

Photo Credit: [Image by Freepik](#)



Energy Saving and Urban Renewable Projects

[Download](#) [Chatbot](#)

Below are a few sample projects on energy saving and urban renewable.

Energy-Efficient Street Lighting PPPs

Sample Contracts, Clauses and Bidding Documents

Brazil:

Belo Horizonte - [Concessão administrativa para a prestação dos serviços de iluminação pública no Município de Belo Horizonte incluídos o desenvolvimento, modernização, ampliação, eficientização energética, operação e manutenção da Rede Municipal de Iluminação Pública](#) – Concession for the development, modernization, expansion, energy-efficiency, operation and maintenance of the municipal lighting network. See also: Impact Story: [SNTA supports street lighting PPPs in Belo Horizonte and Rio de Janeiro](#), PPIAF April 2016.

Canada:

[Request for Proposal – LED Streetlight Luminaire Supply](#) of August 2014. Local Authorities Services (LAS) and RealTerm Energy developed a streetlight replacement program which resulted in 150 municipalities jointly procuring LED public lighting on a turnkey basis. This lowered transaction costs, enabled competitive procurement for the small and medium sized municipalities, and transformed the LED market in Canada.

Germany:

[Package of tender documents for PPP street lighting projects \(*Verdingungsunterlagen Beleuchtung*\)](#) developed by Partnerschaften Deutschland ÖPP Deutschland AG.

India:

[Odisha, Greenfield Street Lighting Project – Request for Proposal \(RFP\)](#) of May 2018 for the implementation of the Odisha Greenfield Street Lighting PPP Project for 113 Urban Local Bodies (ULBs) on a PPP Basis. Given the early success of the first phase of street lighting energy efficiency project at Bhubaneswar followed by the Odisha multicity street light project which is currently under implementation, the Government of Odisha has decided to extend the rollout of such projects to all ULBs within Odisha. With this the Government of Odisha also aims to cut the energy bills for ULBs and to provide roads with brighter and more even illumination with increased safety for pedestrians and vehicle drivers. The Project is envisaged to be implemented under a Public Private Partnership (PPP) model under a seven (7) year annuity based arrangement.

See also [PPP Stories - India: Bhubaneswar – Street Lighting](#), [India: Rajasthan Public Street Lighting](#), [Street Lighting Project, Nasik, Maharashtra, India](#), [Smart Poles and Streetlights, Bhopal, Madhya Pradesh](#), and [Energy-efficient Street Lighting, Bhubaneswar, Odisha, India](#)

Mexico:

Guadalajara – [Leasing contract \(*Contrato de Arrendamiento*\)](#) - Leasing contract of 15 April 2015 between the municipality and a partnership between the installer, Electricidad y Tecnología S.A. de C.V. (Electrotec) and the financial institution, Solucash S.A. de C.V. Sofom E.N.R. (Solucash), regarding the replacement of luminaires and the strengthening of the light network infrastructure in Guadalajara. Private partner is responsible for the installation of the luminaires. Municipality leases retrofitted lights from private partner and makes monthly payments over the 10-year lease term to be financed through cost savings. After expiry of the contract ownership of the luminaires will be transferred to the municipality.

United Kingdom:

[Street Lighting Procurement Pack - Model Documentation](#) by the Local Partnerships – Model documentation aims to provide assistance to local authorities in the procurement of street lighting projects through a public private partnership or through the Private Finance Initiative. It is not intended to be a word-for-word template.

Birmingham [Highways Maintenance and Management Service PFI - Project Agreement & Schedules](#) - Contract between Birmingham City Council (Authority) and Amey Birmingham Highways Ltd (Service Provider) relating to the rehabilitation, maintenance, management and operation of the roads and street lighting network in the City of Birmingham pursuant to the Government's Private Finance Initiative (PFI). The contract was signed in May 2010. The street light component is only one part of the 25-year contract and covers the modernization and maintenance of 97,000 street lights and the upgrade of associated street infrastructure.

United States:

Michigan, Detroit Metro Region - Metro Region Freeway Lighting Public-Private Partnership - [Delivery of Freeway Lighting as a Design-Build-Finance-Operate-Maintain \(DBFOM\) Project - Project Agreement with Schedules](#) between the Michigan Department of Transportation (MDOT) and Freeway Lighting Partners, LLC (Project Company) of 24 August 2015. Contract term 15 years. Project Company to design, build and finance the improvements on existing freeway and tunnel lighting systems during a two year construction

period and to operate and maintain the existing and improved lighting system for the remaining operating and maintenance period of 13 years. Private partner to hand back the lighting system to MDOT at the end of the contract term. MDOT to make Milestone Payments to the Project Company during the design and construction period and Service Payments to Project Company for performance of services during the operating and maintenance period. The Service Payment takes account of energy savings achieved by the Project Company.

