

Public Sector and Hydro-power in Nepal: Organization and Management Issues

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1 BACKGROUND

The paper follows from and expands upon an earlier paper that was prepared for the 2021 conference (Soeftestad and Gorzula, 2021). It aimed to analyse elements of the overall port-folio of hydropower projects. The emphases were on, *inter alia*, the history of the sector, the overall process of project implementation, and comparison of select projects as regards resettlement and compensation. The role of the public sector was not addressed, which is the focus of the present paper. The authors of both papers worked on the EIA for the proposed Nalgad Hydropower Project, and the present paper focus on this project.

2 NEPAL'S HYDROPOWER SECTOR

The major source of energy in Nepal is water. There are presently more than 120 operating hydro-power projects in Nepal, with a combined capacity of 2,600 MW, with more than 230 projects under construction. Together they will generate around 8,700 MW, which is a fraction of the total potential. For the present purpose, key elements of the hydropower sector that are addressed include: (a) Legislation and (b) Public sector institutions.

2.1 Legal Basis

A number of laws govern the sector and more specifically the hydropower projects (Chiatrishuli, 2020; lawimperial.com, 2019; meroadalat.com, nd; NVE, 1998)^{2/}:

- Electricity Act, 1992 (2049) and Electricity Rules, 1993 (2050). *Scope*: Deals mainly with licencing of projects.
- Electricity Regulatory Commission Act, 2017 (2074). *Scope*: For effective production, transmission, distribution, and trade of electricity.
- Nepal Electricity Authority Act, 1984 (2041). *Scope*: Governs Nepal Electricity Authority, established for management of power supply.
- Public Private Partnership and Investment Act, 2019 (2075). *Scope*: Governs projects with capacity above 200 MW and costs more than 6 billion Rupees.

2.2 Public Sector Stakeholders

As the sector gradually grew, new institutions were created, and existing ones were amended in order to address existing or emerging issues. The key institutions are (corporatelawyernepal.com, nd; lawimperial.com, 2019; Chiatrishuli, 2020)^{3/}:

- Department of Electricity Development (DOED). *Responsibility*: (1) Main administrative authority responsible for implementation of projects, including appointing management staff and (2) Licensing of projects, including granting, renewing, amending, and revoking licenses.

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^{2/} Cf. also Soeftestad and Gorzula (2021).

^{3/} Cf. also Soeftestad and Gorzula (2021).

- Investment Board of Nepal (IBN). *Responsibility*: Approves investment for projects with capacity higher than 200 MW and with investment of more than 6 Billion Rupees.
- Electricity Regulatory Commission (ERC). *Responsibility*: Production, transmission distribution, and trading.

Further relevant decision makers and advisory bodies include: Ministry of Energy (MoE); Ministry of Forests and Environment (MoFE); Ministry of Land Management, Cooperatives and Poverty Alleviation (MoLMCA); Ministry of Science, Technology and Environment (MoSTE); National Planning Commission (NPC); Nepal Electricity Authority (NEA), and Water and Energy Commission Secretariat (WECS).

For other aspects of the overall management of the sector, over and above individual projects, and including statistics, the licensing process, EIA, resettlement, and compensation, cf. Soeftestad and Gorzula (2021).

3 NALGAD HYDROPOWER PROJECT

3.1 General^{4/}

Work on Nalgad Hydropower Project was initiated in 2010. The future project area is located in Karnali Province in the western part of the country, specifically on the Nalgad River in Jajarkot District. Topographically this is in the mid reaches, but it is still relatively removed (it takes a whole day of driving to reach the damsite, and a further 1-2 days hiking to arrive at the northernmost part of valley). It is a storage project with a proposed 248 m high reinforced concrete (RCC) dam. The reservoir will have a total storage volume of 474 million cubic meters (MCM), and a live storage of 350 MCM. The project will have a capacity of 417 megawatts (MW). It is expected to generate approximately 1,406,06 gigawatt-hours (GWh) of electricity. Gross Head is 698 meters. Four turbines, each with a 102,5 MW nameplate capacity, will be installed. The project is being developed by the Nalgad Hydropower Company Limited (NHCL).

The mission of NHCL is to: (a) Implement global best practises for high dam construction, (b) Develop, build, own, and operate this storage project, (c) Operate the project in a cost-effective, socio-economically, and environmentally friendly manner, and (d) Improve the lives of local communities in the Karnali Province. The Government of Nepal aims for the project to play a crucial role in Nepal's overall energy landscape through harnessing electricity that will contribute to sustainable development.

3.2 The Project's Phases

The project has been under preparation a number of years, going through several phases, many of them mandated according to official regulations. A summary of project implementation, with a focus on activities, subsequent follow-up activities, and brief comments is available (Table 1).

