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UNECE STANDARD ON PPPS IN RENEWABLE ENERGY

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UNECE Standard on PPPs in Renewable Energy

Implementing the United Nations 2030 Agenda for Sustainable Development

through effective

“People-First Public-Private Partnerships”

Abbreviation and terms	Meaning
ATI	African Trade Insurance Agency
COD	Commercial operation date
EMDE	Emerging markets and developing economies
EPC	Engineering Procurement and Construction.
GENCO	Generating company
IFI	International Finance Institutions (multilateral and bilateral development banks)
IPP	Independent power producer
LD	Liquidated damages
Load	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.
MIGA	Multilateral Investment Guarantee Agency
MW	megawatt (being 1,000,000 watts)
NDCs	Nationally Determined Contributions according to the Paris Agreement
Offtaker	Purchaser of electricity (in particular, in the context of energy (RE and non-RE) PPPs, the purchaser under the PPA)
PPA	Power purchase agreement
PPP	Public private partnership
PRG	Partial risk guarantee
PSA	Power sale / supply agreement
RE	Renewable energy
REFIT	Renewable energy feed in tariff
REIPPPP	South Africa’s Renewable Energy Independent Power Producer Procurement Program.
SE4ALL	Sustainable energy for all
SPV	Special purpose vehicle
UNECE	United Nation´s Economic Commission for Europe
UN SDGs	United Nations’ Sustainable Development Goals
VfM	Value for Money

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."*[1]

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."*[2]

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)[3] 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.

Renewable Energy PPPs as an alternative to 'traditional' public procurement of energy projects

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 RE 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.

Useful Definitions

For the purposes of this RE Standard, the International Energy Association's definition of **Renewable Energy** is acknowledged: *"Renewable energy is energy that is derived from natural processes (e.g. sunlight and wind) that are replenished at a higher rate than they are consumed. Solar, wind, geothermal, hydropower, bioenergy and ocean power are sources of renewable energy."*[4]

1 Sustainable Development Goal 7, "Progress of Goal 7 in 2016", https://sustainabledevelopment.un.org/sdg7.

2 Sustainable Development Goal 13, "Progress of Goal 13 in 2016", https://sustainabledevelopment.un.org/sdg13.

3 Sustainable Development Goal 17, https://sustainabledevelopment.un.org/sdg17.

4 https://www.iea.org/about/faqs/renewableenergy/

II. Objective of the Standard

This Standard provides policymakers with guidance and implementation tools for the design and implementation of People First PPPs in the RE Sector.

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 RE PPPs.

IV. Central questions

'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.

People First for Renewable Energy PPPs

In general terms, a host Government that undertakes 'People First" RE PPP projects would prioritize (in order):

- a sufficient amount of RE generation capacity is developed to meet electricity demand;
- RE generation assets in its country are prudently operated and maintained over the useful life of those assets; and
- consumers are charged the lowest possible tariff, and the Government takes on the lowest possible fiscal burden, in order to enable the above two objectives to be met.

Environmental and Social Sensitivity

Another important component of RE projects that are SDG compliant and put people first is environmental and social sensitivity. RE projects have an impact on the environment. After all, they rely on natural systems to generate energy and if not designed, implemented and operated in full compliance with domestic environmental and social protection laws, and international best practice standards, they risk having a negative impact on the environment. Governments must therefore:

- implement policies to guide the partnership with respect to environmental and social impacts;
- establish a process to identify and assess those impacts;
- develop a management programme, including mitigation measures, which address the impacts throughout the life of the project;
- employ communication and disclosure practices that identify and communicate with stakeholders who are affected by the project, and
- institute a grievance mechanism system 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 PPPs 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.

People first is not just the environment though. RE PPPs and the power they produce have the potential to create jobs and economic opportunities, increase access to education and improve

personal security, and even promote gender balance through structuring and procuring the partnership or providing power to underserved areas so women can grow their business.

Maximizing people benefits

To maximize the benefit a RE PPP project brings to people, host Governments should explore how their renewable energy projects can deliver more value. Mandatory requirements in a RE PPP programme however require diligent and realistic assessments of what the partners, suppliers, and projects can provide. 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 the commercial viability of the project.