Policies and Legislation

France:

The [Code général des collectivités territoriales](#) (French law for regional and local authorities) provides that municipalities have the responsibility for lighting. PPPs (or délégations de service public) are common in this field and [Reconstruction, Management, and Maintenance of Street Lighting and Other Public Facilities, Juvignac, France](#)

Mexico:

[Relevant legislation on street lighting \(*Normatividad aplicable al alumbrado público*\)](#) (Spanish).

Further Reading and Resources

[Street Lighting PPPs: Improving Energy Efficiency and Public Safety in India's Cities](#), IFC 2021 - Street lighting PPPs help provide better services, improve business and public safety, and increase energy efficiency by up to 70%. This IFC sector note provides lessons and examples on scaling up innovative PPP solutions in public street lighting infrastructure across India.

[Proven Delivery Models for LED Public Lighting](#), ESMAP 2017 - This synthesis report summarizes the cross-cutting findings from six case studies, which document real-life experiences, challenges, and solutions encountered in implementing different LED lighting delivery models—ESCO, super-ESCO, joint procurement, public-private partnership, lease-to-own, and municipal financing. Crosscutting findings include various key roles played by governments, ranging from setting policies that support LED lighting programs to establishing an ESCO with a mandate to implement energy efficient programs while transforming the market.

[Handbook on Quality Control for Street Lighting Projects for EESL \(Energy Efficiency Service Limited\)](#), PricewaterhouseCoopers Pvt. Ltd August 2017 - The objective of this handbook is to act as a comprehensive guide in designing and implementing quality control plan for energy efficiency (EE) projects in India involving LED lamps. Performance based contracting is an integral part of EE projects. Under this form of contracting, the revenue generated by a project of an ESCO is directly related to the energy savings achieved.

[Lighting Brazilian Cities: Business Models for Energy-Efficient Street Lighting \(*Modelos de Negócio para Eficiência Energética em Iluminação Pública*\)](#), World Bank, June 2016 (English and Portuguese) - Based on city studies and surveys in more than 300 municipalities, the report identifies business models and innovative financial structures that match the needs and capabilities of different sized cities. It also provides recommendations to governmental institutions on developing effective new policies and mechanisms to help Brazilian cities take ownership of their public lighting.

[Prefeasibility Study Municipal Energy-efficient Public Street Lighting Project in the City of Rio de Janeiro](#), World Bank Group August 2014 - The objective of this study is to provide city officials in Rio de Janeiro

with (a) a brief overview of the global trends in EE public street lighting; (b) a review of the relevant regulatory, institutional and legal frameworks that would have an impact on an investment in energy-efficient public street lighting; and (c) recommendations for financing structures that achieve scale by bundling/aggregation. See also: Impact Story: [SNTA supports street lighting PPPs in Belo Horizonte and Rio de Janeiro](#), PPIAF April 2016 and [Improving Energy Efficiency in Street Lighting in Brazilian Cities](#).

[Les bonnes pratiques en éclairage public](#), l'association des maires de France et des présidents d'intercommunalité (AMF) and Syndicat de l'éclairage May 2016.

[Republic of India, Energy-Efficient Street Lighting - Implementation and Financing Solutions](#), World Bank, June 2015 - This reports serves as a manual for the implementation of LED lighting programs based on the experiences from India. Among other things it provides templates for investment grade audits, procurement and contracting, tools and matrices. The manual has been designed according to the requirements and constraints specific to India. However, many of its recommendations may be applicable across urban local bodies (ULBs) and municipalities in other countries.

[Street Lighting Toolkit – How to assess the impact of an energy efficiency investment in the street lighting asset](#), Scottish Futures Trust, March 2013 - The toolkit and the two accompanying business cases aim to assist local authorities to assess the impact of investing in energy efficiency measures within their street lighting asset. It draws on best practice and learnings from local authorities who have already implemented successful energy efficient street lighting schemes and provides clear guidelines and a structured approach and process for councils to work through to deliver energy efficient street lighting initiatives.

