



USAID
FROM THE AMERICAN PEOPLE

USAID-Funded Nepal Hydropower Development Project (NHDP)

Electricity Regulatory Commission and the Emerging Legal, Policy, and Regulatory Framework for Hydropower in Nepal

Arun Anandan

Regulatory Advisor

26 November 2018

This document was prepared for the United States Agency for International Development Nepal (USAID/Nepal) by Deloitte Consulting LLP on Contract No. AID-367-TO-15-00003. The contents are not the responsibility of USAID, and do not necessarily reflect the views of the United States Government.

Contents

▶ Introduction

- Nepal Hydropower Development Project (NHDP)
- Importance of Legal, Policy and Regulatory Frameworks
- Framework for Hydropower Before ERC Act
- Electricity Act and ERC Act

▶ Concept of Regulation

- Definition, History, and Purpose of Regulation
- Key Regulatory Activities

▶ Nepal's Electricity Regulatory Commission [ERC]

- Functions and Duties of the Commission
- ERC Rules

▶ Implications on Hydropower Financing and Risk Management

- Anticipated changes
- Implications
- Limitations

▶ International examples on Treatment of Hydropower by Regulators

▶ Summary

Introduction

USAID funded Nepal Hydropower Development Project

- USAID’s Nepal Hydropower Development Project (NHDP) has, since 2015, been supporting the progress of Nepal’s power sector, with a special focus on large hydropower projects (HPP) and sector reforms.
- NHDP’s scope of work is divided into two components: component 1, which focuses on providing advisory support to facilitate the development of large and medium hydroelectricity project contracts; and component 2 which focuses on providing advisory support to MoEWRI, for designing targeted electricity sector reforms.