A. Project types and examples

RE PPPs typically involve solar, wind, geothermal, hydropower and/or bioenergy based energy generation. They also 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 co-ordinated 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.

Many EMDE countries have successfully implemented co-ordinated RE PPP procurement programmes, including for example Brazil, Mexico 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 Indonesia.

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 must also provide some level of guarantee to back up the utility's obligations to the private partner. This could also occur through subsidies to support the tariff rates, in particular if end-user tariffs are not cost reflective, or governments holding (directly or indirectly) some portion of the equity and/or debt for the project in order to make it feasible.

Common features of RE Concession Structures

RE PPPs are typically concession structures where the government confers the right to develop and operate the RE facility to a private party and also agrees to buy some or all of the power it will produce through a 'power purchase agreements' (PPA).

RE concessions also 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 "Sponsors"), which will take on the responsibility of designing, financing, constructing, operating and maintaining the power generation facility over the life of the contract;

- a long term (typically 20-25 years) power purchase agreement 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;

Joint Venture RE PPPs

Another model is when the public entity and a private partner hold shares of an energy venture jointly and the project along the same principles as an independent power producer (IPP) (an independent

entity that generates power to sell to a utility or other end user). . However, joint ventures present additional administrative and corporate governance challenges (for example conflict of interest and regulatory interference issues) which may arise as a consequence of the institutionalized partnership.

Renewable Energy Procurement Programmes		Single Concession RE PPP		Joint Venture RE PPP	
Pros	**Cons**	**Pros**	**Cons**	**Pros**	**Cons**
Scalability Likely lower power tariffs Lower transaction costs per project Attract investors and financiers more efficiently	Require long-term dedicated governmental support and complex sectorial arrangements Often require costly public support instruments	Potentially quicker to implement than a full RE PPP programme	One off transaction, so no scale and less added capacity Higher transaction and financing costs per MW, thus higher tariffs in most cases	Involvement of utility in JV may make RE PPP quicker Dividends as revenue source	No scalability Potential public interference and conflict of interest

B. Pros and Cons of RE PPPs

Complexity

Carrying out RE projects as PPPs can ensure that each risk is allocated to the party best able to manage and/or mitigate that risk. If done properly, this ensures, for example, that host Governments and utilities are not burdened with the risk of facility creation and generation. This risk allocation exercise also typically adds a high degree of rigour to the project analysis.

However, RE PPPs require a relatively large number of public and private participants to agree on a complex, interconnected allocation of risk and return. This can be very difficult to manage and require sophisticated technical, financial, legal, and/or transactional capacity.

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 or Implementation Agreement, or impliedly by failing to allocate those risks to the host Government and/or utility. In turn, the SPV will divide these risks and allocate them again to other contractors, investors, insurers, lenders, or other stakeholders best able to manage the risk, . 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, which in turn can lead to an unrealistic assignment of risk and increase the chance for renegotiation or other work out arrangement. Governments must therefore be prepared to tackle the complexity of partnering with a private partner and utilizing private finance to accomplish their energy needs.

C. PPPs Meeting People First Objectives – Replicability, Scalability, Equity, Efficiency, Sustainability, Effectiveness Demonstrated

In light of the 2030 Sustainable Agenda, and going beyond just measuring VfM of projects, the concept of "People First PPPs" provides a metric which seeks to measure the degree to which a project delivers 'value for people' (VfP) and whether the PPP is 'fit for purpose' for the UN SDGs, i.e., its ability to provide poverty alleviation, the degree to which it brings transformational effect to the communities it serves, etc.

A People First RE PPP therefore achieves more than simply energy generation. It should improve health and environmental quality in the location in which it is located by not only generating green energy in a clean and sustainable way, but reducing the negative effects of non-renewable energy generation like burning coal and gas. People First means projects are designed to create jobs and effect technology transfer to local markets to reduce unemployment and boost local and regional economic capacity. Projects that are implemented to make electricity more broadly available and accessible to people and improve personal security, improve access to healthcare, and offer people the ability to be more productive. Projects that create energy independence, reduce reliance on carbon based fuels, mitigate the negative effects of fluctuations of fuel markets on host governments and their citizens, and create long term savings for the government and the people.