[EESL Toolkit for Street Light Energy Efficiency](#), Energy Efficiency Services Limited (EESL) December 2013. The toolkit is based on analysis of the practical situation in Indian municipalities, and experience gained through the implementation of its ongoing street lighting projects.

[Proyecto Nacional de Eficiencia Energética en Alumbrado Público Municipal \(PNEEAPM – National Project for Energy Efficiency and Public Municipal Lighting\)](#) This program was established by Mexico's national government. It aims to provide technical assistance and financing to municipalities intending to implement better and more efficient street lighting systems.

[PPP in Germany: street-lighting and other sustainability projects](#), Partnerschaften Deutschland ÖPP Deutschland AG December 2010 explains key elements of the PPP street lighting model.

Solar Power Energy

Policies, Laws and Regulations: Solar Power

Global

- [IEA/IRENA Global Renewable Energy Policies and Measures Database](#) - The International Renewable Energy Agency (IRENA) maintains a joint database with the International Energy Agency (IEA) for policies and measures pertaining to renewable energy from around the world. The database is searchable by country and sector.

Project Documents and Contracts: Solar Power

Solar Roof Top

Chile

- Public Solar Roofs Program, which involves the installation of photovoltaic solar systems on roofs of public buildings. ([El Programa Techos Solares Públicos \(PTSP\)](#) está orientado a instalar sistemas fotovoltaicos en los techos de los edificios públicos). (Spanish)
- [Ley para la Generación Distribuida 20571 of 6 September 2014 and Reglamentos.](#)

France

- Standard contracts (approved by the Ministry of Energy Transformation and Solidarity - Ministère de Transition écologique et solidaire) related to PV solar projects ([Contrats Filière photovoltaïque](#)) published by EDF together with relevant legislation.
- Additional Information is available on the website of the [Ministry of Energy Transformation and Solidarity Ministère de Transition écologique et solidaire.](#)

India

- [Model Memorandum of Understanding \(MOU\)](#) between Government Ministry/Departments and Expert Public Sector Undertakings (PSUs) for Development of Grid Connected and Off-Grid Roof-Top Solar Photovoltaic and Small Solar Power Plants of November 2016. Ministry/Department desires to implement grid connected rooftop solar PV projects on the roofs of its buildings/offices as well as ground mounted solar PV systems and desires to engage with PSUs for setting up such solar PV system and supply solar power at a tariff determined through competitive bidding processes. The parties enter into MOU for collaborating and jointly undertaking the identification, technical evaluation and development of potential sites for execution of solar power projects.
- [Model Power Purchase Agreement \(PPA\)](#) between Contractor and Government Organization/ PSU and Government Offices for Design, Manufacture, Supply, Erection, Testing and Commissioning including Warranty, Operation & Maintenance of Grid Connected Roof-Top Solar Photovoltaic and Small Solar Power Plants in RESCO model of November 2016
- [Model Engineering, Procurement & Construction \(EPC\) Agreement](#) Between Contractor and Government organization, PSU and Govt. Offices for Design, Manufacture, Supply, Erection, Testing and Commissioning including Warranty, Operation & Maintenance of Grid Connected and Off-grid Roof-Top Solar Photovoltaic and Small Solar Power Plants in CAPEX model of November 2016.
- [Model Tender for implementation of 500 MW Grid Connected Rooftop SPV](#) of May 2016 - Solar Energy Corporation of India Limited invites requests for selection (RfS) of bidders for implementation of 500 MW grid connected roof top solar PV scheme in different states of India under CAPEX and RESCO (Renewable Energy Service Company) model dated 22.4. 2016. In a RESCO model the bidders intend to take a rooftop owned by some other entity on mutually agreed terms and conditions including lease agreement from the roof top owner(s) and enters into the PPA with a rooftop owner/DISCOM /others for supply of solar power by 25 year at a tariff as per RfS from the date of Commissioning of project. Under the “CAPEX Model” the bidder enters into an agreement with the rooftop owner at the quoted project cost as per RfS for the Scope of work not limited to that indicated in the RfS as per mutually agreed terms and conditions. This model also allows energy sale at a tariff as per RfS.
- [Model Tender Document for Grid connected Rooftop Solar PV](#) (Posted on 21.10.2015).

