Economic Commission for Europe
Committee on Innovation, Competitiveness and Public-Private Partnerships
Working Party on Public-Private Partnerships
First session
Geneva, 21-22 November 2017
Item 5 of the provisional agenda

Review of the PPP work since the eighth and final session of the Team of Specialists on PPPs on 20-21 October 2016

Draft UNECE Standard on PPPs in Renewable Energy

Conference room paper submitted by the secretariat

Summary
A project team led by Ms. Ana Hajduka prepared a draft standard on PPPs in renewable energy, which the secretariat is circulating as received from the project team leader for information only. The next step is for the draft to go to public review, where stakeholders, including the expert networks in the UNECE Sustainable Energy Division, are encouraged to provide their comments and feedback for consideration and inclusion in a revised version for consideration by the Bureau of the Working Party on PPPs.

The Working Party is requested to take note of the draft standard, which is subject to change. Participants are encouraged to provide comments on the draft directly to the secretariat at: ppp@unece.org.
Proposed Draft

DRAFT UNECE STANDARD ON PPPs IN RENEWABLE ENERGY

SOURCE: Renewable Energy Project Team
ACTION: Interim draft
STATUS: Draft v3
Draft UNECE Standard on PPPs in Renewable Energy

Implementing the United Nations 2030 Agenda for Sustainable Development through effective “People-First Public-Private Partnerships”
<table>
<thead>
<tr>
<th>Abbreviation and terms</th>
<th>Meaning</th>
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<tr>
<td>COD</td>
<td>Commercial operation date</td>
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<tr>
<td>EMDE</td>
<td>Emerging markets and developing economies</td>
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<td>EPC</td>
<td>Engineering Procurement and Construction.</td>
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<tr>
<td>GENCO</td>
<td>Generating company</td>
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<tr>
<td>IFI</td>
<td>International Finance Institutions (multilateral and bilateral development banks)</td>
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<tr>
<td>IPP</td>
<td>Independent power producer</td>
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<tr>
<td>LD</td>
<td>Liquidated damages</td>
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<tr>
<td>Load</td>
<td>An electrical load is an electrical component or portion of a circuit that consumes electric power. A “load centre” is centre of concentrated electricity demand, such as town, city or industrial facility.</td>
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<tr>
<td>MIGA</td>
<td>Multilateral Investment Guarantee Agency</td>
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<td>MW</td>
<td>megawatt (being 1,000,000 watts)</td>
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<tr>
<td>NDCs</td>
<td>Nationally Determined Contributions according to the Paris Agreement</td>
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<tr>
<td>Offtaker</td>
<td>Purchaser of electricity (in particular, in the context of energy (RE and non-RE) PPPs, the purchaser under the PPA)</td>
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<td>PPA</td>
<td>Power purchase agreement</td>
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<td>PPP</td>
<td>Public private partnership</td>
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<td>PRG</td>
<td>Partial risk guarantee</td>
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<td>PSA</td>
<td>Power sale / supply agreement</td>
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<td>RE</td>
<td>Renewable energy</td>
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<td>REFIT</td>
<td>Renewable energy feed in tariff</td>
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<td>SE4ALL</td>
<td>Sustainable energy for all</td>
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<td>SPV</td>
<td>Special purpose vehicle</td>
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<tr>
<td>UNECE</td>
<td>United Nation’s Economic Commission for Europe</td>
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<td>UN SDGs</td>
<td>United Nations’ Sustainable Development Goals</td>
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<td>VfM</td>
<td>Value for Money</td>
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I. Introduction

The Importance of Renewable Energy (“RE”) to Sustainable Development

The United Nation’s commentary on the progress of Sustainable Development Goal 7 in 2016 states, inter alia, “Energy is crucial for achieving almost all of the Sustainable Development Goals, from its role in the eradication of poverty through advancements in health, education, water supply and industrialization, to combating climate change.”

Furthermore, the United Nation’s commentary on the progress of Sustainable Development Goal 13 in 2016 states, inter alia, “climate change presents the single biggest threat to development, and its widespread, unprecedented impacts disproportionately burden the poorest and most vulnerable.”

Accordingly, access to sufficient, dependable and affordable RE is crucial to attaining the United Nations’ Sustainable Development Goals (“UN SDGs”).

The Role of RE PPPs in Sustainable Development

The UN SDGs cannot be realized unless the private sector is mobilized – and on a significant scale. SDG 17 (Revitalize global partnerships for sustainable development) calls for partnerships between the public and the private sector as well as civic society.