To make this level of impact, however, most governments will need multiple projects and a full suite of RE projects, and while individual projects can bring great benefits, the most efficient outcomes can be achieved with procurement programmes that bring economies of scale. For this reason the recommended approach for governments is a RE Procurement Programme.

This Standard acknowledges, however, that each government's needs are different and single concession RE PPP or Joint Venture RE PPPs may also be suitable depending on, for example, the capacity of the jurisdiction to take on a comprehensive programme, the amount of generation required, the locational or system needs (such as grid coverage or reliability factors), and the financing and contracting/partnering approach. These single facility RE PPPs could also feed into a larger programme or act as pilot projects to test concepts, build capacity, and feed into a full RE PPP procurement programme.

V. Delivering the Models

General

RE PPP procurement programs should be closely considered by governments. Governments must weigh, alongside their sustainable development goals, their generation needs, capacity of the utility(ies) and governmental host institutions, the generation technology in question, overall strategy toward RE generation, and more. After making a full assessment, a RE PPP procurement programme may 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 procurement programme is therefore 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;
- the consistent process and activity of stakeholder engagement – including affected local communities, private investors, financiers, transmission system operators, off-takers, relevant ministries, etc.; and
- the size and impact of the programme and the individual projects within it.

An RE PPP procurement 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.), and the environmental impact of such initiatives and plans for mitigation.

Depending on the size of the programme, it can place a 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 planning 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 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 could otherwise be borne by the private investors[5].

Selection of Appropriate RE PPP projects / Baseline requirements for Private interest

Due to the high upfront investment costs, RE PPP projects generally require a significant degree of long-term investment certainty. However, the decision as to which PPP model is the most suitable depends on a variety of factors. One challenge faced by host Governments is determining simply whether an infrastructure project (RE or otherwise) is best suited to be delivered by a PPP. Governments should acknowledge that RE PPPs are not the panacea for all energy development initiatives, and it is therefore crucial in the planning phase to select RE projects that fit within the government's overall energy strategy but are well suited to the PPP model. Financial feasibility and operational objectives are key to this assessment, but private sector interest and overall viability of the project will be key to attracting qualified partners.

Efficient Risk Allocation

Risk is ideally allocated to the party best able to manage and/or mitigate that risk, despite the fact that it may not be fully controlled.

Nevertheless, these risk examples associated with RE generation and PPPS are by their nature very difficult to control for Governments:

- 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);
- '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; and
- climate change that may affect the efficiency of the systems or their level of generation.

A project's cost of capital will also reflect to seem degree these actual and perceived risks associated with carrying out the project. Such risk categories might include inflation risk, interest rates risk, political and regulatory risk, project design, financing, construction, operation and maintenance risks,

[5] For example, a comparison of the outcomes of RE programs in India and Sub-Saharan Africa. As a result of the programme initiated by the Indian Government, wind and solar projects in India regularly result in levelized tariffs in Rupees equivalent of $0.08/kWh, where 50% of the tariffs goes towards capex and O&M, and 50% to interest and equity return. In contrast, a Sub-Saharan African project which did not follow such a process, would probably end-up with a tariff of US$ 0.12/kWh, where the level of capex and opex would be the same as with a project in India, with almost a 3.0x multiple going to equity return.

and demand and regulatory risks.

Risks Typically Allocated to the Public Sector

Risks commonly 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, and in some cases unforeseeable ground conditions. In countries with weak FX spot and forward markets – tools that could help mitigate the risk of currency convertibility and of macroeconomic crisis - projects are sometimes made viable by involving supranational Political Risk Guarantee products.

Where risk events which have been allocated to the Government arise, and they are sufficiently prolonged or have sufficiently severe effects such that an early termination of the contract arises, the Government 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 negotiated return on equity.

It is worth noting that if circumstances giving rise to requiring the host Government to purchase a RE 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, however, in current market practice as to the formulation of the early termination buyout price formula (and resulting quantum of that price), so governments should carefully consider fiscal impacts of such termination provisions. Accordingly, host Governments should:

- ensure that all relevant host Government personnel understand the surrounding issues and risks involved;

- ensure that contingent liabilities which crystalize upon early termination are kept to the minimum level required for project financing, and

- engage specialists in these areas where necessary.

