

RESTRICTED
WP PPP/ENERGY/01
November 2017

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE
WORKING PARTY ON PUBLIC-PRIVATE PARTNERSHIPS (WP PPP)

Proposed Draft

DRAFT UNECE STANDARD ON PPPs IN RENEWABLE ENERGY

**Implementing the United Nations 2030 Agenda for Sustainable Development
through effective
“People-First Public-Private Partnerships”**

SOURCE: Renewable Energy Project Team

ACTION: Interim draft

STATUS: Draft v3

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Abbreviation and terms	Meaning
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

1 I. Introduction

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

3 The United Nation’s commentary on the progress of **Sustainable Development Goal 7** in 2016
4 states, inter alia, *“Energy is crucial for achieving almost all of the Sustainable Development Goals,
5 from its role in the eradication of poverty through advancements in health, education, water supply
6 and industrialization, to combating climate change.”*¹

7 Furthermore, the United Nation’s commentary on the progress of **Sustainable Development Goal
8 13** in 2016 states, inter alia, *“climate change presents the single biggest threat to development, and
9 its widespread, unprecedented impacts disproportionately burden the poorest and most vulnerable.”*²

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

12

13 The Role of RE PPPs in Sustainable Development

14 The UN SDGs cannot be realized unless the private sector is mobilized – and on a significant scale.
15 SDG 17 (Revitalize global partnerships for sustainable development)³ calls for partnerships between
16 the public and the private sector as well as civic society.

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

21 For the purposes of this Standard, the International Energy Association’s definition of **Renewable
22 Energy** is used: *“Renewable energy is energy that is derived from natural processes and that are
23 replenished at a higher rate than they are consumed. Solar, wind, geothermal, hydropower,
24 bioenergy and ocean power are sources of renewable energy.”*⁴

25

26 PPPs as an alternative to ‘traditional’ public procurement

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

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

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/>

38

39 **People First PPPs**

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

47

48 **Implications for People First for RE PPPs**

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

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

59

60 II. Objective of the Standard

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

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

66 and thereby deliver a RE PPP at an affordable cost. This Standard focuses on the facilitation
67 and delivery models for new (“greenfield”) RE PPP projects. However, PPP options for existing
68 RE assets are also presented in relevant sections.
69

70 III. Scope of the Standard

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

75 IV. Central questions

76 A. Selection of Appropriate RE PPP projects

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

84 B. PPP types and examples in the RE PPP sector

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

90 Common features of RE PPP Structures

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

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

105 RE PPP programs

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

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

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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

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117

118 Joint Venture RE PPPs

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

123 Concession models for existing assets projects (“brownfield”)

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

130 New innovative RE PPP models

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

136 **C. Respective advantages and disadvantages for RE PPP types**

137 The RE PPP sector is less characterized by different PPP structures or contract models, but rather by
 138 diversity in PPP delivery approaches and varying structuring of risk within the transaction documents
 139 (PPA, IA). Furthermore, the RE PPP sector is much more suitable to deliver a multitude of projects
 140 through dedicated procurement programs. Until recently however, most RE PPP were delivered in
 141 form of single concessions. In these cases, the host Government and/or the utility negotiated a single
 142 transaction predominantly based on preceding unsolicited bids by the private sector. Falling
 143 technology prices, standardized project delivery and financing models as well as the involvement of
 144 external expertise for development of specialized procurement procedures have enabled host
 145 Governments to structure iterative tender programs. Yet, such RE PPP programs are not suitable for
 146 all market scenarios. Single Concession or Joint Venture RE PPP will continue to play a role for
 147 particular project sizes and technologies.
 148

RE PPP Programmes		Single Concession		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 Long preparation time and costly	Potentially quicker to implement than a full RE PPP programme Suitable for large, site-dependent RE PPP projects such as hydropower or geothermal	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 implementable Dividends as revenue source Building technical capacity in public JV partner	No scalability Potential public interference and conflict of interest

149

150 While individual projects can bring great benefits, more efficient outcomes can be achieved with
151 procurement programmes which deliver economies of scale. RE PPP programs should be developed
152 through a phased approach to allow for institutional capacity development, price discovery and overall
153 risk reduction for both the host Government and private sector.

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

- 156 • the process of programme development which a host Government implements from the start;
- 157 • constant and complete stakeholder engagement – including affected local communities, private
158 investors, financiers, transmission system operator, off-taker, relevant ministries;
- 159 • the size and impact of the whole programme and of the individual projects within it; and
- 160 • the allocation of risk on the (ideally) standardized transaction documentation.

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165 **D. PPPs Meeting People First Objectives – Replicability, Scalability, Equity, Efficiency,**
166 **Sustainability, Effectiveness Demonstrated**

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

171 **Recommendation of a SDG compliant model**

172
173 As in many other sectors, there is no “one size fits all” PPP model for RE. The multitude and diversity
174 of inputs – including, but not limited to local context, financial markets, RE policy, regulatory and
175 political aspects - make it impossible to recommend a standard approach to delivering a People First
176 PPP in the RE sector. To use the positive effects of economic scale, evidently larger programs are
177 more suited to deliver many of the desired outcomes than one-off RE PPP projects. However, many
178 EMDE countries will not have the financial means to shoulder such programs and they might not even
179 have the demand for larger RE-based electricity additions or ability for the grid to absorb such new
180 capacity.

181
182 An RE PPP programme should educate stakeholders about the ultimate project cost and its impact on
183 the consumer over time, the affordability of electricity for the population at large and other affected
184 parties (departments of finance, utilities, private sector as an off-taker, energy intensive users etc.).