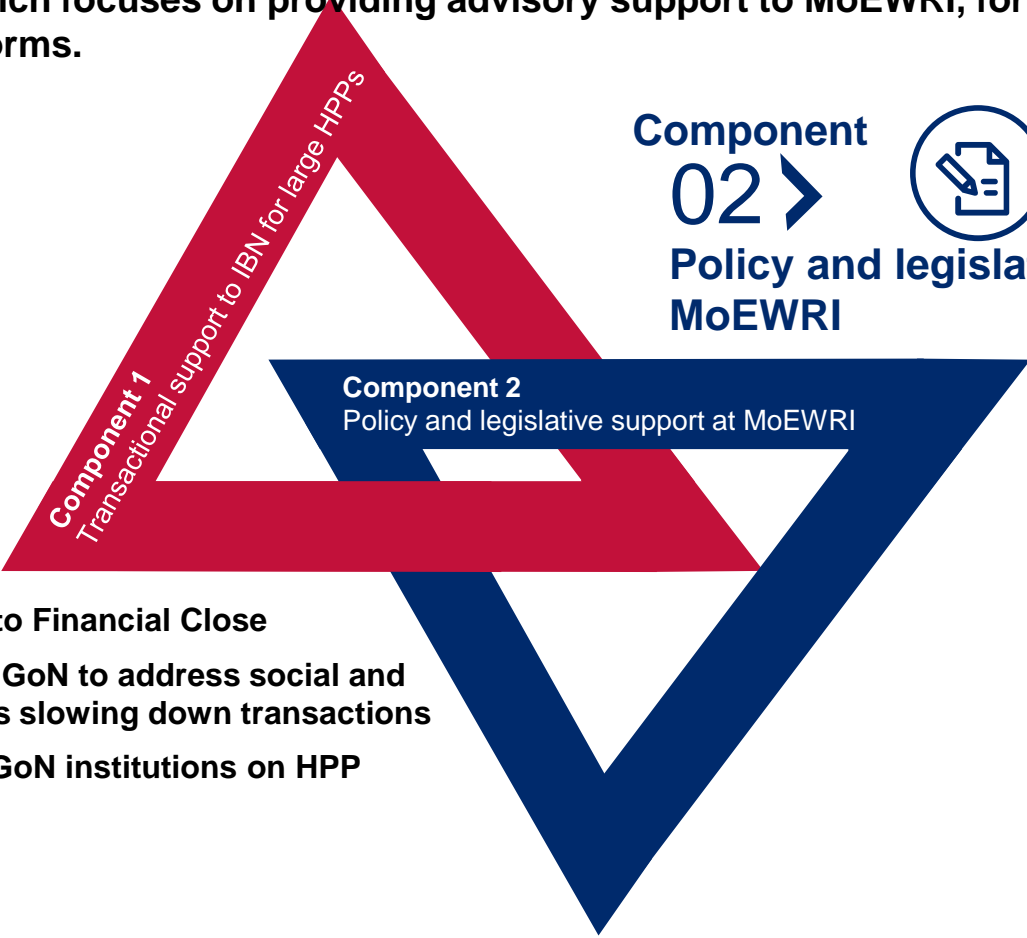
Component
01 > 

Transactional support to the IBN for GoN’s large hydropower projects [> 500MW]

- Goals:**
- Bring at least 1 HPP to Financial Close
 - Help developers and GoN to address social and Environmental issues slowing down transactions
 - To build capacity in GoN institutions on HPP issues

Component
02 > 

Policy and legislative support at MoEWRI



- Goals:**
- Establish an Electricity Sector Regulator to bring better planning and improved electricity services
 - Reduce load shedding
 - Increase regional power trade

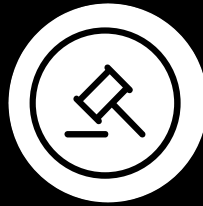
Importance of Legal, Policy and Regulatory Frameworks [1/3]

- Policies, laws & regulations – All play a key role in the financing and risk management of hydro-power projects.



Policy

- Outlines the Government's vision, plan and strategies
- Medium or long term outlook
- Usually, they serve as guidance documents rather than legally binding documents



Laws

- Legally enforceable
- In-line with the constitution, and the spirit of prevalent policies
- Amended or replaced to adapt to new circumstances



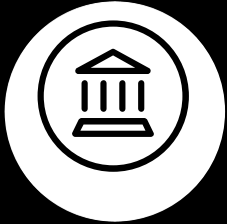
Regulations

- Clear set of rules, norms and guidelines that are legally enforceable
- Evolved through consultations with key stakeholders
- Strives to be fair, efficient, economic and predictable in its approach

- Policies signal the priorities of the Government. Such signals play a key role in the investment planning of utilities and investors.
- For example, a policy that advocates focus on small hydropower spread across the country versus a policy aiming to promote large hydropower in major hydro basins have vastly different implications for investors and utilities.

Importance of legal, policy and regulatory frameworks [2/3]

- Policies, laws & regulations – All play a key role in the financing and risk management of hydro-power projects.



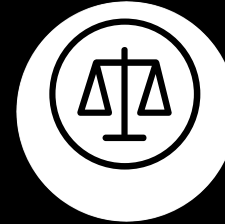
Policy

- Outlines the Government's vision, plan and strategies
- Medium or long term outlook
- Usually, they serve as guidance documents rather than legally binding documents



Laws

- Legally enforceable
- In-line with the constitution, and the spirit of prevalent policies
- Amended or replaced to adapt to new circumstances



Regulations

- Clear set of rules, norms and guidelines that are legally enforceable
- Evolved through consultations with key stakeholders
- Strives to be fair, efficient, economic and predictable in its approach

- Laws have an enabling role in hydropower investments. They empower a Governmental / Regulatory Authority to decide upon utilization of water and other environmental resources for the purpose of hydropower generation.
- Laws also provide the contours of what is allowed and what is not allowed, which even the Government cannot defy, unless the law is changed.

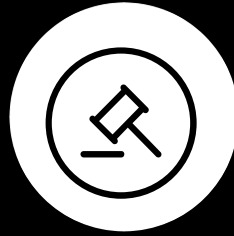
Importance of legal, policy and regulatory frameworks [3/3]

- Policies, laws & regulations – All play a key role in the financing and risk management of hydro-power projects.



Policy

- Outlines the Government's vision, plan and strategies
- Medium or long term outlook
- Usually, they serve as guidance documents rather than legally binding documents



Laws

- Legally enforceable
- In-line with the constitution, and the spirit of prevalent policies
- Amended or replaced to adapt to new circumstances



Regulations

- Clear set of rules, norms and guidelines that are legally enforceable
- Evolved through consultations with key stakeholders
- Strives to be fair, efficient, economic and predictable in its approach

- Regulations build and expand upon the laws, and are typically treated as sub-legislation.
- The regulatory framework covers a variety of aspects such as tariff determination, competition, compliance monitoring, fixation of performance norms, consumer protection and capacity building.
- The regulatory framework strives to provide predictability in regulatory approach, thereby giving assurance and comfort for investments in hydropower. The framework also determines the regulated returns or competitive market framework, which substantially influences hydropower financing.