3.3 Public Sector Staff: Role and Operation

The DOED seconded staff to the project on a permanent basis, though the staff oftentimes did not serve very long. In Kathmandu DOED staff were working in a building located apart from the offices of the administrative and operational project staff, local as well as expatriates. In general, their work was to some extent removed or separate from the work of the permanent and short-term consultants, that is, there was not a lot of contact. DOED staff would travel to the project area, but not very often, oftentimes to stay in a purpose-built office building-cum- guesthouse.^{5/}

^{4/} When nothing else is mentioned, all information in this section is from the project's EIA reports (Nalgad Hydropower Company Limited, 2023).

^{5/} It is interesting that this office-cum-guesthouse was built before any work of the project had begun, and moreover that it appears to be mostly not used.

Table 1. Nalgad Hydropower Project, Overview of phases

No.	Date	Activity	Follow-up Action	Comment
1	Jul 2012	Feasibility Study for Nalsing Gad Storage Hydroelectric Project completed	Prepared by Project Development Department Engineering Services Nepal Electricity Authority	
2	May 2016	Contract signed for Updating of Feasibility Study, Detailed Engineering Survey & Design and Environmental Impact Assessment Study of Nalsing Gad Hydropower Project	Consultant mobilised	
3	Sep 2016	Commencement of EIA Study by Consultant		Delays by NHCL in starting consultation for EIA
4	Aug 2017	Submission of EIA Scoping and TOR Reports to NHCL	NHCL reviewed and provided comments for revision of the documents	
5	Dec 2017	Submission of revised EIA Scoping Report and EIA TOR Report to Ministry of Energy and Department of Electricity Development (DOED) for review/approval	DOED reviewed and provided comments for revision of the documents	Delay by NHCL in reviewing draft scoping and TOR reports
6	May 2018	Presentation of revised EIA Scoping and TOR Reports to Ministry of Environment and Population for review/approval	Approved by new Ministry of Forest and Environment in June 2018	Change in Government led to re-organisation of Ministries
7	Jun 2019	Submitted draft EIA documents to NHCL	NHCL organised Public meeting in Kathmandu	
8	Nov 2019	Public presentation in Kathmandu of draft EIA and supporting documents	All parties provided comments to be included in the Final EIA documents. Consultant revised all documents	COVID delays
9	May 2020	Submission of draft final EIA documents to MoFE	Review of draft final EIA documents by MoFE	Delay due to shortage of staff in MoFE
10	Dec 2021	Final EIA documents submitted to NHCL addressing all comments from public consultation, NHCL and DOED	NHCL submitted EIA documents to DOED and MoFE and arranged presentation of documents to MoFE	COVID delays
11	Aug 2023	Presentation of Final EIA documents to Ministry of Forest and Environment	EIA approved by MoFE	

4 DISCUSSION

4.1 Challenges

The management of a hydropower project (including construction and operation) covers a number of issues, among them: communication (internal and external), economics, engineering, finance, HR, logistics, and general management (Basnet, 2022). They will not be addressed here.^{6/}

(A) Issues referred to characteristics of the DOED staff that were seconded to the project:

1. *Organization of the Sector.* In the overall management of the sector, it seems there is little horizontal focus on sharing information and knowledge from the DOED HQ in Kathmandu to staff at the many hydropower projects. As well, horizontal communication, aimed at sharing and knowledge management, seems to be lacking.

^{6/} The views presented here refer to the author's work on the EIA only and the following period (see Table 1).

2. *Division of Labor.* Division of labour and responsibilities between participating stakeholders, in public sector, private sector, and civil society, is not clear, and leaves much to be desired.
3. *Level of Knowledge.* The level of knowledge at the staff level of the very complex and interdisciplinary expertise necessary for successful management of projects is very low.
4. *Formal Qualification.* The level of personal formal qualification among staff appears to be low, and not optimally suitable for the position they serve in.
5. *Capacity Building.* There is little or no focus on capacity building of staff.^{7/}

(B) Staff resources within the NHCL and MoFE:

6. NHCL had to outsource review of EIA documents because of the lack on internal expertise.
7. MoFE had lacking staff to deal with the volume of EIA documents submitted to the Ministry.

(C) Issues pertaining to work done by the DOED staff and/or organized by them:

8. *Cut-off Date.* No cut-off date for determining level of compensation was set and published. As a consequence, many people in Nalgad continued to build houses and other structures, in order to qualify for compensation.
9. *Land Acquisition.* The Government began the land acquisition process prior to the EIA and preparation of the Resettlement Action Plan (RAP). From this it can be inferred that the Government planned to go ahead with the Nalgad project irrespective of the outcome of the EIA process.
10. *Compensation: Levels.* The compensation for land acquisition offered by the Government does not meet international standards and recommendation as set by the World Bank and ADB, etc.
11. *Compensation: Cash Versus Replacement Land.* The DOED appeared to be concerned with this crucial issue only because it is mandatory. The fact that a good number of the people in Nalgad that qualified for resettlement prefer to stay behind, make the Governments job less complicated, and likely cheaper.

