



TAP

Transformative
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Program

**BÉNIN
ENERGY
PLUS**

Public Private Partnership for renewable energy projects in cities and regions

- *Inventory for the Benin Energy Plus Project* -



This document is a deliverable of the “Benin Energy Plus” Project

About the Benin Energy Plus Project

Funded by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), the Benin Energy Plus project is delivered in a partnership between ICLEI - Local Governments for Sustainability and the Association Nationale des Communes du Bénin (ANCB). The project is part of the GIZ Green People’s Energy program, which aims to provide conditions for supplying regions in rural Africa with decentralised renewable energy, assisted by the involvement of citizens and the private sector.

To achieve this objective, the implementing partners have joined forces to strengthen and leverage enablers to bridge capacity and financing gaps to the access of renewable energy at the local level. The project will further build the capacities of relevant local stakeholders and support them to develop suitable PPP financing models for the implementation and maintenance of identified Solar Photovoltaic (PV) solutions

About ICLEI - Local Governments for sustainability

ICLEI - Local Governments for Sustainability is a global network working with more than 2,500 local and regional governments committed to sustainable urban development. Active in 125+ countries, ICLEI influences sustainability policy and drives local action for low emission, nature-based, equitable, resilient and circular development. ICLEI’s Members and team of experts work together through peer exchange, partnerships and capacity building to create systemic change for urban sustainability.

About Association Nationale des Communes du Bénin (ANCB)

The Association Nationale des Communes du Bénin is the structural organisation of Beninese communities. Since its creation in November 2003, one of its objectives has been to serve as an interface between communes and public authorities on the one hand, and between communes and partners on the other, in order to represent and defend the interests of its members. The ANCB has positioned itself as a key player in the relations between communes and decentralisation actors in Benin, in the promotion of local development and grassroots democracy. In cooperation with development partners, it supports solidarity between Beninese local authorities and decentralised cooperation.

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LIST OF ABBREVIATIONS

BLOT	Build-Lease-Operate-Transfer
BOLT	Build-Operate-Lease-Transfer
BOO	Build-Own-Operate
BOOT	Build-Own-Operate-Transfer
BOT	Build-Operate-Transfer
CBO	Community-based organisation
DBO	Design-Build-Operate
LG	Local government
LRG	Local and regional governments
NGO	Non-governmental organisation
O&M	Operating and Maintenance contracts
PPP	Public-private partnership
SPV	Special Purpose Vehicle
VFM	Value for money

1. What is a PPP?

1.1 Definition

Public-private partnership (PPP) can be broadly defined as a contractual agreement between the government or government owned entity and a private firm targeted toward financing, designing, implementing, and operating infrastructure facilities and services that are traditionally provided by the public sector. For example, provision of security, electricity, water, etc. to the citizens. It embodies optimal risk allocation between the parties— allowing investments that the public partner would not be able to afford on its own while realising project developmental objectives. To engage the private sector, usually a reasonable rate of return on its investment is a prerequisite of PPP projects the private sector gets. (World Bank 2022b)

A PPP is based on two main principles: (i) both parties invest in the project in a financial sense (manpower, materials budget) and in an expertise-related sense (knowledge, networks). (ii) parties contribute to a societal and often also commercial purpose.

Therefore, PPPs present a framework that—while engaging the private sector—acknowledge the role of the government in ensuring that social obligations are met and necessary public investments are realised.

Box 1 - PPP: Key characteristics

- a. A contractual agreement defining the roles and responsibilities of the parties,
- b. Sensible risk-sharing among the public and the private sector partners, and
- c. Financial rewards to the private party commensurate with the achievement of pre-specified Outputs.

Source: Basics of Public Private Partnerships

1.2 Roles and participation

Regarding the division of roles and participation, PPP is a framework that—while engaging the private sector—acknowledges and structures the role of the government in ensuring that social obligations are met and successful sector reforms and public investments are achieved. A well-structured PPP allocates tasks, obligations, and risks among the public and private partners in an optimal way. (ADB 2008)

The public partners are typically government entities, including ministries, departments, municipalities, or state-owned enterprises. On the other hand, the private partners can be local or international businesses or investors with technical or financial expertise relevant to the project. Increasingly, PPP can also include consultations with non-governmental organisations (NGOs) and/or community-based organisations (CBOs) who represent the stakeholders directly affected by the project, which are not consider nor as private or public partner (ADB 2008)

In this sense, the public sector's contribution to a PPP can include the provision of part of the capital for investment (available through tax revenues, among others) and the transfer of assets.

Local and regional governments can also raise social responsibility, environmental awareness, local knowledge, and mobilise political support.

On the other hand, the private sector’s role is to use its expertise in commerce, management, operations, and innovation to run the business efficiently. The private partner may also contribute investment capital depending on the form of contract. The level of the private sector’s participation can cover a spectrum from short-term service contracts at one end all the way through to full privatisation (disinvestment).

As Table 1 shows, all the stakeholders involved in PPPs have specific roles. Each role is critical, yet specific stakeholders will have different interests that influence how they approach their role.