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

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

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

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

204 Environmental and Social Sensitivity

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

- 209 • policies to guide the partnership with respect to environmental and social impacts;
210 • a process to identify and assess those impacts;
211 • development of a management programme, including mitigation measures, which address the
212 impacts throughout the life of the project; and

- 213 • communication and disclosure practices that identify and communicate with stakeholders who are
214 affected by the project, and
215 • a grievance mechanism to resolve outstanding stakeholder issues, in particular for projects which
216 involve resettlement.

217 For example, large-scale RE PPPs, in particular hydropower projects, can have adverse effects on
218 ecosystems which sustain community livelihoods far beyond the vicinity of the project. Accordingly,
219 People First RE PPP stakeholders must avoid or mitigate irreversible impacts on biodiversity, natural
220 habitats and protected areas and be aware of the breadth of potential stakeholders, however remote
221 to the project.

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

225 Maximizing direct public benefits

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

233 **Improving the Baseline**

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

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

262 network upgrades triggered by RE PPP are identified and associated cost responsibilities allocated
263 to specific generation projects.

264

265

266 **V. Delivering the Models**

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

268

269 **Baseline requirements for Private interest**

270 Allocation of Risk

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

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

281

282 Risks Typically Allocated to the Public Sector

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

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

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

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

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

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

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

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

320

- 321 • risks associated with matching electricity supply and demand. This is particularly relevant for
322 large RE PPP programs or projects, whose installed capacity may sometimes exceed 100% of a
323 host country's total peak demand (including the reserve capacity) at the time of inception;
- 324 • exchange rate risks (capital and repayment); and
- 325 • 'political force majeure' risks, such as war, civil disturbance, terrorist attack, currency
326 convertibility, etc., which are not within the direct control of the host Government.

327 Risks Allocated to Investors

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

331

332 Efficient Risk Allocation

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

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

347

348 Legal and Regulatory Framework

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

356

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

362

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

367 Power Purchase Agreements

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

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

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

- 377 • commissioning test procedures;
- 378 • whether a 'capacity charge plus energy charge' tariff structure is appropriate, or 'delivered energy
379 plus deemed energy' tariff structure is appropriate;
- 380 • the methodology for calculating deemed energy; and
- 381 • appropriate performance requirements and the methodology for calculating performance.

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

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

391 Host Government Support Agreements

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

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

398

399 Project Finance

400 RE PPP in EMDE countries with project costs above circa US\$20 million +/-⁵ are typically project
401 financed; however, project finance often requires cumbersome and expensive processes leading to

⁵ There are no hard and fast rules; however, most project lenders have minimum deal sizes, below which they

402 high fixed upfront transaction costs and extended timelines. Investors will need to accommodate
403 project lenders who will be more risk averse than investors (as lenders expect a lower return than the
404 project investors).

405 Project finance in EMDE countries is structured to:

- 406 • maximize the ratio of debt finance to equity investment, as the interest rates required by lenders
407 are typically much lower than the returns sought by equity investors;
- 408 • lend against the expected long-term income stream flowing from the power purchase agreement
409 (“PPA”), and not against the value of the underlying assets or a balance sheet;
- 410 • compensate the parties should the RE PPP project terminate early (i.e., before the expiry of the
411 natural term of the PPA), because the expected value to the equity investors and lenders of the
412 underlying infrastructure (i.e., largely immobile infrastructure with no certainty of a customer or
413 means of earning income) is minimal at best;
- 414 • accommodate project lenders who will be more risk averse than investors (as lenders expect a
415 lower return than the project investors); and
- 416 • minimize recourse to the investor’s balance sheet.

417

418 Payment for capacity

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

423

424 Liquidity Support

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

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

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

439

440 **Feasibility for low and middle income countries**

441 Electricity tariff

442 Electricity tariffs are an important socio-economic factor in EMDE countries. Low electricity prices may
443 not only facilitate industrial development, but also decrease the financial burden on the poor. Thus,
444 achieving lowest possible cost of electricity production must be a focus of People First PPPs in the RE

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).

445 sector. Host Governments should explore possibilities to lower project development and financing
446 costs through appropriate regulatory and fiscal measures.

447

448 Lowering Risk Perceptions

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

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

457 Fiscal burden

458 Host Governments have only partial (and sometimes quite limited) control over some of the risks
459 typically allocated to them. However, in some EMDE countries, it is clear that if certain classes of
460 events trigger an early-termination 'put option', accumulated claims could bankrupt the host country
461 or, at least, significantly curtail public expenditure available for other public services. While there is
462 no 'magic bullet', host Governments should at least:

- 463 • address the issues surrounding fiscal burden openly with all stakeholders;
- 464 • ensure that the Ministry of Finance (or equivalent), and where appropriate the Government
465 Cabinet (or equivalent), (i) is fully apprised of the contingent liabilities which the host
466 Government will take on in connection with an RE PPP, and (ii) formally approves the
467 Government taking on those contingent liabilities;
- 468 • consider how it accounts for contingent liabilities which arise under 'put and call option'
469 arrangements (or explicit sovereign guarantees if these are used); and
- 470 • embrace the other policy standards recommended in this document as a means of reducing the
471 cost of project delivery, which in turn has a direct impact on fiscal burden.

472

473 Other Issues

474 Role of the Regulator

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

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

487 Dispatchability of RE

488 In many EMDE countries the grid can be less reliable and 'trip' from time to time, in some case many
489 times each month. The grid is also more likely to be prone both to constraints and to downtime
490 during upgrades and even 'small' projects even though small can account for a material percentage of
491 overall generation capacity. As a result, in these circumstances, if and when the grid is down and/or
492 constrained, and the off-taker has a true 'must take' obligation, the off-taker can be in breach of

493 contract, giving rise to an obligation to pay damages and potentially triggering cross-default
494 provisions in other contracts.

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

499 **Climate Change**

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

504

505 **VI. Credits and References**

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