Framework for hydropower, before ERC Act

- The core framework for hydropower in Nepal consists of the following, with the Electricity Act of 1992 assuming center stage in defining the industry in the past two and a half decades.



Policies

Hydropower Development Policy, 1992	Utilize hydropower to meet the demands of urban and rural areas, and industrial consumers, by motivating national and foreign private sector investment
Hydropower Development Policy, 2001	Hydropower development, rural electrification and export of hydropower



Laws

NEA Act, 1984	Establishment and management of NEA, for generation, transmission & distribution
Electricity Act, 1992	Framework for licensing and regulation of survey, construction & operation of projects
Investment Board Act, 2010	Establishment of a high powered Investment Board to mobilize investments, including investment in hydro power projects with capacity of 500 MW or more.
New Constitution, 2015	Demarcation of powers and responsibilities in the electricity industry between central, state and local levels of Government

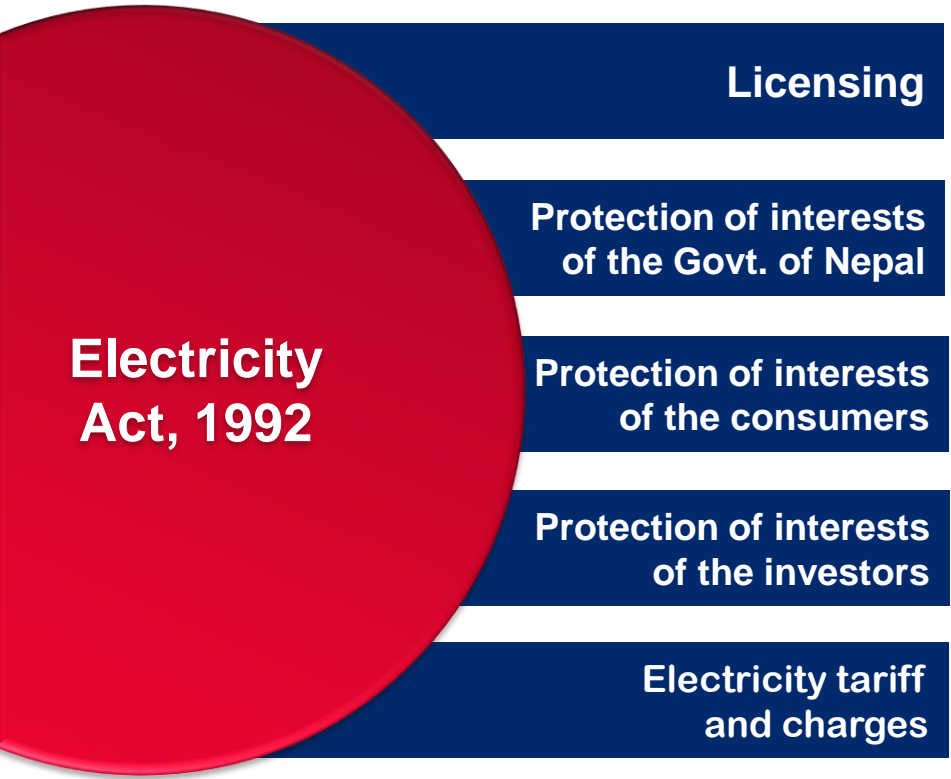


Regulations

Electricity Rules, 1993	Implementation rules for the Act; Provisions that led to the formation of DOED
Licensing Directives [Multiple years]	Detailed procedure and conditions for licensing

Electricity Act

- The Electricity Act of 1992 tied together various provisions to protect the interests of Government, consumers and the investors.
- The contents of the Act can be considered to fall under any of the following categories:



Mandatory licensing for 1 MW+, Licensing procedure, Validity.

Payment of royalty, Govt. ownership of land & assets of foreign owned projects after the expiry of license period, GoN approval for import / export, no adverse effect to be made on environment.

Quality standards for electricity, Safety measures, Provision for cancellation of license for licensee's failure to make improvements.