Table 1 - Roles of different stakeholders in PPP

Stakeholder	Role
Political decision makers	<ul style="list-style-type: none"> Establish and prioritize goals and objectives of PPP and communicate these to the public Approve decision criteria for selecting preferred PPP option Approve recommended PPP option Approve regulatory and legal frameworks
Company management and staff	<ul style="list-style-type: none"> Identify company-specific needs and goals of PPP Provide company-specific data Assist in marketing and due diligence process Implement change
Consumers	<ul style="list-style-type: none"> Communicate ability and willingness to pay for service Express priorities for quality and level of service Identify existing strengths and weaknesses in service
Investors	<ul style="list-style-type: none"> Provide feedback on attractiveness of various PPP options Follow rules and procedures of competitive bidding process Perform thorough due diligence resulting in competitive and realistic bidding
Strategic consultants	<ul style="list-style-type: none"> Provide unbiased evaluation of options for PPP Review existing framework and propose reforms Act as facilitator for cooperation among stakeholders

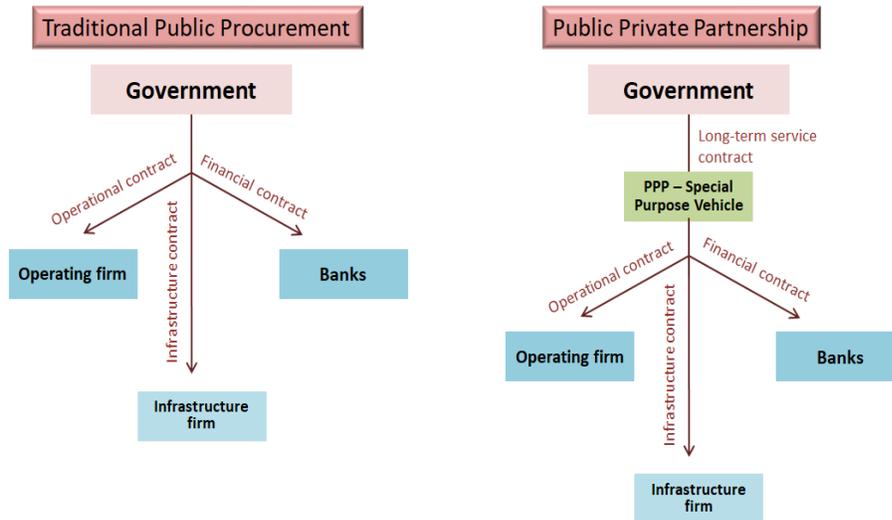
Source: Heather Skilling and Kathleen Booth. 2007.

2. How does a PPP work?

Figure 1 shows, PPPs change the typical governmental framework and flows to manage projects. While in traditional public procurement the public sector party must fully take care of the implementation of the project, whereas in a PPP the government commissions a private partner, which is then also responsible for further actions, where the responsibility, liability and ownership, between the government and private organisation, is defined by the terms and conditions of the PPP agreement.

Figure 1 - Differences between the traditional and PPP schemes

Source: Eurac Research 2018



In a public private partnership, the government or public entity awards a contract to the private sector partner, which then creates a company to operate the contract. This company is the so-called Special Purpose Vehicle (SPV). This is a key feature in the implementation of

PPP models and it is the element that differentiates PPPs from the traditional public procedures.

SPV consists of a legal entity that undertakes a project, working as managing and operating company. It is usually established as a mechanism through which the funds are channelled and the financial model implemented. SPV signs a contract with the government and negotiates all contractual agreements between the various parties. It manages the sub-contracts of the construction and the maintenance of the asset and operation of the service.

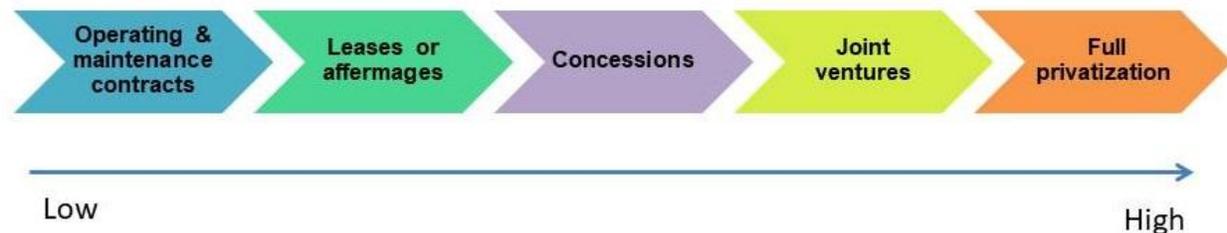
Regarding financial flow, the public entity can compensate the private partner in different forms. One option is an unitary payment to the SPV, which can be related to the performance of the private party's obligations included in project deliverables. Another alternative is the establishment of charges or fees. The private partner uses this fee to repay the loans and pay dividends to its shareholders. This payment can take the form of an interest by the entity that can result in an investment.

The ownership structure of the SPV can be shared among public and private partners, deciding the percentage that each of the sides will cover. After that, the SPV starts operating as a separate entity, which avoids it being constrained by public sector rigidities and keeps it focused on its goals. The host government authorises the SPV to carry out the project, while the private sector is authorised to operate the business based on a long-term concession agreement. (OECD 2014).

3. Types of PPPs

Depending on the extent of the private sector engagement and risk allocation, there are different types of PPPs.

Figure 2 - Extent of private sector participation



3.1. Management/Operating and Maintenance contracts (O&M)

Box 2 - O&M as a waste management tool in Europe

In 2021, Acciona has been awarded three O&M contracts to operate and manage 300 wastewater treatment plants and 600 pumping stations in Italy. The company will be in charge of operating the wastewater treatment plants and pumping stations, as well as waste collection and ordinary and extraordinary maintenance.

Acciona will provide expertise to enhance energy efficiency and foster the circular economy and sustainability.

