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Hydropower: Hydroelectric Pipeline

Hydropower

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Hydropower or water power energy is created from flowing water. As the world's largest affordable renewable energy source, hydropower currently accounts for about 18 percent of the total world electricity supply.

Below are examples of laws and regulations in various jurisdictions as well as sample agreements relating to hydro power projects and additional references.

Policies, Laws and Regulations: Hydropower

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.

France

Ministry of Ecological Transition: portal for hydroelectric

Lao PDR

The Policy on Sustainable Hydropower sets out regulatory guidelines for the planning, construction, operation and transfer of both large and small scale hydropower projects. Among other things, the policy requires that all hydropower projects undertake a comprehensive Environmental and Social Impact Statement and implement benefit sharing arrangements with local communities.

Montenegro

Concession Act consisting of the information and analysis directly related to the process of concession award for exploitation of water flows for construction of small hydropower plants in Montenegro

Project Documents and Contracts: Hydropower

Brazil

Table with concession agreements and amendments for a substantial number of projects (in Portuguese)

- Concession agreements for generation

- Concession agreements for generation, transmission and distribution

Canada

Clean Power Call Request for Proposals (2008) by the province of British Columbia with specimen Energy Purchase Request Agreement and related documents (in English).

Standing Offer Program by BC Hydro - The Standing Offer Program (SOP) encourages the development of small clean or renewable electricity projects (over 100 kW up to and including 15 MW). It offers small-scale clean energy projects in British Columbia the opportunity to enter into energy purchase agreements (EPAs) with BC Hydro. An EPA requires the project developer to sell all energy from the project to BC Hydro for a term of 20 to 40 years commencing on commercial operation date (COD).

The standard documents include a standard form EPA of March 2016.

Standard Form Electricity Purchase Agreements published by BC Power, 2006. EPA between Independent Power Producer (Seller) and British Columbia Hydro and Power Authority in 2006 (Open Call for Power – 2006).

Ethiopia

Draft Sample Power Purchase Agreement (PPA) of May 2015 for Large Hydro Facility Developed as a joint venture between an Independent Power Producer (IPP) and Ethiopian Electric Power Enterprise (EEP) Joint Venture is to install, own, operate and maintain a hydroelectric power generation plant and EEP to purchase offered capacity and the electrical energy produced in accordance with the terms and conditions set forth in the agreement. 25-year contract.

Lao PDR

IPP Hydropower Procurement Manual ("**the Manual**") - The Manual is intended to contribute to the strengthening of IPP procurement in Lao PDR. Together with its annexes it provide a set of guidelines for the procurement of medium and large hydropower projects on a Build-Operate-Transfer ("BOT") basis.

Power Purchase Agreement ("PPA") for the Xayaburi Dam Project - This PPA provides a more recent example of offtake arrangements for hydropower projects in Laos (a number of which are dedicated to power export to neighboring countries). The project is sited approximately 350km upstream of Vientiane and is developed pursuant to a concession agreement with the government of Laos PDR. The power plant has a nameplate capacity of 1225 MW and the electricity produced is exclusively earmarked for export to Thailand. The PPA is signed between the project company, Xayaburi Power Company Limited (a Laos incorporated subsidiary of the Thai construction company CH. Karnchang Public Company Limited, the lead contractor for the project) and Electricity Generation Authority of Thailand ("**EGAT**"). It is structured on a BOO model, with long term offtake to commence upon achieving commercial operation. It provides a useful illustration of an energy project involving the international export of electricity and some of the additional complexities involved in such projects (including risk allocation between state utilities from two different countries operating in different roles). For key features of the Power Purchase Agreement ("PPA") for the Xayaburi Dam Project, read more...

Model Concession Agreements - The Investment Promotion Department of Lao PDR also publishes model draft concession agreements for PPP projects between private project proponents and the government of Laos. While these may need to be further adapted to particular projects, they provide useful guidance on standard terms which the government of Laos will likely require for all PPP projects (e.g. in relation to the importation of equipment and material into Laos for the project, obligations to provide local employment, environmental management and community engagement).

Nepal

Nam Theun 2 Hydroelectric Project – Summary of the Concession Agreement between the Government of Lao PDR and Nam Theun 2 Power Company Limited (NTPC) of November 2005.

Proposed Draft Model Project Development Agreement (for Hydropower Projects with installed capacity less than 500MW) between the Government of Nepal and Project Company. Project Company to develop and

execute hydropower project including the transmission line on a Build-Own-Operate-Transfer (BOT) basis. The Model Project Development Agreement is endorsed and authorized by the Ministry of Energy of Nepal.

Macedonia

Water Concession Agreement on Construction of Small Hydro Power Plants for Electricity Generation - Draft Concession agreement to design, construct, operate, maintain and manage a hydro-electric generating Facility with associated fixtures and equipment of 2007.