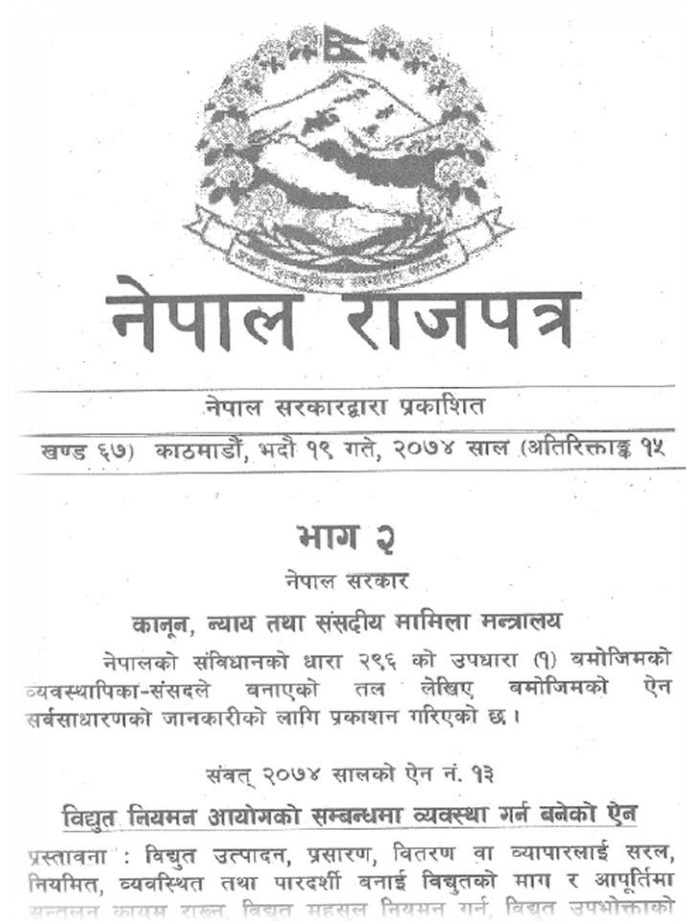
Protection from Nationalization of assets, Concessions on customs duty and sales tax for import of capital equipment, Facility of foreign exchange, Assistance in arranging land.

Setting up of Tariff Fixation Committee, Deregulation of off-grid electricity tariff.

Rules:	Electricity Rules, 1993	Electricity Tariff Fixation Rules, 1994
---------------	--------------------------------	--

Electricity Regulatory Commission Act

- In August 2017, after 20 years of effort, Nepal passed an act to establish an Electricity Regulation Commission.
- The new law – “Electricity Regulatory Commission Act, 2017” came into effect from 05 December 2017.
- Based on the law, Government of Nepal is in the process of appointment of the Chairperson and Members to commence the operation of ERC.
- The establishment of such a regulatory body marks the beginning of a new era in the development of Nepal’s hydropower sector.



Concept of Regulation

What is Regulation?

- In the context of electricity utilities, regulation refers to the supervision and oversight exercised on the utilities through a well defined regulatory framework, supported by legal powers, so as to ensure that interest of all relevant stakeholders are protected in an efficient and socially beneficial manner.
- Regulation is undertaken by institutions which may be named differently in different jurisdictions; such as regulatory commissions (India, Bangladesh), regulatory authorities (Pakistan, Bhutan), public utility commissions (Sri Lanka) etc.
- Under regulation, utilities are given the opportunity to recover their costs and also earn a “fair and reasonable” return on their investments. In certain scenarios such as overachievement of targets, they may also be allowed to make additional profit.
- Apart from regulation of costs and tariffs, regulators serve as watchdogs to ensure that utilities are responsive to customers’ needs, and that their service is adequate and reliable.