Source: Smart Water Magazine 2021

In these agreements, the public partner contracts a private company for implementing certain services or actions. It is generally a short term engagement (2 to 5 years) in which the private sector is paid a fixed fee to cover staff and expenses. The remuneration does not depend on collection of tariffs and the private operator does not typically take on the risk of asset condition, which is borne by the public party. The agreements can include a performance-based clause, obliging the private party to take over some operational risks. (PPP Knowledge Lab 2021a)

3.2. Leases or affermages

Leases or affermages are arrangements under which the private operator is responsible for operating and maintaining the project but not for financing the investment. The public sector might choose this option when the awarding authority (i.e. entity or department that awards or is otherwise responsible for the administration of a service contract) wants to combine public financing with attracting private efficiency or when greater commercial risk is to be passed to the private operator than with a management contract, with incentives to perform. (World Bank 2022b)

In **leases** contracts, the public sector is the owner of the assets and contracts a private company as the operator. In this case, contracts last from 8 to 15 years. The operator (private sector) does not receive a fixed fee for his services but charges a fee to consumers (public sector). In the case of a lease, a portion of the receipts goes to the awarding authority as a lease fee and the remainder being retained by the operator.

On the other hand, in the case of an **affermage**, the operator (private partner) retains the operator fee out of the receipts and pays an additional surcharge. This expense is, then, charged to customers and is converted into investments that the awarding authority makes/ has made in the infrastructure.

The contracts are usually from 8 to 15 years, including a review process every 4 or 5 years to check some features as performance and costs. The cost of maintenance is transferred to the operator. In this sense, the operator takes some degree of asset risk in terms of the performance of the assets.

Box 3 - New India New Railways

The initiative, created in 2020 by the Indian government, aims to modernize and increase the efficiency in Indian public transport. Through a BOLT model, the private entity is responsible for financing, procuring, operating and maintaining the trains, with the option of procuring trains through a leasing model. Indian Railways, a state-owned company, provides the infrastructure, such as access to tracks, statios, watering and cleaning lines. The private entity pays India Railways fixed haulage and energy charges, as well as a share in gross revenue.

Source: Jain 2020

a) Build-Operate-Lease-Transfer

(BOLT): In this approach, the government gives a concession to a private entity to build a facility (and possibly design it as well). Here, a private contractor builds a project on leased public land and operates the facility for the duration of the lease; once the lease is completed, ownership is transferred to the public entity or client. BOLT model is commonly employed on infrastructure projects. In 2020, India used this model to attract private investments on railways, as illustrated by the box.

b) **Lease-Develop-Operate (LDO):** In this type of investment model either the government or the public sector entity retains ownership of the newly created infrastructure facility and receives payments in terms of a lease agreement with the private promoter. It is mostly followed in the development of airport facilities.

c) **Build-Lease-Operate-Transfer (BLOT):** Under this type of PPPs, a facility which already exists and is under operation, is

Box 4 - BLOT in Turkey's public healthcare system

The BLOT model was employed in Turkey in the reform of the country's healthcare system. Under the scheme, launched in 2006, investors financed, constructed (or renovated, when necessary), operate and maintain the hospitals. The Ministry of Health remained responsible for providing medical services.

Source: UNECE, 2012

entrusted to the private sector partner for efficient operation, subject to the terms and conditions decided by mutual agreement. The contract will be for a given but sufficiently long period and the asset will be transferred back to the government at the end of the contract. Leasing a school building or a hospital to the private sector along with the staff and all facilities by entrusting the management and control, subject to predetermined conditions could come under this category.

3.3. Concessions

Concessions are usually the PPPs applied for infrastructure services. Here, the public sector gives a private “concessionaire” the right to use all utility assets, including responsibility for operations, maintenance and some investments. Asset ownership remains with the public authority and the authority is typically responsible for replacement of larger assets.

The concessionaire (private entity) will pay a concession fee to the authority (public sector partner), which will usually be ring-fenced and put towards asset replacement and expansion. Here, the private sector takes a substantial part of the risk, including the condition of assets and income collection.

Concessions are long-term commitments (25 to 30 years) and include the possibility to amortise major initial investments.

At the local level, a concession gives a concessionaire the long-term right to use specified local government (LG) owned asset(s) and operate the asset(s) over the contract period. The concessionaire is also responsible for making specific investments over the contract period. Asset ownership remains with the LG and the LG is typically responsible for replacement of larger assets. Assets revert to the LG at the end of the concession period, including assets purchased by the concessionaire. (PPP Knowledge Lab 2021a)

Build-Operate-Transfer (BOT)

This is the most common PPP model used by local and regional governments. In this type of concession, the public sector grantor grants to a private company the right to develop and operate a facility or system for a certain period (the "Project Period"), in what would otherwise be a public sector project. Operator finances, owns and constructs the facility or system and operates it commercially for the project period, after which the facility is transferred to the authority.

Depending on the ownership structure, the LG may also be required to raise its share of equity. Given that the asset ultimately reverts

to the LG, it is often constructed on LG-owned land under a lease arrangement with the SPV. The project company or operator generally obtains its revenues through a fee charged to the government rather than tariffs charged to consumers. The private sector partner has to bring finance for the project and take the responsibility to construct and maintain it. The Bangkok Mass Transit System Public (BTS), an elevated train system in Bangkok, is an example of a

Box 5 - The Bulacan Bulk Water Supply Project: BOT in the Philippines

The project, initiated in 2014 for a period of 30 years, aims to provide treated bulk water to the various water districts (WDs) of Bulacan to help meet the increasing water demand of its consumers, expand its current service area coverage and increase the households served. The private partner, Luzon Clean Water Development Corporation, will undertake the financing, detailed design and construction, and maintenance of conveyance facilities, treatment facilities and water source.