Public Private Partnerships (“PPPs”) are a mechanism for facilitating private sector participation in the delivery of RE infrastructure projects. PPPs can mobilize private sector capital, technological and operational know-how, and risk appetite to develop, design, finance, build, operate and maintain an RE infrastructure project.

For the purposes of this Standard, the International Energy Association’s definition of Renewable Energy is used: “Renewable energy is energy that is derived from natural processes and that are replenished at a higher rate than they are consumed. Solar, wind, geothermal, hydropower, bioenergy and ocean power are sources of renewable energy.”

PPPs as an alternative to ‘traditional’ public procurement

Compared to traditional public procurement where a public entity finances and contracts for a specific good or service and retains much of the risk of public service delivery, a distinguishing feature of a PPP is the allocation of a significant portion of that risk to the private sector. They are particularly valuable in RE projects because the private sector is able to deliver:

- **Technology:** where the service requires external expertise and government will not be able to provide it independently;
- **Quality of Service:** where the private sector would significantly enhance the quality of service compared to what the government could extend independently;
- **Time:** where the private sector would expedite the project implementation significantly; and
- **Cost Savings:** where there would be a considerable reduction in the project cost and also the service cost with the involvement of the private sector.

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4 https://www.iea.org/about/faqs/renewableenergy/
People First PPPs

People First PPPs are PPPs, which (a) are seen as synonymous with the purposes of the UN SDGs; (b) out of all the stakeholders, put people as the main beneficiaries of the projects; (c) increase access to water, energy, transport, and education especially to the socially and economically vulnerable members of society; (d) promote social cohesion, justice and disavow all forms of discrimination based on race, ethnicity, creed and culture; (e) focus on improving the quality of life of communities, fighting poverty and creating local and sustainable jobs; and (f) contribute to ending hunger and promote the empowerment of women.

Implications for People First for RE PPPs

In general terms, a host Government that undertakes ‘People First” RE PPP projects would prioritize

- A sufficient amount of (clean) RE generation capacity is developed in its country to meet electricity demand or renewable energy targets;
- RE generation assets in its country are prudently operated and maintained over the useful life of those assets;
- Consumers are charged the lowest possible tariff, and the Government takes on the lowest possible fiscal burden and receives value for money;
- Local legislation and regulation – especially environmental laws – are fully complied with; and
- Negative social impacts are minimized, in particular in context of large-scale projects with resettlement and economic displacement.
II. **Objective of the Standard**

This Standard sets out recommendations as to how host Governments in emerging markets and developing economies ("EMDE") can, through relatively low cost interventions:

- maximize the economic benefits of RE PPPs;
- attract increased private sector participation in RE PPPs; and
- reduce the development time and costs for RE PPPs;

and thereby deliver a RE PPP at an affordable cost. This Standard focuses on the facilitation and delivery models for new ("greenfield") RE PPP projects. However, PPP options for existing RE assets are also presented in relevant sections.
III. **Scope of the Standard**

This Standard provides introductory, high level guidance to policy makers as to some of the key issues related to People First PPPs in the RE Sector. With a focus on EDME countries, a number of guiding principles, key considerations and potential implementation tools for the design and implementation of People First RE PPPs are provided.
IV. Central questions

A. Selection of Appropriate RE PPP projects

One challenge faced by host Governments is determining whether a RE project is best suited to be delivered by a PPP. Governments should acknowledge that RE PPPs are not the panacea for all development initiatives, and it is therefore crucial in the planning phase to select RE projects that would be well suited to the PPP model. Classic public procurement and ownership can be a suitable option in cases in which, for instance, the host Government or utility fear that a PPP would be too expensive (and thus does not deliver value for money) or the utility desires to diversify its generation source base.

B. PPP types and examples in the RE PPP sector

RE PPPs for greenfield projects typically come in two distinct types of structural arrangements: (a) concession based agreements, which may be entered on a project-by-project basis, or under a coordinated procurement programme of multiple projects, where the private entity undertakes the delegated public energy service, and (b) Joint (Equity) Ventures where a mixed public and private entity is formed to undertake the provision of energy.

Common features of RE PPP Structures

A RE PPP project structure typically include most or all of the following features:

- a single-purpose project company (or “special purpose vehicle” (SPV) established and owned by shareholders (often referred to as “Investors” or “Sponsors”), which has typically the responsibility to design, finance, construct, operate and maintain the power generation facility throughout the project term;
- a long term (typically 20-25 years) PPA between the SPV and the offtaker, which is often a Government owned utility;
- an agreement between the SPV and the host Government (such agreement often referred to as an “Implementation Agreement”, “Concession Agreement”, “Government Support Agreement” or similar) which sets out various rights and obligations between the SPV and the host Government;
- the PPA and Implementation Agreement sitting within a matrix of contracts entered into by SPV pursuant to which, inter alia, risk is allocated as between the immediate stakeholders to the project.