Maldives

- Bidding Documents for roof top solar PV project on a design, build, finance, operate and transfer (DBFOOT) basis. According to the bidding documents the private partner would design, build, finance own and operate the grid-connected solar PV electric generating facilities situated at the roof top of government owned buildings. The electricity generated would be purchased by a state-owned utility under a long-term Power Purchase Agreement at a fixed tariff. The IPP would lease the property necessary for setting up the electricity generating facilities under a Roof Lease Agreement.

United States

- To help streamline the [federal on-site renewable power purchase agreement \(PPA\)](#) process, the Federal Energy Management Program works with agencies and partners to assemble sample documents (request for proposals, PPAs) from completed projects including solar roof projects.

Vietnam

- The Vietnamese Government has issued a new model PPA for rooftop solar projects under [Circular No. 05/2019 TT-BCT](#), dated 11 March 2019.

Solar Utility Scale/Ground-Mounted

Argentina

- [RenovAR](#), Argentina has been holding public auctions to buy RE under a program called “RenovAR”. The program applies for wind energy, solar energy, biomass and small hydroelectric plants and biogas. It includes a “green trust fund” to provide security and confidence to investors. Cammesa (Compañía Administradora del Mercado Mayorista Eléctrico) has published the relevant laws, and bidding documents (including **draft PPAs**) on its website.
- **Bidding documents** (in [English](#) and [Spanish](#))

Australia

- [Utility Scale Solar PV](#), PwC 2017 - Suite of precedent project documents developed by PwC to facilitate the contracting process for small to midscale solar PV facilities. While the detail of the contractual structure will vary from project to project, depending on size, location and parties, these documents encompass the majority of key relationships in the financing and development of a solar facility.

Ethiopia

- Draft Sample Solar PV PPA of May 2015 between small power producer (Seller) and the Ethiopian Electric Utility “EEU” as off-taker relating to a solar PV electric power generation facility. Seller will develop, build, own and operate solar PV electric power generating facility and EEU to purchase the electrical energy produced at the facility in accordance with the terms and conditions of the PPA. 20 year contract. Pricing based on feed-in tariff.

India

- **National**
 - Jawaharlal Nehru National Solar Mission - [Guidelines for Development of Solar Parks](#), Government of India Ministry of New & Renewable Energy February, 2016. The Jawaharlal Nehru National Solar Mission is a major initiative of the Government of India with active participation from States to promote ecologically sustainable growth while addressing India’s energy security challenge. The solar park is a concentrated zone of development of solar power generation projects and provides developers an area that is well characterized, with proper infrastructure and access to amenities and where the risk of the projects can be minimized. Solar parks are envisaged to be developed following four modes described in the scheme. The Solar Project Developers within the solar park shall enter into PPAs with the Central Utilities, State Utilities, and Discoms, Captive Users/Third parties who are willing to buy power from the developer. The tariff for the sale of power through PPAs could be either based on the tariff determined by the Central Electricity Regulatory commission, the State Electricity Regulatory

commission or as determined through bidding process.

- **Annexure III** contains Implementation Agreement between Solar Power Park Developer (SPPD) and Solar Project Developer (SPD).
- **Annexure VI** Lease Deed between the SPPD and the Solar Project Developer.

• **Odisha**

- The **Green Energy Development Corporation of Odisha Limited** has published tender documents it has issued on its website. See, for example:
- [Tender Document: Design Engineering, Procurement, Construction, Operation and Maintenance of 20MW Grid-Connected Crystalline Photo Voltaic Solar Power Plant](#) of April 2014.
- [Revised PPA: Selection of Solar Power Developers for Development of 20MW Grid Connected Solar Photo Voltaic Power Projects in Odisha](#) of April 2016.

Malaysia

- [Renewable Energy standardized Power purchase agreements](#) for solar PV projects (up to 10 MW, 12 MW and 30 MW) published by the Sustainable Energy Development Authority Malaysia. Based on feed-in tariff system.

Pakistan

- [Standard Energy Purchase Agreement](#) of 29 June 2015 relating to a solar powered power generation complex between Seller (private energy company) and Purchaser (Central Power Purchasing Agency (Guarantee) Limited acting on behalf of the former government-owned public utility maintaining power in Pakistan, (Water and Power Development Authority (“WAPDA”) Distribution Companies). Seller to design, engineer, construct, insure, commission, operate and maintain a solar powered electric generation facility on build, own and operate (BOO) basis. Purchaser to purchase all of the net delivered energy generated by the complex and delivered to the interconnection point. 25 year contract.
- [Standard Implementation Agreement](#) between Seller and Government of Pakistan of 29 June 2015.