Source: PPP Center 2021

BOT model usage. The project was implemented under a 30-year BOT concession agreement between the concessionaire and Bangkok Metropolitan Administration (the city Government).

- **Build-Own-Operate (BOO):** this is a variation of BOT, except that the ownership of the newly built facility will rest with the private party during the period of contract. This will result in the transfer of most of the risks related to planning, design, construction and operation of the project to the private partner. The public sector partner will however contract to 'purchase' the goods and services produced by the project on mutually agreed terms and conditions. In this model ownership of the newly built facility will rest with the private party. On mutually agreed terms and conditions the public sector partner agrees to 'purchase' the goods and services produced by the project.
- **Build, Own, Operate and Transfer (BOOT):** the facility / project built under PPP will be transferred back to the government department or agency at the end of the contract period, generally at the residual value and after the private partner recovers its investment and reasonable return agreed to as per the contract. In this variant of BOT, after the negotiated period of time, the project is transferred to the government or to the private operator.

The BOOT model is commonly used for the development of highways and ports. Canada is one of the most prominent examples of this model. Their local companies are first tasked to build, operate, and own services such as power stations and water treatment facilities before the government takes over them.

a) Design-Build-Operate (DBO)

In this model, the entire responsibility for the design, construction, finance, and operation of the project for the period of concession lies with the private party. The operator is responsible for the design and the construction as well as operations and so if parts need to be replaced during the operations period prior to its assumed life span the operator is likely to be responsible for replacement. Here, the asset is not transferred back to LG as the private sector retains ownership of the asset at the end of the contract period. The private sector's responsibilities remain the same in terms of designing, financing, building and operating the asset. This model does not lend itself to using LG land given that the asset does not revert to LG. (PPP Knowledge Lab 2021a)

3.4 Joint ventures

Joint ventures between the public and private sector in a PPP arise when the contracting authority may require to have an equity stake ("shares") in the project company/operator. It can also happen when an existing public entity sells a share in the utility to a private company.

Box 6 - Joint venture for energy and water resources in Zimbabwe

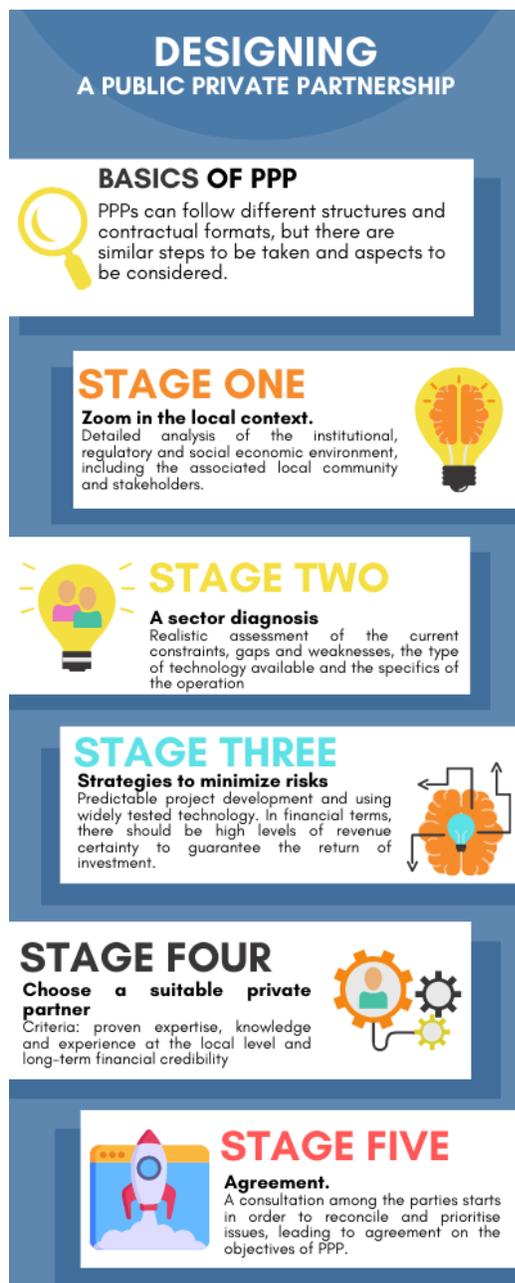
In Zimbabwe, public and private sector partners planned to form a joint venture business to buy bulk electricity and manage its distribution within Willowvale Industrial Park. The project was intended to include demand side management and the provision of technical advice and services to customers in the Park. Therefore, public sector partners included the providers of power, water and waste disposal services; while private sector partners included the industrial users of these services in Willowvale.

Source: UNDP, 2000

In the case of an existing utility, shares in the utility are divested to the private sector (or a new holding company is created which holds the assets of the utility which is established with a joint ownership structure). In the case of a project financed project, the project company will be established with a joint share ownership structure with limited scope (usually focused on delivering the project with limited ability to diversify). The level of share ownership will differ depending on whether the government is seeking to get the project off balance sheet and whether the government wishes to retain management control of the utility.

The joint venture can be either a partnership (arrangement with profit sharing between partners) created for specific purpose or a contractual consortium arrangement in which the parties contract to work together on a specific project. Under joint ventures, the government is both the ultimate regulator, as well as an active shareholder in the operating company, allowing it to maintain a controlling interest in the venture for the sake of safeguarding public needs and interests.