RE PPP programs

Under a RE PPP program, a multitude of RE PPP are procured through an often purpose-designed procurement structure with standardized transaction documentation and risk allocation between the host Government, the utility and the private sector. To utilize falling technology prices and align demand and supply, host Governments often opt for a number of tender windows and a repetitive process.

Many EMDE countries have successfully implemented co-ordinated RE PPP procurement programmes, including for example Brazil, Mexico, the Philippines and South Africa. Some smaller EMDE countries have also moved towards co-ordinated procurement programmes, often with targeted technical and financial support from IFI and development cooperation actors, for instance, in Uganda, Honduras and Zambia.
Delivery options for RE PPP

Host Governments have several options to facilitate private investment into RE through implementation of RE PPPs:

**REFITs**
Renewable energy feed in tariff (“REFIT”) regimes typically:

a. provide for a prescribed feed in tariff (i.e., wholesale electricity tariff for sale of electricity under the PPA between the generation company and the buyer/offtaker, which is typically a Government owned utility) for different generation technologies and classes of generation capacity, often also providing different tariffs for different sizes of projects; and

b. prescribe standard form PPAs (and perhaps other project documents) and set out standard procedures for carrying out qualifying projects.

In current market practice, REFITs are likely to be suited to RE projects:

- which are too small to justify bespoke negotiations or procurement processes;
- where the benefit of certainty outweighs (i) the cost of some projects being over-compensated, and (ii) the risk that other projects will not be carried out as the REFIT tariff is too low for those particular projects; and
- where the generation technology and costs associated with it are well established and fairly stable, e.g. not in the case of solar PV over recent years, where reverse auctions have discovered rapidly reducing costs.

**Reverse Auctions**
Reverse auctions are procurement processes pursuant to which a procuring entity tenders for bids to carry out RE PPP projects. Common features of RE PPP reverse auctions to-date have been allowed up-to-date price discovery in the market, ensuring that RE PPPs are carried out by financially and technically competent private sector participants at the lowest available price in the market at the time of carrying out the reverse auction process, i.e., they allow real-time price discovery in the market. They have proven to be particularly successful in relation to solar PV, where fast moving improvements in the generation technology coupled with reductions in technology costs have been reflected directly in the winning tariffs. Typically (but not necessarily), a bidding process in an EMDE country would have two phases:

- a first phase pursuant to which a short list of bidders may qualify based on technical and financial competence criteria; and
- a second (final) phase during which shortlisted bidders compete on a variety of criteria; however, as shortlisted bidders have already pre-qualified as being technically and financially competent, the lowest price will typically carry a very high weight in the scoring process. I.e., typically ‘lowest price wins’.

**Direct Negotiations**
Negotiating a project with single or multiple developers without inviting other potentially interested private sector developers and implementing any form of competitive procurement process is termed direct negotiations. Typically, such direct negotiations occur in early stage of private sector involvement into the generation sub-sector and are result from unsolicited bids. Nowadays, a host Government should generally only consider direct negotiations for a RE PPP if it promises more affordable power, value for money or shorter development timelines. Large scale hydropower and geothermal projects are sometimes suitable for direct negotiations due to the predetermined locations of these projects as well as unique project characteristics and transaction requirements. Similarly, transactions for an expansion of existing PPP RE projects should be done by means of Direct Negotiation.
Joint Venture RE PPPs

An RE PPP in which the public and private sectors hold shares and jointly manage the project generally follow the same principles as an IPP regarding the transaction and financing. However, additional administrative and corporate governance challenges (for example conflict of interest and interference) may arise as a consequence of the institutionalized partnership.

Concession models for existing assets projects (“brownfield”)

For operational RE assets, host Governments may choose to involve private sector in form of an operation & maintenance concession. Against a concession fee and usually on basis of a lease agreement, private sector companies are incentivized to operate and maintain the asset prudently and also make investments into refurbishment or modernization of the asset. The ownership of the asset usually remains with the utility. The concession fee is usually linked to performance or availability requirements.

New innovative RE PPP models

Achieving financial close on RE PPPs in EMDE countries has proven difficult. Innovative financing and risk mitigation structures have thus been embraced by host Governments, especially for smaller projects where the overhead costs of implementing existing structures can be prohibitive. Currently implemented innovative models include donor-subsidized RET investment programs or supranational offtake initiatives.