Tanzania

- [Model PPA for solar projects](#) - Approved by EWURA for solar powered generating plant of total installed capacity more than 10 MW; the Seller and the Purchaser agree to develop the Project under [an Independent Power Producer (IPP)/Public-Private Partnership (PPP)] arrangements and recognize that training citizens of Tanzania in the design, construction, installation, operation, maintenance and management of the Project and maximizing technology transfer are central to the interests of the Purchaser in the Project; 20 years operation phase.

United States

- [California, United States. Solar Power Purchase Agreement](#) - California, USA. This is a standard PPA for a 250 MG photovoltaic (PV) power plant developed as part of Southern California Edison’s Request for Proposal for its solar energy program (.pdf in English).
- Oregon, United States [Draft Solar Power Purchase Agreement](#) (Photovoltaic Solar Electric Systems) between an Oregon provider and the State of Oregon whereby provider desires to install, maintain and operate the systems on the sites in the licensed areas and desires to sell electrical energy generated by the systems securing sustainable energy resources to support its operations at no greater cost for the energy than it would pay for the electricity otherwise supplied (in English).
- [Annotated Solar Power Purchase Agreement \(PPA\)](#) prepared by Sustainable Power Group (sPower), an independent power producer from the United States.
- [US Virgin Islands solar PPA and RFP](#) (in English). PPA and RFP documents for a project whereby the Virgin Islands Water and Power Authority is seeking a maximum of 10 megawatts (MW) of electrical capacity, allocating approximately 5 MW to each of its two generation facilities serving the districts of

St. Thomas-St. John and St. Croix.

Further Reading and Resources

See also Further Reading and Resources [Renewable Energy](#)

Solar Roof Top

India

- [Rooftop Solar in India - Addressing Policy Regulatory and Operational Barriers](#), Deloitte 2014 – Presentation summarizes the main global models and challenges associated therewith, with some recommendations on how to resolve those challenges in an Indian context.
- [Harnessing Energy From the Sun, Empowering Rooftop Owners](#) - white paper prepared by IFC for State of Gujarat that analyzes various business models used around the world and their associated issues and challenges and suggests next steps for a large-scale roll out.
- [Public Private Partnerships Lessons from Gujarat Solar](#), Partnerships IQ Handshake publication, IFC 2014.

United States

- [Solar Power Purchase Agreements](#) - Online information provided by the United States Environmental Protection Agency.
- [Solar Power Purchase Agreements: Identifying Risks for Municipalities in Massachusetts](#) [PDF report] prepared by Tufts University. The report explores the perceived risks of 18 municipalities in Massachusetts (MA) throughout the negotiation of Solar PPAs with private sector project developers. It also contains an extensive literature review and analysis of the regulatory structure for PPAs in MA. Findings suggest that municipalities are largely uninhibited by identified risks with PPAs.

Solar Utility Scale / Ground-Mounted

Pakistan

- [A Solar Developer's Guide for Pakistan](#), IFC 2016 - This document is intended as a guide for international developers and solar investors who are considering investing in Pakistan.

India

- [Utility Scale Solar Power Plants: A Guide for Developers and Investors](#) [PDF] This guidebook is a best practice manual for utility-scale solar power plants in India. It focuses primarily on ground mounted, fixed tilt projects and also covers solar tracking system technology. Intended to be a practical toolkit, the guidebook includes an annex that covers Concentrated Solar Power (CSP) technology and highlights aspects of the CSP project development process that differ from the equivalent. It also has annexes on construction, operation and maintenance contract terms.
- [PPIAF Support Transforms Odisha's Enabling Environment to Tackle Climate Change through 1,000 MW Solar Park](#), Impact Story, PPIAF 2016.

United States

- [Solar Power Purchase Agreements: Identifying Risks for Municipalities in Massachusetts](#) [PDF report] prepared by Tufts University. The report explores the perceived risks of 18 municipalities in Massachusetts (MA) throughout the negotiation of Solar PPAs with private sector project developers. It also contains an extensive literature review and analysis of the regulatory structure for PPAs in MA.

Findings suggest that municipalities are largely uninhibited by identified risks with PPAs.