The private sector partner often has the primary responsibility, while the public sector continues to be involved in governance and daily management. However, there is no sharing of a pool of profits. In this case, each party is remunerated for specific services provided to the consortium and no separate legal entity is created.



4. Designing a PPP

PPPs can follow different structures and contractual formats, but there are similar steps to be taken and aspects to be considered.

Figure 3 - Designing a public private partnership

STEP 1

When designing a PPP, the actors must look into the **local context** within which the partnership will be implemented. This includes a detailed analysis of the institutional, regulatory and social economic environment, including the associated local community and stakeholders.

STEP 2

A **sector diagnosis** is an important next step to provide a realistic assessment of the current constraints, gaps and weaknesses, the type of technology available and the specifics of the operation..

STEP 3

The PPP model will need to be structured to **minimise risks** for the private sector and its lenders. Some factors help to increase the interest of private partners in engaging in PPP, such as predictable project development and using widely tested technology. In financial terms, there should be high levels of revenue certainty to guarantee the return of investment.

STEP 4

The public authority, then, needs to **choose the most suitable private partner** for the program or project that is targeted by the PPP. The choice must consider factors such as proven expertise, knowledge and experience at the local level and long-term financial credibility.

STEP 5

After these stages are complete, a consultation among the parties starts in order to reconcile and prioritise issues, leading to **agreement** on the objectives of PPP.

5. Advantages and disadvantages of PPPs

5.1 Advantages

The application of PPP models presents both challenges and opportunities. Given the massive capital requirements and need for innovation (both in terms of technological solutions and funding structures), PPPs potentially provide a useful framework under which the public and private sectors can pool and **coordinate** their financial and technological **resources more efficiently**.

One of the main advantages of PPPs for the public sector is the support with the **needed initial investment** done by the private partner. This allows public institutions to:

- **distribute expenses over a longer period**, and
- to **get the sought financing and unlock additional external sources** that otherwise wouldn't be possible or accessible.

Financing a project through a public private partnership can also allow a project to be **implemented faster** than it would be relying only on public sources and efforts.

The **innovation and replicability potential** are other benefits of this type of partnership. The **know-how the private sector partner** brings in is disseminated among the public employees, who can then use this knowledge working with other sectors and projects too.

Also, the private company, training and using local partners for implementation and operation, sets the path for **diffusion of technology** at a larger scale.

In regards to operational advantages to the public sector, PPPs offer the possibility of **increasing public service efficiency**, which is something public entities always struggle with. Here, the private sector helps in leveraging the efficiency in investment and operations, enhancing the quality of the services provided. Within this model, the government can focus on

functions such as regulation and supervision, while the private partner manages performance.

5.2 Disadvantages and challenges

On the other hand, it is important to consider some disadvantages when engaging in PPPs. First, these models generate **higher project costs and a riskier project** arrangement in terms of future liabilities and the need of a reliable private partner.

In some countries, additional challenges can emerge due to the **lack of an appropriate regulatory framework** that would enable PPPs. This includes not only specific legislation and regulations, but also all legislation that affects PPP contracts, decision processes, and implementation procedures. The framework will depend on the type of law that rules the country. The most common types are civil law and common law.

In the case of civil law countries, for example, PPP contracts are under the administrative law, which governs the functions and decision-making processes of government agencies. This body of law can create legal rights and obligations for both the contracting authority and private party in addition to those specified in the contract. Common law systems count with fewer provisions governing contracts in general. As a result, contracts in common law countries tend to be longer than in civil law countries. (PPP Knowledge Lab 2021a)

PPPs have a complex structure, trust and good relationships between the partners are critical. If one party feels they are losing some of the control they may work on adopting **more rules** and regulations throughout the process instead of working together.

PPPs often cover a long-term period of service provision (eg. 15-30 years, or life of the asset). Any agreement covering such a long period into the future is naturally subject to **uncertainty**. If the requirements of the public sponsor or the conditions facing the private sector change during the lifetime of the PPP the contract may need to be modified to reflect the changes, which might also have cost implications. (PPP Basics)

The different actors work with **different timelines**: nonprofits long-term, for-profit organisations short-term, which can create conflict in the goal setting and prioritisation.

In addition to that, the government's timeline is heavily influenced by **elections**. The time span of the development and implementation of large infrastructure projects, PPPs are mostly used for, is usually longer than one election cycle. A newly elected government might have different priorities than the previous one, risking the realisation of the investment.

Usually a project using PPP has to demonstrate that it provides value for money (VFM) compared with public sector procurement. However, it is **difficult to demonstrate VFM** in advance due to uncertainties in predicting what will happen over the life of the project. (PPP Basics)

At the same time, **climate change** creates novel forms of **risk** which are difficult to quantify and present unique challenges to public and private sector parties seeking to negotiate an appropriate allocation of risk between themselves.

6. PPPs at the local level

Private investment and expertise, including **infrastructure finance through public-private partnership (PPP)** models is essential for the delivery of climate-smart infrastructure, especially in low-income countries whose capacity to provide the necessary investments to tackle climate change is limited. PPP is recognized as one of the most viable financing instruments that can potentially rescue governments from the pile of underdeveloped infrastructure, technology, and service they are faced with. Recognising this, many countries have adopted policies and laws to support public-private partnerships, leveraging private capital and expertise to develop and implement projects, also addressing climate change.