C. Respective advantages and disadvantages for RE PPP types

The RE PPP sector is less characterized by different PPP structures or contract models, but rather by diversity in PPP delivery approaches and varying structuring of risk within the transaction documents (PPA, IA). Furthermore, the RE PPP sector is much more suitable to deliver a multitude of projects through dedicated procurement programs. Until recently however, most RE PPP were delivered in form of single concessions. In these cases, the host Government and/or the utility negotiated a single transaction predominantly based on preceding unsolicited bids by the private sector. Falling technology prices, standardized project delivery and financing models as well as the involvement of external expertise for development of specialized procurement procedures have enabled host Governments to structure iterative tender programs. Yet, such RE PPP programs are not suitable for all market scenarios. Single Concession or Joint Venture RE PPP will continue to play a role for particular project sizes and technologies.

<table>
<thead>
<tr>
<th>RE PPP Programmes</th>
<th>Single Concession</th>
<th>Joint Venture RE PPP</th>
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<tbody>
<tr>
<td><strong>Pros</strong></td>
<td><strong>Cons</strong></td>
<td><strong>Pros</strong></td>
</tr>
<tr>
<td>Scalability</td>
<td>Require long-term dedicated governmental support and complex sectorial arrangements</td>
<td>Potentially quicker to implement than a full RE PPP programme</td>
</tr>
<tr>
<td></td>
<td>Long preparation time and costly</td>
<td>Suitable for large, site-dependent RE PPP projects such as hydropower or geothermal</td>
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<tr>
<td>Likely lower power tariffs</td>
<td></td>
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<tr>
<td>Lower transaction costs per project</td>
<td></td>
<td>Dividends as revenue source</td>
</tr>
<tr>
<td>Attract investors and financiers more efficiently</td>
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While individual projects can bring great benefits, more efficient outcomes can be achieved with procurement programmes which deliver economies of scale. RE PPP programs should be developed
through a phased approach to allow for institutional capacity development, price discovery and overall risk reduction for both the host Government and private sector.

The success of an RE PPP programme is a function not only what the host Government decides to do, but also how it goes about the design of programme. The ‘how’ aspect of PPP programs is about:

- the process of programme development which a host Government implements from the start;
- constant and complete stakeholder engagement – including affected local communities, private investors, financiers, transmission system operator, off-taker, relevant ministries;
- the size and impact of the whole programme and of the individual projects within it; and
- the allocation of risk on the (ideally) standardized transaction documentation.
A. **PPPs Meeting People First Objectives – Replicability, Scalability, Equity, Efficiency, Sustainability, Effectiveness Demonstrated**

In light of the 2030 Sustainable Agenda, and in place of a purely mathematical measure of VfM, the concept of “People First PPPs” provides a metric which seeks to measure whether PPPs are ‘fit for purpose’ for the UN SDGs, their ability to provide poverty alleviation, and the degree to which they bring transformational effect to the communities in which they serve.

Recommendation of a SDG compliant model

As in many other sectors, there is no “one size fits all” PPP model for RE. The multitude and diversity of inputs – including, but not limited to local context, financial markets, RE policy, regulatory and political aspects - make it impossible to recommend a standard approach to delivering a People First PPP in the RE sector. To use the positive effects of economic scale, evidently larger programs are more suited to deliver many of the desired outcomes than one-off RE PPP projects. However, many EMDE countries will not have the financial means to shoulder such programs and they might not even have the demand for larger RE-based electricity additions or ability for the grid to absorb such new capacity.

An RE PPP programme should educate stakeholders about the ultimate project cost and its impact on the consumer over time, the affordability of electricity for the population at large and other affected parties (departments of finance, utilities, private sector as an off-taker, energy intensive users etc.).

The size of the programme can place significant strain on the balance sheet of a country, especially where revenues are constrained by regulation or the ability of the consumer to pay. This is true for both the utility, which has to purchase additional RE capacity at potentially higher cost, as well as for host Governments who provide explicit or quasi-sovereign guarantees. The impact of RE PPP projects and programs should therefore be subjected to cautious due diligence and a comprehensive review of a country’s ability to meet its obligations under the RE PPP programme.

An efficient RE PPP procurement programme should also be embedded in a broader process or integrated plan which should include realistic supply and demand forecasts, least cost planning associated with the energy mix, resource assessments, transmission network development and broader power sector development. It is incumbent upon a host Government in launching an RE PPP procurement programme to assess the building blocks of its programme, for example, availability of data on resource assessments, transmission risks, and land titles, and design a process that takes its strengths and weaknesses into account.