Useful Links

- [Off-Grid Solar Policy Toolkit](#) - This Off-Grid Solar (OGS) policy toolkit is designed to assist governments in creating an enabling environment for OGS and pay-as-you-go (PAYG) sector growth by establishing policy reforms determined through a structured process of inter-ministerial policy dialogue. It identifies twelve key policy issues and considers the advantages and disadvantages of different policy approaches to each issue. The toolkit then outlines a step-by-step process that governments can use to facilitate policy dialogue, providing guidance and tools at each step. This process envisions a scenario where government ministries and agencies work together to advance policy reforms that accelerate progress in energy access, digital inclusion, and financial inclusion.
- [Scaling Solar](#) - Scaling Solar brings together a suite of World Bank Group services under a single engagement aimed at creating viable markets for solar power in each client country. The “one stop shop” program aims to make privately funded grid-connected solar projects operational within two years and at competitive tariffs.
- [The Global Solar Standardization Initiative](#) - The Global Solar Energy Standardisation Initiative is currently developing standardized solar contracts and guidelines that simplify and streamline existing best practice.

Rural Electrification Funds: Sample Operational Documents and Resources

As this is a growing set of sample documents, further annotations and examples will be posted here on an ongoing basis.

If you have any suggestions, please contact us at ppp@worldbank.org.

Sample practical operational documents

To generate solutions for rural electrification in Africa, an innovative program, the [Africa Electrification Initiative \(AEI\)](#), created and sustained a living body of practical knowledge and a network of practitioners in the area of design and implementation of rural, peri-urban and urban on-grid and off-grid electrification programs.

Master Plans and Prospectuses for Seeking Donor Funding

Rwanda Prospectus—This "prospectus" goes beyond a typical national electrification master plan. It is designed to serve as planning document and more importantly as a "marketing" prospectus to persuade multilateral and bilateral donors to provide financial support to the Government of Rwanda's five year program to scale up electricity access. By providing detailed technical, financial and policy information in one document, it facilitates the work of donors in justifying their support of Rwanda's electrification program to their governments or governing boards. [Prospectus for Rwanda Electricity Sector Access Programme—Volume I](#) (March 2009, Final Working Draft, 89 pages) and [Volume II, Technical Annex Containing Least Cost Master Plan](#), Castalia Strategic Advisors (March 2009, Final Working Draft, 34 pages)

Sample Laws, Legal and Regulatory Frameworks

Cambodia, REF Fund—This is the 2005 Cambodian law that establishes a Rural Electrification Fund to provide grants to lower the capital costs of projects designed to provide electricity services to previously unserved rural households and businesses. It describes the governance structure, functions and internal

procedures of the fund. Similar funds or rural electrification agencies have now been established in more than 10 African countries. [Statute of the Rural Electrification Fund of the Kingdom of Cambodia](#) (November, 2005, PDF, 7 pages)

Tanzania, [Rural Energy Act](#) – Tanzania's Rural Energy Act is similar to the Cambodian law, but much more detailed. It establishes a Rural Electrification Board, Agency and Fund and describes in considerable detail the functions and relationships of these different entities. The Tanzanian law also provides more detail on sources of financing for the fund. In 2010, the World Bank initiated efforts to provide a line of credit that would provide easier access to longer term and lower cost loans to supplement the grants provided by the Rural Electrification Fund.

The performance of the African rural electrification funds and agencies has been evaluated in a study by the International Energy Agency in 2010, and presented in [Comparative Study on Rural Electrification Policies in Emerging Economies](#).

Regulatory Entities

Tanzania—EWURA, a suite of several documents developed by EWURA (the national electricity regulator of Tanzania) specifying the technical standards that must be satisfied and the studies that must be performed before a small power producer (a renewable generator or cogenerator exporting the energy associated with 10 MW or less of installed capacity) can get permission to connect to the main grid and sell electricity to the national utility. The goal of the document is to “standardize” the requirements and thereby reduce transaction costs for both parties. [Guidelines For Grid Interconnection of Small Power Projects in Tanzania \(Part A—Mandatory Requirements and Test Procedures](#) (38 pages), Part B—[Technical Guidelines](#) (33 pages), Part C—[Appendices- Studies To Be Conducted, Islanding and Protection](#) (44 pages) (March 2009, Working Draft For Public Consultation) (Short title: Interconnection Guidelines).