Local and regional governments can be important partners in building PPPs since they are closer to the populations they serve, and better able to identify projects that satisfy local needs. However, they face additional challenges such as limited project development and procurement capacity and the fact that most of them do not benefit from the same credit ratings as central governments. Therefore, in the short term, most will need central government support in the form of payment guarantees or public finance.

The absence of a clear and efficient legislative and regulatory framework at the local level, including a procurement code and fiscal management guidelines, may restrict the ability of subnational governments to implement PPPs and create uncertainty for private investors.

While large infrastructure projects grab the attention of the central government, infrastructure investment is important also at the sub-national level. The traditional sources of financing are often inadequate to fund local and regional investment needs, and local agencies often lack capacity and resources to deliver quality services. In this context, private sector engagement through PPP projects can deliver infrastructure and improve services at the local level, whilst providing opportunities for the private sector.

7. PPPs in renewable energy projects

Regarding renewable energy, PPPs can be considered a key actor in the sector's recent growth, which was driven to a large extent by policies, laws and regulations that encourage private investment engagement. Therefore, these changes led to the creation of a market for investors with the financial capacity to provide long term investments in different countries.

Renewable energy projects are generally characterised by high share of upfront investment and maintenance costs, complex construction issues, available lands and a clear regulation. These factors might create some challenges in attracting financiers and the penetration of the technology. In this context, PPPs emerge as a solution to incorporate private capital, helping to narrow the financing gap and overcome the challenges in the upfront financing phase.

Currently, PPPs represent a model in which the public and private sectors are generally involved in all phases of the project, including construction, financing and operation as evidenced by section 3. This means that the risks are shared among the partners, which makes the arrangement more attractive to the private sector. However, the benefits of PPPs goes beyond the shared risks, since this model also helps to increase technical skills in renewable energy technologies and keep a resulted-mindset on the projects, focusing on efficiency and cost-effectiveness. (PPP Knowledge Lab 2011).

Due to the spread of the cost of renewable energy projects, PPPs also contribute to a quick cost recovery (CoM SSA 2020). Finally, PPPs can trigger other projects with the same model since it promotes adaptation in regulatory frameworks, increases the technical capacity and uncovers new technologies. (PPP Knowledge Lab 2011; CoM SSA 2020).

In addition, local and national governments have a key role to play in this scheme by creating an enabling framework for PPPs. As renewable energy projects are still perceived as a higher risk investment when compared to fossil fuels due to the lack of the same infrastructures and subsidies (PPP Knowledge Lab 2022), this regulatory scheme is necessary to increase the private sector confidence.

Here, adapted policies that create favourable conditions for PPPs and guarantee returns on investments can work in encouraging private partners to finance renewable energy projects. In PPPs model at the local level, the private sector provides financing means and technical knowledge to the subnational government, while the local authority creates the right conditions for the development of these PPPs.

7.1 Enabling conditions for renewable energy PPPs at the local level

The enabling conditions for a PPP in renewable energy depends on the power sector features, which may lead to changes in specific jurisdictions over time, as the sector matures. Some economies, for example, have state operated power sectors. In this context, PPPs provide important means of financing generation projects to meet basic demand. On the other hand, in economies with more deregulated power sectors and mature electricity markets, generation projects are often privately financed. In these cases, PPPs may be more relevant to systemic projects which cannot be funded through private finance alone.

As described in the previous sections, the establishment of PPPs faces some challenges at the local level. However, there are different strategies that local and regional governments can adopt to increase certainty at the project level and create enabling conditions for these models, especially in renewable energy.

a. Tax incentives:

Tax incentives consist of the most common form to attract investments at the local level. Whether through tax-based investment incentives or a decrease in taxes, local and regional governments can support investing in solar rooftops or solar PV fields. They can also promote highly energy efficient solutions through favourable local property tax credits or giving

preferential property tax treatment. Moreover, local businesses can be contemplated with business tax or licence fees deductions (Cities Climate Finance Leadership Alliance 2021).

In some cases, local and regional governments can also lobby the national authority to act on their tax collection level. In Madagascar, the 2015 Tax Code aims at developing incentives to

invest in renewable energy production and distribution. Investments benefit from a reduction in corporate income tax representing 50% of the total investment made. The Value Added tax is removed from equipment for the production of renewable energy technologies. However, this generates a financial burden that is only carried over by the governments.

Box 7 - Palmas Solar Program

The Palmas Solar Program was created by the Complementary Law and translated into a municipal ordinance in 2015 and launched in 2016. This ambitious policy aimed at going beyond the Paris Agreement and shifting the city's entire energy mix to solar power through incentives for technological development and solar energy infrastructure. In exchange for physical or juridical person to install PV panels in their houses or businesses, the city offers up to an 80% cut in municipal taxes : the Property and Urban Land Tax and the Real Estate Transfer Tax.

The decentralized solar PV systems are connected to the state electricity grid, in which their energy is injected in case of surplus. This creates another incentive for private users, since the electricity they generate is deducted from their final bill.

Source: ICLEI TAP Renewables Roadmap

b. Regulatory Approaches :

Local and regional governments can also establish standards for their public procurement projects. In this case, they can request that every new building be powered by a predefined percentage of renewable energy, and organise competitive tendering in order to find the most fitting partner for a PPP. Since the decision will be based on who can bring the technology at the lowest price, this mechanism leads the private sector to pursue cost-effective and innovative solutions to this requirement. Thus, these standards can enhance competitiveness between the private actors and eventually result in decreasing GHG emissions, while spurring innovation locally (PPP Knowledge Lab 2011).