Key players and their roles in regulatory framework

Government	Regulator	Utility	Consumers
Formulate policies, laws and guidelines	Issue regulations, guidelines, rulings / orders Undertake licensing, dispute resolution, market monitoring etc.	Comply with directives of regulator File tariff petition / rate case to regulator Provide updates / information required by the regulator	Participate in public hearings; respond to relevant public notices Present the case of consumers before the Commission directly or through associations

History of Regulation in the Electricity Industry

- The history of electricity utility industry started with the opening of Pearl Street station in New York in 1882. The 100 KW station supplied mainly lighting power in the lower Manhattan area.
- The regulation of electricity industry followed the growth of the industry. In the initial years, regulation was mainly through franchise agreements that the utilities had to sign with the municipalities, for obtaining permission to dig up streets and install wires.
- The franchise agreements had either price ceiling clauses, or required the prices to be arrived at based on mutual consent between utilities and the municipalities.
- After some time, utilities started viewing the control exerted by municipalities as excessive, and there were also allegations of corruption.
- In 1907, the states of Wisconsin and New York started regulating the electricity industry through state Commissions. Between 1907 and 1922, nearly thirty states in USA created statewide commissions to regulate public utilities.

Wisconsin Public Utilities Law of 1907

Commission vested with powers to supervise and regulate public utilities
(power, heat, water, telephone)

Utility charges to be just and reasonable

Commission empowered to fix rates for utilities

Commission empowered to demand access to the books and accounts of utilities

Public utilities required to provide “reasonably adequate service and facilities” for consumers

A public utility has the obligation to serve all who reasonably request service

These basic
concepts still
hold true

Purpose of regulation

To limit monopoly power and remove conflict of interest

Public utilities, especially network based utilities such as those relating to wires and pipelines, are natural monopolies
When monopolies flourish, customers suffer—monopolies typically do not have adequate incentives to improve their efficiency or provide better services

Regulation introduces some amount of competition, and also introduces penalties and incentives on the monopolies to improve their performance and reduce costs.

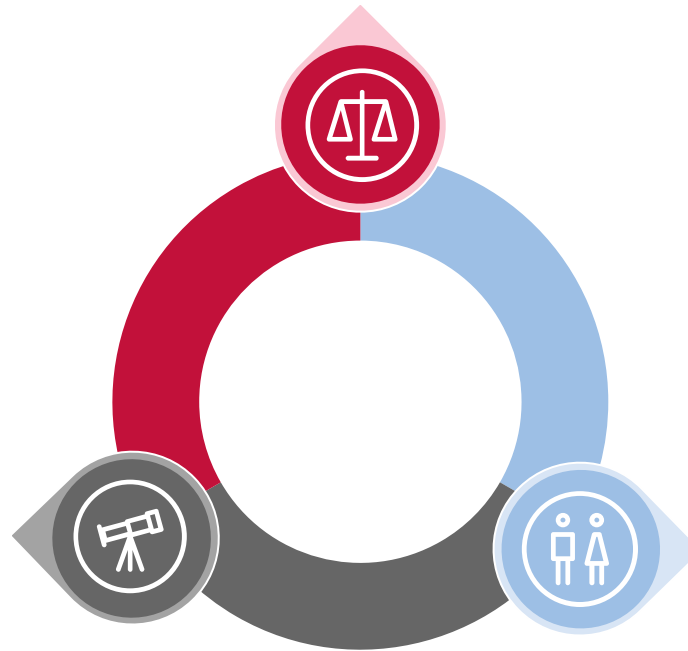
Public utilities are mostly owned by Government, and there is thus a clear conflict of interest in the Government also determining utility rates and related aspects

To provide predictability

A regulator can provide predictability in sector regulation by issuing clear framework and guidelines.

Predictability may cover rules for market access, pricing mechanisms, customer service standards etc.

Predictability aids in the growth of private investment in the sector.



To protect the interests of all the stakeholders

A regulator protects the interests of all stakeholders – Government, consumers, utilities, investors etc.

Customers are the most vulnerable of all stakeholders. They cannot protect themselves from the much stronger government and state-owned utility. Regulator empowers them and provides them a voice in decision making process.

Key regulatory activities

- The key goals of a regulator are to:
 1. Protect Principal Stakeholders
 - Government
 - Utility / Service Providers
 - End Consumers
 - Society and environment
 2. Operate Transparently; and
 3. Promote competition.
- The regulator works towards these goals through its activities such as licensing*, price determination, fixing service standards, and dispute resolution.
- The regulator has various tools at its disposal such as public hearing, discussion papers, issue of sub-legislation (regulations/directives), framing of guidelines and issue of orders.
- In some legal frameworks, regulators also have judicial/quasi judicial powers such as powers for summoning of witnesses, demand the production of documents, and order imprisonment of officials, if needed.