Malawi

Draft Standard PPA of December 2010 published by the Malawi Energy Regulatory Authority for hydro/geothermal/gas fired] power generation between IPP ("Seller") and Purchase, a company entitled to purchase electricity and to transmit and distribute electricity in the Republic of Malawi;. Seller proposes to develop, design, finance, insure, construct and complete, own, operate and maintain a [hydro/geothermal/gas fired] power generation facility and Purchaser wishes to purchase from the Seller he capacity of such power generation facility and all of the net electrical output pursuant to the terms and conditions of the PPA.

Independent Power Producer (IPP) Framework for Malawi, 8 March, 2017.

Malaysia

Renewable energy standardized power purchase agreements for small hydropower projects (i) up to 10 MW and (ii) above 10 MW published by the Sustainable Energy Development Authority Malaysia. Based on feed-in tariff system.

Namibia

Model PPA for small scale IPPs – Standardized agreement for small scale IPP for supply of electrical energy between Electricity Control Board, Namibia and private company of December 2006.

Pakistan

a. Standard Agreements published by the Private Power and Infrastructure Board of the Ministry of Water & Power of Pakistan - Agreements between national transmission and dispatch company ("Power Purchaser") and public or private company ("Seller"). Seller will design, engineer, construct, insure, commission, operate, maintain a hydro-electric generation facility (the "Complex"); Agreements are supposed to encourage private investment in the electric power sector in Pakistan and to provide assurances of support for the Seller's efforts to develop the Project in an efficient and timely manner.

- Standard Hydropower Implementation Agreement

- Standard Hydropower Purchase Agreement (PPA) and Standard Water Use Agreement (WUA)

b. Standard PPA and IA published by the Alternative Energy Board - Standard Agreements between the government of Pakistan ('Purchaser") and public or private company ("Seller"). Seller will design, engineer, construct, insure, commission, operate, maintain and transfer hydro-electric generation facility (the "Complex") on build-own- operate-transfer (BOOT) basis; Agreements are supposed to encourage private investment in the electric power sector in Pakistan and to provide assurances of support for the Seller's efforts to develop the Project in an efficient and timely manner.

Energy Purchase Agreement - EPA between Seller and Purchaser relating to hydroelectric generation facility.

Implementation Agreement between Seller and Purchaser.

Peru

Concessions for power generation - Main Hydroelectric Plants under Construction with Installed Power Greater than 150 MW (Concesiónes de Generación -Principales Centrales Hidroeléctricas en Construcción con Potencia Instalada Mayor a 150 MW) (Spanish).

South East Asia

Power Purchase Agreement (PPA) for Small Scale Rural Power Projects - Part of suite of documents prepared by international law firm for use in small scale rural power projects.

Tanzania

Model Power Purchase Agreement for a hydropower project published by the Energy and Water Utilities Regulatory Authority (EWURA). Model Agreement for the sale of power from a hydro power generation plant of installed capacity more than 10 MW for 30 years. The draft agreement is to be used as a starting point in the procurement of hydropower projects and needs to be adjusted on a case by case basis.

Further Reading and Resources

Climate Toolkits: Hydropower, The hydropower toolkit helps address major climate-related aspects in projects, such as risk identification, incorporating climate considerations in project selection, and assessing climate effects on project economics. The Hydropower toolkit is part of the Climate Toolkits for Infrastructure PPPs.

Operation and Maintenance Strategies for Hydropower: Handbook for Practitioners and Decision Makers, The World Bank 2020. Through eight steps, this handbook proposes a framework and processes to establish an operation and maintenance (O&M) strategy adapted to local contexts. It also presents the basic principles of O&M for hydropower and provides examples of the consequences of inadequate O&M policies, programs, and procedures.

Hydroelectric Power: A Guide for Developers and Investors, IFC 2015 - The guide aims to assist all players in hydropower development involved in project planning, evaluation (appraisal), implementation and monitoring. It emphasizes the importance of interactions among technical, commercial, permitting/licensing, environmental and social, and financing activities. The technical sections are more detailed and can be used as reference, while the permitting/licensing and financing sections are intended to provide general guidelines; each project needs to consider country- and site-specific requirements. It is a complement and not a substitute for IFC's Performance Standards and other official guidance documents.

Legal and Economic Analysis: Development of Hydro Power Plant (HPP) Projects in Peru, Oesterreichische Entwicklungsbank 2012.

Related Content

- **Climate-Smart PPPs**
- **Climate-Smart PPP Legal and Regulatory Framework**

- **Preparing, Procuring and Implementing Climate-Smart PPPs**
- **?Sector-Specific Content on Climate-Smart**
- **Renewable Energy**
- **Climate-Smart PPPs: Further Reading and Resources**

Additional Resources

- Sub-national and Municipal PPPs
- Public-Private Partnerships for Transport
- Power and Renewable Energy PPPs
- Solar Power Energy
- Wind Power Energy
- Biomass
- Geothermal Energy

Partner Resources



Renewable Energy Project Resource Centre (REPRC)

hosted by Energypedia

Wiki-based library of energy project resources. Includes sample terms of references, procurement documents, economic analyses and case studies (success factors and lessons learned).

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