RE PPP programmes targeting intermittent power sources impose additional requirements to a country’s grid absorption capacity and management. Ignoring these principles usually leads to a higher cost of service and a risk mitigation programme which leaves the host Government with risk that should be borne by the private investors.

Some additional key considerations and recommendations are provided below irrespective of the scale of the RE PPP programme:

**Environmental and Social Sensitivity**

Another important component of RE PPP projects that are SDG compliant and put people first is environmental and social sensitivity. People First RE PPP projects must be designed, implemented and operated in full compliance with domestic environmental and social protection laws as well as international best practice standards and include:

- policies to guide the partnership with respect to environmental and social impacts;
- a process to identify and assess those impacts;
- development of a management programme, including mitigation measures, which address the impacts throughout the life of the project; and
- communication and disclosure practices that identify and communicate with stakeholders who are affected by the project, and
- a grievance mechanism to resolve outstanding stakeholder issues, in particular for projects which involve resettlement.
For example, large-scale RE PPPs, in particular hydropower projects, can have adverse effects on ecosystems which sustain community livelihoods far beyond the vicinity of the project. Accordingly, People First RE PPP stakeholders must avoid or mitigate irreversible impacts on biodiversity, natural habitats and protected areas and be aware of the breadth of potential stakeholders, however remote to the project.

Gender aspects also must be taken into account – in particular in cases of resettlement and compensation - and should address equity, equality, security and gender balance in the structuring of the partnership.

Maximizing direct public benefits

To maximize public benefit, host Governments should explore opportunities for local long-term job creation and skill building. Mandatory requirements in the RE PPP programme however require diligent and realistic assessments of what the domestic workforce and suppliers can provide for an RE PPP. Making economic development criteria part of the project selection process can be a powerful tool; however, it might have an adverse impact on tariffs. Equally, community shareholding can contribute positively to public benefits, yet require an increased tariff in order to protect expected dividends for project investors.

Improving the Baseline

To build an RE PPP programme which will have the transformational effect called for in the UN SDGs, host Governments should aim to develop an RE policy framework which will bring not only successive projects but drive down the cost of RE PPP transactions. This is especially imperative for low and middle income countries. Some practical, low cost measures include:

- **policy guidelines** - identification by the public sector of priority technologies and regions for investment, as well as lists of potential projects / project sites;
- **resource mapping** – mapping RE resource, collecting RE resource data (wind speed, irradiation, hydrology, etc.) on an ongoing basis and publishing this data;
- **investor guidelines** - development of detailed investor guidelines, which set out clearly all steps investors must take, including in particular permits and consents, etc., which must be obtained from Government authorities from project initiation through to commercial operations, as well as guides to the tax treatment and investment incentives available;
- **standardised project agreements** – development of a full suite of realistic, technology specific, bankable project documentation that is also customisable;
- **engagement of external advisors** – working with financial, legal and technical advisors can help designing an efficient RE PPP programme or project in line with international best practice, attracting more prospective investors, and driving the competition up and prices down. Associated costs can be sponsored through MFI support programs or recuperated through the project;
- **site selection, early project development** - site selection or identification of priority locations by the public sector, as well as carrying out preliminary legal and technical due diligence which can be shared with all shortlisted bidders;
- **RE appropriate grid code** – acknowledging RE, and the specific requirements and technical limitations of various RE technologies, in the grid code, and development of detailed RE grid connection guidelines; and
- **Interconnection and associated costs** – governments, utilities and / or regulators must provide uniform and transparent interconnection procedures, guidelines and application forms for RE generation connection. It is also important to provide transparency on how required grid network upgrades triggered by RE PPP are identified and associated cost responsibilities allocated to specific generation projects.
V. Delivering the Models

Project Selection / Baseline requirements for Private interest (for the Sector).

Baseline requirements for Private interest

Allocation of Risk

As presented under IV, each facilitation and delivery approach for RE PPP has its respective merits and disadvantages. The most suitable model for a specific project depends on a variety of input factors. Most of these input factors also feed into the risk profile of a project. A project’s cost of capital reflects the actual and perceived risks by the investor with carrying out the project, including risk categories such as inflation risk, interest rates risk, political and regulatory risk, project design, financing, construction, operation and maintenance risks, demand and regulatory risks.

