bear to the weaker party. Efficient allocation of risk will generally result in a more successful and profitable project and will benefit each of the parties involved (Delmon, 2009).

In order to minimize the market risk from the project company and the project lenders, an offtake purchase agreement, or in the case of a power project, a power purchase agreement, may be made. This is to create a secure payment stream which will be an important basis for financing the project. The offtake purchaser may also be the grantor, or a government entity such as a public utility, in which case the offtake purchase agreement and the concession agreement may be one and the same document (Delmon, 2009).

The lenders will want project risks to be allocated to project participants, i.e. the construction contractor and the operator but not the project company, which is their debtor. The project company will enter into a contract with the construction contractor in order to divest its obligations to the grantor to design, build, test, and commission the project. Completion risk for the project should be allocated to the construction contractor. In the case of a turnkey project, completion and performance risk should fall on the construction contractor.

If the main risks are associated with poor management of the service, shifting the risk to the operator could provide the right incentives to ensure that the project delivers. If risks are related to changes in policies, then the government should bear the risk. This is because the project company will not generally be able to manage political risk. The project company will ask the government to bear those risks, not necessarily to claim compensation at a future date but to pressure the government to avoid such risks and to minimize the probability that such risk events will occur.

Sharing the risks and the rewards in a fair and sustainable manner is important for the success of a PPP that may be operating for a few decades. During this time economic and financial crisis can hit. This risk should be factored into the project. In turn, this can result in demands for higher returns for private sector participants. Crises in East Asia as well as in Latin America can teach valuable lessons to the private and public sectors, as well as to bilateral and multilateral providers of loans, equity and guarantees.

Reducing the risk of failure through efficient project company operations as well as good government policies is important for all parties involved. Shifting the risk to a weaker party is, however, questionable (e.g. if an insured private sector participant files a claim against the host government of a developing country without trying to resolve issues and then an insurer such as an IFI files a reclaim against the host government without making credible efforts to resolve the dispute).

PPPs place a strong demand on host government capacity to communicate and negotiate both with private participants and IFIs when these are involved. Low government capacity is an obstacle when using the PPP framework, but one must keep in mind that a weak government is also less likely to be able to run a project with 100 percent public ownership efficiently. When disputes occur between the private sector and host governments, IFIs can, and should, play an important role in resolving disputes and help ensure the fair sharing of the risks and the rewards of the PPP for all the parties involved.

Conclusions

Clean energy investments such as geothermal and hydropower projects tend to be large, capital intensive and with long repayment periods. These projects are challenging, especially in developing and emerging countries that are in transition and sometimes characterized by a changing and unpredictable political situation and unfavorable business environments. PPPs enable pooling of public, private and donor funds for clean energy investment in developing and emerging market economies. Those economies are also eligible for support from IFIs. A well designed PPP can be a venue for scaling up funding for clean energy investment internationally and thus contribute to the battle against climate change. Thus a potential global benefit exists in using this arrangement.

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Notes

- (1) Such as the African Development Bank, the Asian Development Bank, European Bank for Reconstruction and Development and the Inter-American Development Bank.
- (2) The Public-Private Infrastructure Advisory Facility was created in 1999 to act as a catalyst to increase private sector participation in emerging markets. It provides technical assistance to governments to support creation of a sound enabling environment for the provision of basic infrastructure services by the private sector. According to the Public-Private Infrastructure Advisory Facility a sound business-enabling environment consists of strong institutions, legal systems and rule of law, high standards of public and corporate governance, transparency, competition, protection of investments, enforcement of laws, and dispute resolution mechanisms. The Public-Private Infrastructure Advisory Facility is a multi-donor technical assistance facility, financed by 17 multilateral and bilateral donors: the Asian Development Bank, Australia, Austria, Canada, the European Bank for Reconstruction and Development, France, Germany, the International Finance Corporation, Italy, Japan, the Millennium Challenge Corporation, the Netherlands, Sweden, Switzerland, the United Kingdom, the United States, and the World Bank. Public-Private Infrastructure Advisory Facility funds are untied and grants are provided on a demand-driven basis, see further: <http://www.ppiaf.org/node/23#What%20is%20PPIAF?>

- ⁽³⁾ An offtake purchaser is a purchaser of the product produced by a project. In the case of a power project the product produced is the electricity generated.
- ⁽⁴⁾ A sponsor of a project is a party wishing to develop or undertake a project. A sponsor would normally provide financial support for the project e.g. early equity capital.
- ⁽⁵⁾ PPP schemes and modalities other than Build-Operate-Transfer (BOT) include for example: Build-Own-Operate-Transfer (BOOT), Build-Rent-Own-Transfer (BROT), Build-Lease-Operate-Transfer (BLOT), Build-Transfer-Operate (BTO).
- ⁽⁶⁾ A concession is the right granted by the host government for a private company to undertake a public sector project and operate it over an agreed period.
- ⁽⁷⁾ For a comprehensive discussion on BOTs see, for example, Jeffrey Delmon's outstanding book on Private Sector Investment in Infrastructure (Delmon, 2009).
- ⁽⁸⁾ i.e., equity contributors to the project company.
- ⁽⁹⁾ i.e., they would only take measurable and measured risks.
- ⁽¹⁰⁾ i.e., equity holders in the project company.

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