On the other hand, this can lead to the development of a single RE technology that is already cost-efficient and hinder innovation or the emergence of new solutions. To avoid this scenario, local governments can run multiple separate auctions to support different RE technologies and eventually lead to more diversification (PPP Knowledge Lab 2011).

Furthermore, it is also complicated to set a percentage that takes local and sector specificities and realities into account.

c. Feed-in tariffs and Feed-in premiums :

A feed-in tariff secures a fixed price for the renewable energy's purchase and transmission to the grid for a fixed period of time. This increases safety for the private investors, who are able to plan their costs in advance based on this fixed tariff, managing the investment return over the contract period.

As described in the box 8, the government of Gurajat, India, used this incentive when setting out a public procurement call for offers, aiming to establish solar powered generating units, assuring applicants that they will buy net power at the rate set by the state's regulatory commission for \$0,32/kWh. The price created a consensus, since it kept prices low for consumers while allowing investors to have a secure recovery. This process resulted in a Power-Purchase Agreement contract.

Box 8 - Gurajat's Solar Policy

In 2021, Gurajat developed its solar regional policy further: it made residential, commercial, industrial consumers as well as third party projects eligible to sell power to the state's distribution company. The goal is to promote growth by encouraging micro, small and medium enterprises to use solar energy in order to bring down its operating cost. Regarding small scale projects (up to 4MW), DISCOMS will purchase power at a rate higher than the tariff discovered through competitive bidding. Finally, the government of Gurajat also subsidizes large scale installations.

Source: IEA, Mercomindia

Contrary to Feed-in Tariffs, the electricity produced by renewable energy can also be directly sold on the electricity spot market. In this case, the government incentive comes from a fixed or sliding premium that is paid to the renewable electricity producers on top of the market price.

The so-called feed-in premium (FIP) can vary according to the location and the renewable energy technology. The sliding FIP evolves with the market prices and is often fixed to the reference tariff level (FIT). The fixed FIP can, then, lead to over- or under-compensation depending on the market prices evolution. They reduce the market price risk for investors and encourage renewable energy electricity producers to produce it when the demand is high. (Energypedia, 2019)

d. Competitive bidding and auctions for the development of a renewable energy project:

In this structure, local and regional governments establish criterias for a private entity partner and open auctions to accept candidates for working on renewable energy projects. This is a more market approach tool, encouraging competition among the private players, also increasing efficiency and transparency.

The local government selects the most suitable partner according to the defined standards, considering the most efficient technology, which leads to the procurement of new renewable energy capacity at the lowest price. However, this process might involve high transaction costs and auctions usually take a long time.

e. Local government guarantee :

In some PPPs on renewable energy, the local government guarantees the private company's loan by using its own funds, national and international grants.

This mechanism shares the investment risk between public and private actors and makes the project more bankable for investors without increasing their initial spending. Thus, government guarantees increase the private sector's confidence in PPPs, leading to a greater amount of

financing available and allowing the government to show its support to the project. (World Bank, 2020)

On the other hand, the ultimate fiscal cost of this model remains very uncertain. This occurs because local governments may or may not have to reimburse a part of the loan or match lacking results.

f. Reduced costs on publicly-owned land:

Local and regional governments can make publicly-owned land or buildings available at low or minimum cost for renewable energy projects. A public field can be made available for the development of a solar PV project on its surface or the city can lease its roofs for a low fee for the development of solar roof panels, for example. By implementing such facilitation policies, LRGs can take the financial burden off of the private investors and ensure less administration costs and negotiation with other stakeholders.

These favourable conditions will enhance trust in innovative renewable energy projects among investors and ensure a more secure cost recovery. The right policies will also make renewable energy projects more bankable, as it is already the case for solar PV and solar mini grids projects. These projects can be partially or totally refundable mainly through the collection of fees, generating direct and indirect income for local governments, such as income from electricity savings, land sales and rental fees. It also creates taxes and fees from increased employment, household and business income and the increase in property value.

7.2 Energy PPPs agreements

When analysing the development of PPP models in solar energy, it is possible to notice different types of projects with varying advantages. Solar projects can be grid-connected, which means that the solar PVs or rooftops are connected to the utility's power grid, and the electricity produced is thus transferred across the grid and not especially used locally. There are also off-grid schemes, which implies that the system works independently and that the consumer is not connected to the utility's power grid.

Thus, the application of PPP models can differ in characteristics, goals and limits. Utility-scale and grid-connected projects need space and will be situated in remote areas, often requiring a Power-Purchase-Agreement between the local or national government and an Independent Power Producer, while rooftop solar panels will be situated in urban areas and require less space. In this case, the engagement of multiple stakeholders, namely the owner of the roofs, demand complex negotiation and dealing with conflicting interests.

Off-grid electrification projects, such as small energy projects, aim at developing energy access in remote areas. Depending on these configurations, the PPPs can involve different actors and scale. The most common agreements used in PPP models on renewable energy are presented in the following subsections.

a. Service Level Agreement (SLA) : Public-owned and private sector operated

A Service Level Agreement implies that the local government establishes a contract with a private sector service provider to operate a public sector company, without a separate legal entity needed. While there are clear benefits for the projects such as the private sector's technical skills and capacity as well as a well-known procurement process, the entirety of the funding and the risks are however carried by the government. For instance, this agreement can include a Energy Service Company (ESCO) and a LG for the maintenance of solar equipment.