Such perception must then be incorporated in the risk allocation of the transaction documentation to achieve bankability of a RE PPP transaction. Host Governments should ensure that the “golden rule” of risk allocation - that a risk should be allocated to the party who is best able to manage and/or mitigate it - is enshrined by the transaction.

Risks Typically Allocated to the Public Sector

Risks allocated to the host Government include change in law, change in tax, failure of Government authorities to issue requisite permits and consents (which have been properly applied for and diligently pursued by the project company), undue interference by public authorities / officials, war, civil commotion/unrest, strikes, in some cases unforeseeable ground conditions. In countries with weak FX spot and forward markets – the risk of currency convertibility and of macroeconomic crisis - projects are made viable by involving supranational Political Risk Guarantee products.

Where risk events which have been allocated to the ‘Government side’ (i.e., the host Government and/or a national utility offtaker) arise and are sufficiently prolonged or have sufficiently severe effects such that an early termination of the contract arises, the Government side will typically be required to purchase the generation facility. The purchase price will almost certainly be one which (a) covers any termination and transfer costs, (b) repays outstanding debt, (c) returns equity invested, and (d) provides a return on equity.

It is worth noting that if circumstances giving rise to requiring the host Government to purchase a project’s assets were to arise, it very possible that those circumstances may:

- affect most if not all energy (RE and non-RE) PPPs in a host country (e.g. the applicable circumstance may be a prolonged civil war); and
- coincide with a period when the host Government is least able to pay (and many EMDE host Governments may be unable to pay the early termination buyout price at any time).

A wide disparity exists in current market practice as to the formulation of the early termination buyout price formula (and resulting quantum of that price) which applies if the host Government is obliged to buy the generation facility upon early termination. This can have far reaching fiscal impacts for host Governments. Accordingly, host Governments should take specialist advice to:

- ensure that all relevant host Government personnel understand the surrounding issues and risks involved; and
- ensure that contingent liabilities which crystalize upon early termination are kept to the minimum level required for project financing.

One particular risk worth highlighting is ‘grid risk’; i.e., the risk that the electricity grid is not able to accept and/or evacuate electricity made available by the project company. Even when grid outages are caused by a force majeure event, project lenders in particular will require (as a condition to the provision of finance) that this risk is allocated either to the utility and/or to the host Government (i.e., that they should be obliged to reimburse the RE PPP for the revenue which it would have otherwise lost), on the bases that (a) the RE PPP cannot realistically insure against events which may be caused or occur anywhere on the electricity grid, and (b) the utility has the dual duties of ensuring that
the grid is robust in the first place, and re-instating the grid promptly if for any reason it is knocked out of service.

Host Governments should acknowledge the fact that they – as the private sector – might need to shoulder risks which cannot be fully controlled. Such risks include:

- risks associated with matching electricity supply and demand. This is particularly relevant for large RE PPP programs or projects, whose installed capacity may sometimes exceed 100% of a host country’s total peak demand (including the reserve capacity) at the time of inception;

- exchange rate risks (capital and repayment); and

- ‘political force majeure’ risks, such as war, civil disturbance, terrorist attack, currency convertibility, etc., which are not within the direct control of the host Government.

Risks Allocated to Investors

Different classes of investors have different risk appetites. This reality should be acknowledged and embraced. Generally, the private sector is willing to take the following risks: project cost, construction, technology, operation and maintenance risk.

Efficient Risk Allocation

In turn this ensures that host Governments and utilities are not burdened with any risks which are better allocated to other stakeholders, and it typically adds a high degree of rigour to the project analysis. RE PPPs typically require a relatively large number of stakeholders to agree a complex, interconnected allocation of risk and return, and this can be incredibly difficult to manage. For example, risks which are not allocated to the host Government and/or utility will initially be allocated to the SPV, either explicitly in the PPA and/or Implementation Agreement (or similarly named document), or simply by omitting to expressly allocate those risks to the host Government and/or utility.

In turn, the SPV will divide these risks and allocate them to other stakeholders, e.g. the EPC contractor, equity investors, lenders, et al., again either by an express contractual allocation and/or as a consequence of omitting to allocate certain risks to other stakeholders. One consequence is that the stakeholder who is ultimately expected to bear a certain risk may not be involved at the stage when that risk is defined and initially allocated to the SPV, in turn leading to a high propensity for renegotiation of principal project agreements, etc.