Principal activities of a regulator



Access to markets - Licensing



Pricing - Tariffs and fees



Prevent abuse of monopoly power – Service Stds



Resolution of disputes and technical issues

** In Nepal's context, licensing will continue to be under Government based on existing legal framework.*

Nepal's Electricity Regulatory Commission

Key features of the Commission

- The ERC Act envisages the creation of a self-governing regulatory commission headed by a Chairperson and four Members, who are selected under the recommendations of a Selection Committee constituted by the Government

Key provisions* of ERC Act, 2017

Sec 3(1): Regulates the generation, transmission, distribution, and trade of electricity

Sec 4: ERC is a self-governing corporate body with perpetual succession

Sec 17(1): Ensure compliance of Licensees with the Act, sub – legislation (rules, orders etc) or other prevailing laws

Sec 37: Power to issue directions to licensees under the Act. Duty of all to comply with such directions

Sec 19(1): Power to fine licensees not complying with orders or directions...

** Based on unofficial English translation of ERC Act, 2017*

**Electricity
Regulatory
Commission
of Nepal**

Functions and duties of the Commission

COMPETITION AND CONSUMER INTEREST

Protection of consumers, ensure competition, provide for open access, etc.

TARIFF AND REGULATION OF POWER PURCHASE

Electricity tariff, transmission and distribution charges, PPA rate, PPA approval, surcharges etc.

TECHNICAL MANAGEMENT

Grid code, distribution code, least cost expansion plan, quality and safety standards etc.



DISPUTE RESOLUTION

Resolve disputes between [DOED] licensees, and consumers

IMPROVE CAPACITY OF [DOED] LICENSEES

Standards for evaluation of efficiency, code of conduct, uniformity in accounting, surprise examination etc.

COMPLIANCE/INSPECTIONS

Examine / inspect compliance of [DOED] licensees*, impose fines for non-compliance of [DOED] licensees

Despite lack of licensing powers, the ERC Act has entrusted the Commission with a substantial amount of functions and duties

* The licenses are issued by Government of Nepal through Department of Electricity Development (DOED). However the ERC Act has granted power to the Commission to conduct examination and inspection of compliance of the [DOED] licensees.



Key tasks assigned to the Commission under ERC Rules

- The ERC rules, notified in 2018, clarified further about the key functions and duties of the Commission, and provided a more focused list of action points, mandatory requirements and guidance for the Commission.

KEY TASKS / FUNCTIONS ASSIGNED TO THE COMMISSION UNDER ERC RULES

CODES, STANDARDS AND APPROVALS

- Approve Grid Code (To be consistent with international grid)
- Approve Distribution Code
- Approve Least Cost Expansion Plan
- Approve/ set performance standards for licensees
- Approve quality and safety standards for national grid
- Define Obligations of system operators
- Issue Directives for electricity trade
- ERC must approve transfer of ownership (shares) more than 5% change in share structure

TARIFF AND COMPETITION

- Rules to develop tariff methodology and procedures to apply for a tariff
- Procedures for approval of PPA
- Power to set generation, transmission and distribution tariffs
- Must approve direct sales from generating licensees to industries / institutions
- Develop procedures to allow consumers to select their service provider
- Set/approve trading margin

CONSUMER PROTECTION

- Set/approve standards for electricity quality (voltage, frequency, outage duration and regularity and duration, of electricity) supplied by distribution licensees, including compensation
- Customer complaints procedures and monitoring
- Other quality and performance standards as determined by regulator and licensee
- Process for the distribution licensee to make new connections

- The Rules also specified the process for selection of Chairperson and Members

* Based on unofficial English translation of ERC Rules, 2018

Implications for Hydropower Financing and Risk Management

Anticipated Changes in Project Process



Project Development

- Commission's consent / approval is mandatory for all new PPAs
- Commission to fix tariff for power purchase from HPPs
- Utility required to comply with Commission's "Least Cost Expansion Plan"
- Commission's prior approval required for public issue of shares



Project Construction

- Commission may penalize time over-runs, and can incentivize early completion of project
- Commission may undertake prudence verification of incurred capital expenditure



Operation

- Commission to monitor compliance of the power plant, with regard to license conditions, applicable laws, and related orders
- Commission may incentivize performance in excess of normative levels, and may penalize inadequate performance
- Commission's prior approval required for purchase / sale of shares, resulting in more than 5% change in share structure [*Not applicable for listed companies*]

Anticipated changes in the power market



Competitive Markets

- In the medium to long term, Commission may also allow signing of PPA directly between generators and bulk consumers / industries
- This will allow such bulk consumers to wheel power utilizing the existing transmission and distribution infrastructure, by payment of transmission and wheeling charges, and any additional charges determined by the Commission.
- Credit worthiness of such bulk consumers may be higher than the distribution utilities, and therefore developers may find it as one of the attractive options for sale of power.