One particular risk worth highlighting is 'grid risk'; i.e., the risk that the electricity grid is not able to accept the 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.

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.

Improving the Baseline

To build a 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. Some practical 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.

Financing

RE PPP with project costs above circa US$20 million +/-[6] are typically project financed; however, project finance often requires cumbersome and expensive processes leading to higher upfront transaction costs and extended negotiation and preparation timelines. Sponsors (and Governments) will need to accommodate project lenders who are more risk averse than investors/sponsors (as lenders expect a lower return than the project sponsors).

[6] 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 require required in project preparation (which in turn is to a large extent fixed regardless of the project size).

RE PPPs that are project financed are 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") (project finance), and not against the value of the underlying assets or a balance sheet (corporate finance);
- 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;
- accommodate project lenders; and
- minimize recourse to the investor's balance sheet.

Transaction Documentation

Power Purchase Agreements

Recognition should be given to the PPA's central role in raising finance from the private sector in RE PPP. Its role is to create the expected income stream against which financiers provide finance. In RE PPPs, 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 with respect to attaining the commercial operation date ("**COD**") of the project, 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. Crafting the PPA requires expert advice 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; thus even the best PPA is not 'bankable' without the package of documentation which surrounds it.

Liquidity Support

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

'Liquidity support' mechanisms (that ensure timely payment to the project company) are also important and can occur through 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.

Lowering Risk Perceptions

Lowering risk perceptions may also 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 utility (offtaker) is not perceived to be structurally loss making and thus a high credit risk;
- improving the utility's revenue collection performance, e.g. by promoting pre-paid metering, again so that the utility is perceived to be on a sound(er) financial footing; and
- ensuring that the utility develops a good track record of timely payment to its existing IPP suppliers.

Feasibility for low and middle income countries

Fiscal Burden

RE PPPs in EMDE countries face many of the same challenges as those in more affluent countries, but those challenges can have a much larger impact on the success or failure of a project or programme in a low and middle income country. For example fiscal burden of a project should be accounted for in all jurisdictions, but the cost of a project and its contingent liabilities can have a disproportionate impact in an EMDE country over that of its more wealthy neighbours.

This, coupled with the fact that host Governments have only partial (and sometimes quite limited) control over the risks allocated to them, it is clear that certain classes of termination events, for example an early-termination 'put option' and any accumulated claims, could bankrupt the host country or, at least, significantly curtail public expenditure available for 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.

Electricity tariff

Electricity tariffs are also 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.

New innovative RE PPP models

Achieving financial close on RE PPPs in EMDE countries is difficult. Innovations should be embraced, especially for smaller projects where the predevelopment and project costs of implementing existing models can be prohibitive. Simplified contracts and project models are also recommended in order to

combat the complexity, expense, and high level of technical, financial, legal, and/or transactional capacity that is often needed.

In addition, in many EMDE countries, the first power generation (RE and non-RE) PPPs were individually negotiated on an *ad hoc* basis. In some circumstances these lead projects set *de facto* market standards, and host Governments should employ new models such that over time they are able to wind back at the margins, e.g. the support that is expected projects, more favorable terms and conditions, etc.

REFITs

EMDE countries should also consider renewable energy feed in tariff ("**REFIT**") regimes which 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.

One necessary consequence of an REFIT regime is that the prescribed tariff for a particular project will almost certainly either be:

- too high, i.e. more than what would be required in order to attract the private sector investment required to carry out the project. In this case the project's private investors may be thought of as being over-compensated at the expense of electricity consumers (and/or host Governments to the extent of any subsidy of the tariff); or

- too low, i.e., less than what would be required in order to attract the capital investment required to carry out the project, in which case certain projects which may well be very worthy for any number of reasons will not be financed by the private sector.

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.

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 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.

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, Governments in EMDE countries should expect payment under the PPA to be based on availability (including 'deemed availability') not on utilization.

Dispatchability

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

Other Issues

Risks resulting from climate change are often underestimated when host Governments and project sponsors 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 insurance instruments.

Indicators of Compliance

Access to energy / universality (electricity, cooking fuel, etc.)
Share of renewables in the national mix
Reduction in air, water, land pollution
Reduction in poverty
Economic productivity
Healthcare outcomes