Legal and Regulatory Framework

Due to the high upfront investment costs, RE PPP projects generally require a significant degree of long-term investment certainty. A conducive legislative environment is one of the key contributors to investment security. In general, risk mitigation can be enhanced through a clear PPP framework, as well as public support commitments to the projects as part of the PPP framework. However, for the case of RE PPP procurements, potential procedural benefits of a general PPP framework can be conflicting with requirements for RE PPP procurement. Thus, any general PPP legislative framework needs to be aligned with other legal, regulatory or other enabling support measures for RE PPPs.

The existence of PPP legislation is thus not a necessary factor in the success of RE PPP development, and there are examples of unintended consequences of such legislation posing a significant barrier to infrastructure development. In various countries, host Governments have actually exempted RE PPP programs from the provisions of the PPP Acts and allowed for a regulation of the procurement process through the tender documentation.

An important factor to the success of an RE project and programme is the existence of a clear and well thought out enabling framework. At a minimum, this should authorize specific public authorities to use PPPs in RE projects, be flexible enough to not impede or prevent RE PPP development, and empower officials to strike the appropriate balance.

Power Purchase Agreements
Recognition should be given to the PPA's central role in raising finance from the private sector, in particular its role in creating the expected income stream against which financiers provide finance. In RE PPPs in EMDE countries, the PPA performs several important roles, including:

- providing the expectation of a long-term income stream against which the project will be financed;
- providing the contractual mechanisms for the sale and purchase of electricity; and
- setting the contractual obligations of the project company, in particular in respect to attaining the project commercial operation date ("COD"), and post-COD performance standards.

Each PPA will also require project specific tailoring to address such issues as:

- commissioning test procedures;
- whether a ‘capacity charge plus energy charge’ tariff structure is appropriate, or ‘delivered energy plus deemed energy’ tariff structure is appropriate;
- the methodology for calculating deemed energy; and
- appropriate performance requirements and the methodology for calculating performance.

It should be recognized that (a) a single PPA will not be appropriate for multiple generation technologies, and (b) if the PPA has not been tailored to a specific technology, it is unlikely to be ‘bankable’ for any technology. Expert advice should also be taken to optimize various provisions including liquidity support, economic stabilization, required performance standards and end of term transfer obligations (if any).

Finally, although the PPA is the cornerstone of RE PPP documentation, the PPA is part of suite of documentation which works together to allocate risk and responsibility between RE PPP stakeholders; even the best PPA is not a ‘bankable’ document without the package of documentation which surrounds it.

Host Government Support Agreements

RE PPPs in EMDE countries will almost invariably require host Government support in the form of a contract between the host Government and the project company.

This contract is given a variety of names in different countries, e.g. a ‘PPP Agreement’, ‘Concession Agreement’, ‘Implementation Agreement’, ‘Government Support Agreement’ etc.; however, its principal purpose is to allocate to the host Government those project risks which (as between the project stakeholders) which the host Government is best able to manage.

Project Finance

RE PPP in EMDE countries with project costs above circa US$20 million +/- are typically project financed; however, project finance often requires cumbersome and expensive processes leading to high fixed upfront transaction costs and extended timelines. Investors will need to accommodate project lenders who will be more risk averse than investors (as lenders expect a lower return than the project investors).

Project finance in EMDE countries is structured to:

- maximize the ratio of debt finance to equity investment, as the interest rates required by lenders are typically much lower than the returns sought by equity investors;
- lend against the expected long-term income stream flowing from the power purchase agreement ("PPA"), and not against the value of the underlying assets or a balance sheet;
- compensate the parties should the RE PPP project terminate early (i.e., before the expiry of the natural term of the PPA), because the expected value to the equity investors and lenders of the underlying infrastructure (i.e., largely immobile infrastructure with no certainty of a customer or means of earning income) is minimal at best;

There are no hard and fast rules; however, most project lenders have minimum deal sizes, below which they are not prepared to incur the significant time and expense required in project preparation (which in turn is to a large extent fixed regardless of the project size).
• accommodate project lenders who will be more risk averse than investors (as lenders expect a lower return than the project investors); and
• minimize recourse to the investor’s balance sheet.

Payment for capacity

It should be recognized that the private sector incurs fixed costs associated with constructing, financing and operating RE infrastructure regardless of the extent to which the public sector utilizes that infrastructure. Accordingly, payment under the PPA should be based on availability (including ‘deemed availability’) not on utilization.

Liquidity Support

Although the typical RE PPP structure is understood as a privately sponsored project with non-recourse or limited recourse project financing, in EMDE countries the government usually also guarantees the utility’s obligations, subsidizes the PPA tariff if end-user tariffs are not cost reflective, and/or may hold (directly or indirectly) some portion of the necessary equity and/or debt for the project.