Trading Licensees

- ERC Act and ERC Rules consist of certain provisions for electricity traders, though ideally, those may not be implementable till amendment of Electricity Act, to allow licensing of trading.
- As and when the regulatory framework for traders become operational, and the existing single-buyer model is discontinued, developers may obtain access to more attractive sale options, as traders may be able to undertake aggregation of supply / demand.

Implications on financing and private investment

KEY ISSUES / BOTTLENECKS

Prolonged negotiations for PPAs most of which are subject to Governmental discretion

Disputes / difference of perception between developers and utility over tariff offered by the Government

Disagreements in dealing with impact of geological surprises during construction

Regulatory / policy uncertainty

HOW A REGULATOR CAN IMPROVE THE SITUATION

Transparent process for approval of Power Purchase Agreement, including possibility of introduction of standard PPA templates

Regulator develops sub-legislation that can also consider any project specific issues and requirements. Dispute resolution under regulator also expected to be faster.

Regulator undertakes prudence verification of capital expenditure, subject to risk sharing provisions in PDA

Regulators typically avoid retrospective actions and strive to protect existing capital investments from getting stranded by regulatory changes

Implications on performance and transparency

KEY ISSUES / BOTTLENECKS

No mechanism to penalize inefficient service providers, other than internal government level reviews

Inadequate level of transparency and stakeholder engagements

HOW A REGULATOR CAN IMPROVE THE SITUATION

Establishment of performance standards, including penalties

Availability based capacity charges for hydro power plants

All records subject to public review

The Commission also initiates public hearings and invites comments from all stakeholders on key decisions in the sector

Potential role of the Commission in risk management

Risk	Potential role of the regulatory commission in risk management
Construction risks	In case of geological risks, natural disasters etc., the Commission has powers to grant extension in time, or additional capital expenditure, after undertaking its own prudence check.
Offtake risks	Commission is allowed to determine two-part tariffs for whole sale supply, with capacity charges linked to availability.
Currency risks	<p>As per ERC Rules 2018, the Commission is expected to consider the exchange rate of convertible foreign currency as one of the components during tariff fixation.</p> <p>The Commission may also approve a mechanism to compensate developers with international loans, for foreign exchange rate variation, or for their hedging costs, subject to prevalent Government policy and laws, and subject to risk management framework agreed in the PDA.</p>
Political and legal risks	Commission is expected to play a key role in protection of existing operational assets and avoid them from getting stranded due to unexpected legal and/or regulatory changes.

Limitations of the Commission

Regulatory Commission is
NOT

- A substitute for Government; Government will continue to play a key role in policy formulation and licensing
- A silver bullet solution for all the woes of the sector

Regulatory Commission
CANNOT

- Decide by itself on matters involving other ministries
- Act against legal framework and constitutional provisions
- Unilaterally modify existing PPAs

Regulatory Commission
REQUIRES

- Support from the Government
- Compliance from the regulated entities
- Participation by all stakeholders, especially the common citizens

International Examples of Treatment of Hydropower by Regulators

Treatment of hydropower by CERC in India

- In India, Central Electricity Regulatory Commission [CERC] has been balancing the interest of developers / generating companies and the distribution utilities over the last two decades.
- CERC provides the following incentives to large hydropower projects:
 1. While the regulated rate of return on equity is 15.5% for thermal power projects, it is 16.5% for storage based hydro power projects, and for run of river projects with pondage.
 2. Additional capitalization expenses on account of damage caused by natural calamities and geological reasons, after adjusting insurance proceeds, if any, can be passed on to tariff.
 3. Normally land is considered to be a non-depreciable asset in tariff determination. However, due to the peculiar nature of hydro project where the land area gets submerged and land used for reservoir is not available for any other use, CERC allows depreciation on cost of land in the case of hydropower projects.
 4. Hydro power projects can declare commercial operation commencement at full capacity, even if water level or inflow is insufficient to demonstrate full capacity, subject to full capacity demonstration at a later date when adequate water is available.
 5. Two part tariff is allowed for hydro power projects. 50% of tariff recovery is linked to plant availability, with no linkage to actual water availability / generation.