- Energy Service Company (ESCO) Funded Model :

An Energy Service Company (ESCO) is a company which provides energy service to its customers. In this model, all of the costs of the project will be assumed by the energy service company (ESCO) and the local government doesn't have to involve its own capital. The ESCO will take care of the entirety of the investment needed, while bringing technical and operational support as well as its RE solar technology knowledge over the duration of the contract.

This funding model is mostly adapted for projects which cost-recovery is assured due to a low upfront investment, like a maintenance project. However, the

ESCO market needs to be well developed in the country and trusted by the banks in order to operate properly. This market is still nascent in Sub-Saharan Africa (CoM SSA 2020).

Box 9 - ESCO Business Model for the development of solar PV

As part of a project with the GIZ under the IKI framework, the Chilean Ministry of Energy developed an ESCO business model for solar PV energy self-consumption. In this model, the ESCO owns the system and is responsible for its operation and performance, while the client (usually a group of co-owners) purchases the generated energy in kWh. If the energy generated exceeds the needs of the client, the rest will be fed and sold into the power grid. Thus, it combines off- and on-grid solar PV technology. The absence of a monthly fee and the low overhead represent clear advantages for the development of this technology. With this model, the ESCO will benefit from economies of scale, while the development of solar PV technology for self-consumption is facilitated.

Source : Energypedia

b. Pay-as-you-go :

In this model, the client, usually a household, pays a deposit to a company providing equipment for energy production and self-consumption. This deposit is followed by daily or weekly small payments over a specified period of time, at the end of which the client owns the equipment.

This funding model is especially suited for small energy projects, such as small solar rooftop off-grid projects in remote and sparsely populated areas.

Though this financing model involves mainly the private sector and individuals/households, the local governments can facilitate the work of the PAYG suppliers by accrediting them and promoting their use by households (CoM SSA, 2020).

Box 10 - Financing Platform MKopa

A telling example of the Pay-as-you-go model is the financing platform MKopa, which sells off-grid solar systems for underbanked households. This platform aims at reaching customers that are generally underserved by traditional financing services, starting with the solar market. Customers pay an initial \$35 deposit followed by 365 payments of 45 cents. In the end, they are owners of their home solar system. In 2018, they had managed to sell over 750 000 off-grid solar systems and to unlock \$233 million in financing for underbanked households in Kenya, Uganda and Tanzania.

Source : CoM SSA, MKopa.

c. Power-Purchase-Agreement (PPA):

A Power-Purchase-Agreement is a contract between a seller, which generates electricity, and a buyer or purchaser, which wishes to purchase electricity. This contract defines all of the terms of this transaction, specific to energy.

Normally employed on solar power projects associated with a Feed-In Tariff, it also has been shown successful in providing new generation capacity through an Independent Power Producer.

In countries where the energy market is partially liberalised, a PPA is primordial to ensure the bankability of the renewable energy project. It will usually involve an energy producer and one single buyer, most likely state-owned. In more liberalised energy markets, an energy producer can develop multiple PPAs with multiple partners. A feed-in

Box 11 - EWURA Modal PPA for Solar, 2015

The Energy and Water Utilities Regulatory Authority of Tanzania developed Model Power Purchase Agreements for projects larger than 10MW that Local Governments or any Purchaser can use as guidance. Every model was made to fit the technology it was addressing. In the solar PPA model, the Seller would design, engineer, construct, insure operate and maintain the solar powered electric generation facility, while the Purchaser would buy all of the Net Delivered Energy. An interesting feature of this PPA model is that it stipulates that the Seller will employ local citizens and train them in the whole project process and maximize technology transfers.

Source : EWURA

tariff subsidised by the national government is a strong incentive for private investors to engage in new renewable technologies and be sure to recover their investment over the contract period. PPA can also be framed in such a way that it benefits the local population and operates a transfer of technology and knowledge.

Indeed, local governments can frame and design the PPA in such a way that it requires their private partner in the PPP to fit certain criterias, delivering specific public services such as training needs for instance. The Energy and Water Utilities Regulatory Authority of Tanzania (EWURA) developed a standard model PPA for solar powered generating plant (>10 MW) that recognizes the training of citizens throughout every project phases (design, construction, installation, operation, maintenance, management).

8. Policy recommendations

When establishing a public private partnership, local and regional governments must take some points into account. First, an enabling framework that includes specific legislation and concessional taxes is necessary. This legal framework will serve not only to adapt the existing regulations, assist in regulating the operation, but also to protect the local government in case of unreliable partners.

At the project level, it is important that local governments focus on capacity building, using the private partner's expertise and project preparation facilities to increase public employees' knowledge. This will increase the LRG's independence in designing and implementing similar projects in the future.

Besides, PPP's projects must start with a clear budget and work plan including tasks assignments and deadlines. A well collected baseline data can help to identify the energy sources, technical solutions, size of the project and funding models that are the most adapted to the local context. It is also important to demonstrate the project's feasibility and establish monitoring and evaluation methods, for instance an Environmental and Social Impact Assessment. These actions will require the engagement of professional and, sometimes, external experts. By following these steps, the local government demonstrates political commitment and transparency, increasing the private partners confidence, which increases the chances of a strong commitment in the long term (CoM SSA 2020).

In regards specifically to renewable energy projects, the type of PPP model might vary according to the technology available. As a consequence, while elaborating a renewable energy project, it is important to take the local context and the revenue potential into account, as well as to choose the most suitable technology. Lastly, local and regional governments must communicate the benefits of PPPs to its citizens. It is relevant that the population understands the model's impact and relevance, increasing its support to the initiative.

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