A strong utility credit rating is usually key for underpinning a credible RE PPP programme or project. The reality in most EMDE countries is that utilities struggle to keep up with cost recovery and have poor payment track record. The first effort of host Governments therefore should be to map out a path for strengthening utility creditworthiness.

‘Liquidity support’ mechanisms to ensure timely payment to the project company include bank guarantees, letters of credit, or a cash escrow account. In many instances the bank guarantee or letter of credit provider will in turn require further backstopping with, for example, cash collateral or a partial risk guarantee provided by another credit worthy entity such as MIGA or some regional insurers, e.g. African Trade and Insurance Agency (ATI) in ATI member countries.

Feasibility for low and middle income countries

Electricity tariff

Electricity tariffs are an important socio-economic factor in EMDE countries. Low electricity prices may not only facilitate industrial development, but also decrease the financial burden on the poor. Thus, achieving lowest possible cost of electricity production must be a focus of People First PPPs in the RE sector. Host Governments should explore possibilities to lower project development and financing costs through appropriate regulatory and fiscal measures.

Lowering Risk Perceptions

Lowering risk perceptions may be achieved by improving the financial viability and performance of the electricity subsector as a whole through measures such as:

• implementing cost-reflective and adequate end-user tariffs, so that the Offtaker is not perceived to be structurally loss making and thus a high credit risk;
• improving the Offtaker’s revenue collection performance, e.g. by promoting pre-paid metering, again so that the Offtaker is perceived to be on a sound(er) financial footing; and
• importantly, ensuring that the Offtaker develops a good track record of timely payment to its existing IPP suppliers.

Fiscal burden

Host Governments have only partial (and sometimes quite limited) control over some of the risks typically allocated to them. However, in some EMDE countries, it is clear that if certain classes of events trigger an early-termination ‘put option’, accumulated claims could bankrupt the host country or, at least, significantly curtail public expenditure available for other public services. While there is no ‘magic bullet’, host Governments should at least:
• address the issues surrounding fiscal burden openly with all stakeholders;
• ensure that the Ministry of Finance (or equivalent), and where appropriate the Government Cabinet (or equivalent), (i) is fully apprised of the contingent liabilities which the host Government will take on in connection with an RE PPP, and (ii) formally approves the Government taking on those contingent liabilities;
• consider how it accounts for contingent liabilities which arise under ‘put and call option’ arrangements (or explicit sovereign guarantees if these are used); and
• embrace the other policy standards recommended in this document as a means of reducing the cost of project delivery, which in turn has a direct impact on fiscal burden.

Other Issues

Role of the Regulator

Financiers of RE PPPs in EMDE countries typically will not take the risk that regulated or market-determined wholesale electricity tariffs throughout the life of their project will stay at a level which will make the project economically viable. This may be due to perceived inexperience of the electricity regulator, perceived risk of political interference, or simply a ‘chicken and egg’ issue of the electricity regulator not having a sufficient track record of tariff setting, and thus being precluded from gaining and demonstrating that experience. It is thus a common feature of electric power RE PPP in EMDE countries is a requirement for a long-term (20-25 year) contractually agreed tariff, together with contractually agreed mechanisms to adjust the tariff should various risk events arise.

Building market acceptance of the regulator’s role will result from the absence of actual or perceived political intervention in the performance, decisions and awards made by the regulator. Independent regulators staffed with strong professionals will be more successful in attracting international investment into RE PPP.

Dispatchability of RE

In many EMDE countries the grid can be less reliable and ‘trip’ from time to time, in some case many times each month. The grid is also more likely to be prone both to constraints and to downtime during upgrades and even ‘small’ projects even though small can account for a material percentage of overall generation capacity. As a result, in these circumstances, if and when the grid is down and/or constrained, and the off-taker has a true ‘must take’ obligation, the offtaker can be in breach of contract, giving rise to an obligation to pay damages and potentially triggering cross-default provisions in other contracts.

In the alternative if there is a dispatch right (with an obligation to pay for deemed energy if it does not dispatch), then the deemed energy charges which arise would typically be identical to the damages which would have been payable for breach of contract under a ‘must take’ contract but the offtaker could also be in default and/or trigger ‘cross-default’ provisions in other contracts.

Climate Change

Risks resulting from climate change are often underestimated when host Governments and project investors analyse an RE PPP projects viability. It is important to diligently analyse and address such risks in early stages of an RE PPP project and agree on a fair share of subsequent revenue risks and eventually consider available mitigation instruments.
VI. Credits and References