Treatment of hydropower by NEPRA in Pakistan

- For hydropower IPPs, National Electric Power Regulatory Authority [NEPRA] determines tariff upfront for thirty years, subject to certain adjustments later. Typically, separate tariff is adopted for debt repayment period of 12 years, and thereafter.
- The tariff components also have indexation with domestic and international parameters, as below:

Tariff	Component	Indexation
Fixed Charges	Fixed O&M – Local	Local CPI
	Fixed O&M – Local	Exchange Rate, Local CPI
	Insurance	Exchange Rate
	Debt Service	LIBOR, Exchange Rate
	Return on Equity	Exchange Rate
	Return on Equity during Construction	Exchange Rate
Variable Charges	Variable O&M – Local	Local CPI
	Variable O&M - Foreign	Exchange Rate, Local CPI
	Water Use Charge	Local CPI






- An interesting aspect is that tunneling related cost is subject to adjustment at the time of commercial operation, based on actual rock conditions.

Dam safety program of FERC in the United States

- In 1921, a Federal Power Commission [FPC] was established to coordinate the development of hydroelectric projects under Federal Water Power Act of 1920. The Commission initially consisted of ex-officio members from various Government departments.
- In 1930, the FPC was reorganized as an independent Commission. In 1977, the newly created Federal Energy Regulatory Commission [FERC] took over all the activities of FPC, and FPC was abolished.
- FERC is led by five commissioners, including a Chairman, who are appointed by the President of the United States with the advice and consent of the Senate. Commissioners serve staggered five-year terms.
- FERC now handles more than 1000 hydropower license holders, with a total capacity of over 50,000 MW. Apart from licensing and regulation, the Commission is very active on compliance monitoring and dam safety.
- The Commission staff inspects projects on an unscheduled basis to investigate:
 - potential dam safety problems;
 - complaints about constructing and operating a project;
 - safety concerns related to natural disasters; and
 - issues concerning compliance with the terms and conditions of a license.
- In addition, in every 5 years, an independent consulting engineer, approved by the Commission inspects and evaluates major reservoir based projects.

Summary

Summary

- The regulatory framework for hydropower is poised for a major change, with the upcoming establishment of Electricity Regulatory Commission.
- ERC, under its existing legal framework has the potential to drive and support the development of Nepal's hydropower sector, through the following activities:
 -  Formalize process for the ERC's approval of Power Purchase Agreements
 -  Formalize processes for setting of generation, transmission and distribution tariffs under economic principle;
 -  Development of grid code, distribution code, safety standards, and standards of performance aimed at improving quality and reliability of electricity;
 -  Formalize procedures to resolve disputes between service providers
 -  Facilitate the introduction of competition into the market.
- At the same time, ERC is not a standalone solution. ERC will have its own constraints and limitations, and will have to work within its legal framework. Development of the sector will continue to be also dependent on support from Government, utilities and citizens.

Annexure:

Abbreviations

CERC	Central Electricity Regulatory Commission [India]
CPI	Consumer Price Index
DOED	Department of Electricity Development
ERC	Electricity Regulatory Commission
FERC	Federal Electricity Regulatory Commission [USA]
FPC	Federal Power Commission [USA]
GoN	Government of Nepal
HPP	Hydro Power Projects
IBN	Investment Board of Nepal
LIBOR	London Inter Bank Offer Rate
MoE	[Erstwhile] Ministry of Energy
MoEWRI	Ministry of Energy, Water Resources and Irrigation
NEA	Nepal Electricity Authority
NEPRA	National Electric Power Regulatory Authority [Pakistan]
NHDP	Nepal Hydropower Development Project
PDA	Project Development Agreement
PPA	Power Purchase Agreement
USAID	United States Agency for International Development

Thank You !

USAID's Nepal Hydropower Development Project

Baluwatar, Kathmandu, Nepal