Tanzania—EWURA, a 2009 draft of the user’s guide on the processes and approvals required for a grid connected SPP to sell electricity at wholesale or retail. (A final version of the user’s guide is expected to be issued in 2010.) The Guidelines emphasize that the national utility’s decision to connect an SPP to its grid can be made based only on technical criteria. The price for the power that the national utility will purchase from the SPP will be based on the regulator’s annually updated estimate of the national utility’s avoided cost. [Guidelines for Developers of Small Power Projects in Tanzania](#) (March 2009, Working Draft for Public Consultation, 53 pages) (Short title: Process Guidelines).

Vietnam—A regulation that spells out the rights and responsibilities of EVN (the Vietnamese national utility) and retail service providers (i.e., affiliated and non-affiliated entities that purchase electricity at wholesale and resell this electricity at retail to end use customers. Vietnam has had considerable success in expanding grid electrification through standardization of construction standards and standardized contracts between EVN and the retail service providers. The number of connected rural households grew from 14% in 1993 to 94.5% in 2008. A more detailed description of the Vietnamese electrification program can be found in the presentation at the June 2009 Maputo workshop of Mr. Hung Van Tien (Marjorie/Raluca: please provide the URL). [Regulation on Organization and Operation of Electric Power Retail Service/Network](#) (Undated, 24 pages).

Rural Electrification Agencies and Funds

i. Information Packages For Investors

Bolivia

[SHS Medium Term Service Contracts - Teaser for Tender Package](#) (2004, 14 pages). A “teaser” document designed to interest international and domestic investors in competing for the right to install government subsidized solar home systems (SHS) on a mass basis in four defined geographic areas of Bolivia. Using a combination of “medium term service contracts” and capital subsidies, the program was designed to develop self-sustaining solar home systems in these regions. Unlike other earlier SHS programs in other countries, the Bolivian program placed heavy emphasis on independent monitoring of the performance of winning service providers.

ii. Operation Manuals

Cambodia

A detailed internal operations manual for the Cambodian Rural Electrification Fund. This builds on and “drills down” from the Cambodian Rural Electrification Fund law. Note the sample grant application forms for different types of applicants that are attached as appendices. The REF has a goal of disbursing 50,000 grants of US \$45 for each new household connection in rural areas. [Operational Manual For Rural Electrification Fund](#) (January 2007, 81 pages).

For additional information and resources visit [Cambodia’s Rural Electrification Fund](#).

iii. Pre-Investment Surveys

[Tanzani-Pre-Investment Survey For Sustainable Solar Market Packages Project](#) (Undated, 42 pages). A detailed interview guide for conducting a socio-economic survey of communities that could be candidates for community and household solar installations under a World Bank financed program. The survey is designed to provide information that would help in selecting communities that are more likely to be willing to pay for and benefit from the subsidized solar systems.

iv. Sample Terms of Reference (TORs) for Consultants

The first TOR is to hire a consultant to perform a post-installation validation of the village level economic benefits obtained from the installation of an off-grid mini-grid powered by a hydro/wind/biomass generator. The second TOR is to hire a chartered engineer to evaluate the safety, reliability and likely longevity of off-grid mini-grids that have received capital cost grants. It is anticipated that the on-site evaluations would take place 3 to 4 years after initial installation. The third TOR is to hire a consultant to perform an environmental assessment of off-grid mini-grids to evaluate compliance with the Government of Sri Lanka and World Bank requirements.

Sri Lanka

- [Village Hydro/Wind / Biomass Economic Benefits Verification](#) (2002, 2 pages)
- [Village Hydro/ Wind / Biomass Post-Installation Verification](#) (2002, 2 pages)
- [Post Completion Environmental Audit of Sub-Projects](#) (2002, 2 pages)

For more information, please visit Sri Lanka’s [Rural Economic Development \(RERED\) Project](#)

v. Subsidy/Grant Applications and Agreements, Conditions of Service and Concessions

Sri Lanka

[Project Application Form](#) (October, 2005, 3 pages). A sample grant application for an off-grid community based mini-grid. The application requires information on the likely sources of funding (grants, loans and equity) as well as information on the likely economic effects of the project.

Mali

- This is a detailed annex to the concession document that allows a retail service provider to serve a specified community. It specifies minimum daily duration of the service and the requirement that voltage cannot fluctuate by more than 12% from the target level and frequency by more than 5 % from the target level. It also specifies the information that the concession holder must report to AMADER, the rural electrification agency in Mali. Article 21 specifies reporting requirements for the concession holder. Article 25 gives detailed formulas on how retail tariffs will be set. The tariff setting formula allows the concession holder to recover the costs of pre-financing the customer's connection costs. The overall effect is that AMADER (a rural energy agency) functions both as a grant giving agency and a de facto regulator. [AMADER-Cahier de Charges](#) (Undated, 15 pages, in French). [Technical Specifications to Concession Contract](#) (Unofficial English translation).
- The concession document which essentially constitutes a contract between AMADER and the holder of the concession. Like many contracts, it specifies force majeure conditions and a dispute resolution process. Article 6 spells out the operator's obligations relative maintenance and replacement. Article 15 describes the process by which a new operator may take over the concession at the end of the concession period and how the "outgoing operator" will be compensated. [AMADER Contrat d'autorisation](#) (Undated, 11 pages, in French). [Concession Contract](#) (Unofficial English translation).
- This agreement sets forth the rights and responsibilities of the concession operator and AMADER in financing a new project. Note the operator is allowed to provide cash or "in kind" contributions and must provide proof of these contributions within 60 days after the signing of the financing agreement. Article 3 provides a detailed description of when and how AMADER will provide its grants. AMADER agrees to disburse 25% of its total grant when the operator provides proof of its contribution. The remaining 75% is disbursed according to pre-determined "stages of work." [Convention de Financement](#) (Undated, 10 pages, in French). [Model Financing Agreement](#) (Unofficial English translation).

Connecting Entities

i. Contracts With Village Level Agents

Vietnam

A contract between EVN (the national utility) and local independent contractors who will provide meter reading, billing and minor repairs for retail customers. By using individuals from local communities to perform these services, EVN estimates that it saves 30 to 40% of what it would cost to provide the same services with one of its own employees. A typical service agent will be responsible for 30 to 100 households and will earn US \$30 to 120 per month.— [EVN: Contract with Service Agent](#) (2008, 12 pages).

ii. Technical Standards

Vietnam

[Principal Technical Standards For Electrical Materials and Construction Structures Part I](#) (MV and LV) (2006, 62 pages) and [Part II](#) (2006, 37 pages).

Peru

In Peru, technical and commercial quality of service standards are different in urban and rural areas. Quality of service standards are lower for isolated electricity service providers in rural areas. The rationale for setting lower standards of service in rural areas is that it is more difficult and costly to provide comparable service in rural areas at a price that would be avoidable to generally poorer rural customers. For example, the maximum allowed number of interruptions in urban concentrated areas is 12 while the comparable figure for rural dispersed areas is 40. [Normas Técnicas de Calidad de los Servicios Eléctricos Rurales](#), (in Spanish). [Quality of Service Standards for Grid Connected Rural Service Providers](#). (Unofficial English translation) (October 2008, 47 pages).

Further Reading

- [Mini Grids for Half a Billion People: Market Outlook and Handbook for Decision Makers](#), Technical Report of the Energy Sector Management Assistance Program (ESMAP), World Bank 2019.
- [From the Bottom Up: How Small Power Producers and Mini-Grids Can Deliver Electrification and Renewable Energy in Africa](#) by Bernard Tenenbaum, Chris Greacen, Tilak Siyambalapitiya and James Knuckles, World Bank 2014.

Related Content

- [Sub-national and Municipal PPPs](#)
- [Grain Storage PPPs](#)
- [PPP in Health](#)
- [Municipal Solid Waste \(MSW\) PPPs](#)
- [Water & Sanitation PPPs](#)
- [Sub-national and Municipal Policies Laws and Regulations](#)
- [Municipal Public-Private Partnership Framework](#)
- [Further Readings on Sub-national PPPs](#)

Additional Resources

- [Three ways to partner with cities and municipalities to mobilize private capital for infrastructure: A look at Latin America](#)
- [Asian Countries Tap Potential of Subnational PPPs](#)
- [What do mothers-in-law and national PPP structures have in common?](#)

Disclaimer: *The resources on this site is usually managed by third party websites. The World Bank does not take responsibility for the accuracy, completeness, or quality of the information provided, or for any broken links or moved resources. Any changes in the underlying website or link may result in changes to the analysis and recommendations set forth on the Public-Private Partnership Resource Center. The inclusion of documents on this website should not be construed as either a commitment to provide financing or an endorsement by the World Bank of the quality of the document or project. If you have any comments on any of the links provided on the Public-Private Partnership Resource Center, please get in touch [here](#)*