(D) Issues of a social/cultural character:

12. *Stakeholder Relations.* Relations with local people (the 'beneficiaries' in development cooperation parlance), of which many are indigenous, appears not to be given high priority.
13. *Cultural/Social Data, including Socio-Economic Data.* This is another example of how DOED and the Government do not place much, and certainly not enough, emphasis on the softer human aspects of hydropower projects.
14. *Resettlement and Compensation.* These processes and activities address social/cultural issues, largely because it is mandated. It follows that they are treated as externalities.

These challenges or issues are not wholly separate. Many of them are causally connected. This means that addressing one of them implicitly addresses also others

4.2 Operation and Management

Several of the challenges listed above fall under Operation & Management (O&M). O&M is ubiquitous in hydropower project (as well as in other infrastructure projects). O&M is concerned with designing and controlling the production of goods and services, in order to ensure efficiency in resource use. In the context of hydropower, it focuses on efficiency in economics, financing, and engineering.

Several private sector companies in Nepal provide training on O&M, among others to DOED staff. One such trainer is Homs Operation and Maintenance Services (Homs, nd). There is an international understanding of what O&M entails, and these firms provide training following this understanding. O&M addresses a limited set of economic, engineering, financial, and technical issues. Everything else, in particular the social human concerns centred around people that live in the project area, are

^{7/} Cf. section on Operation and Maintenance (O&M) below.

understood as externalities and accordingly of no concern. A revised, broader, and more inclusive understanding of what O&M entails would be a good idea.

5 CONCLUSIONS

The arguments presented in sections 3 and 4 are based on the experience with working on the Nalgad Hydropower Project. Chances are high that the very issues apply to all hydropower projects in Nepal, those under construction and those operating. Also, the larger the project the higher the chances that these challenges will be present.

Further, chances are high that all or most of these challenges are available also in hydropower projects elsewhere in the Himalayas, that is, in Bhutan, India, China, and Pakistan.^{8/}

Of the challenges listed above, this paper is above all concerned with what can be referred to as soft human issues. These include, but are not limited to, communication, governance, inclusion, knowledge management, networking, participation, and sharing.

Finally, we argue for increased communication between the public sector and civil society.

6 RECOMMENDATIONS

We present two recommendations that represent, summarize, and expand upon several of the challenges listed above, and that are themselves related.

6.1 Networking

Increased emphasis on networking, which would support and further inclusion between all relevant stakeholders, is necessary to address several of the challenges mentioned above, support sharing of information and knowledge, and support learning. This will further support the following recommendation on training.

Networking should also take place internationally, with the neighbouring countries in the Himalayas. The Himalayan region contains hundreds of hydropower project, partly under construction and partly operating. The public sector institutions responsible for these projects will have deep experiences to share what works and what does not work.

6.2 Training

Training, first and foremost for the DOED staff seconded to hydropower projects is necessary. This is crucial in order to increase their formal competence and knowledge as well as to understand the lives and cultures of peoples who live in the project areas, including indigenous peoples.

Such training should also be offered to members of NGOs and private sector companies involved in building and managing project.

Training modules should build upon, and expand upon, existing training on O&M organized by private companies. It should be considered if it is better that DOED organizes such training.

REFERENCES ^{9/}

Basnet, Suman. 2022. "Nepal's Hydropower sector is faced with the multifaceted challenges ranging from technical, financial, social to environmental". URL: <https://nepaleconomicforum.org/the-role-of->

^{8/} At present only data from India are available. For a possible future revised edition of the paper data from all Himalayan countries will hopefully be available.

^{9/} All references accessed 17 April 2024.

- [and-challenges-and-prospects-for-hydropower-development-in-nepals-energy-sector/](#). Kathmandu, Nepal.
- Government of Nepal. 2001. "Hydropower development policy, 2058". Kathmandu, Nepal.
- Homs Hydropower Pvt. Ltd. nd. "We provide Professional O&M Management Services". URL: www.homs.com.np/about. Lalitpur, Nepal.
- hydropower.org. 2024. "2023 World Hydropower Outlook". URL: <https://www.hydropower.org/publications/2023-world-hydropower-outlook>.
- Kumare, Krishna and R.P. Saini. 2022. A review on operation and maintenance of hydropower plants. *Sustainable Energy Technologies and Assessments*, vol. 49, February, no. 101704. DOI: <https://doi.org/10.1016/j.seta.2021.101704>. Kathmandu, Nepal.
- lawimperial.com. 2019. "Hydropower project development in Nepal". URL: <https://www.lawimperial.com/hydropower-project-development-in-nepal/>. Kathmandu, Nepal.
- meroadalat.com. nd. "Hydropower law in Nepal – Easy guide 2080". URL: <https://meroadalat.com/hydropower-law-in-nepal/>. Kathmandu, Nepal.
- Nalgad Hydropower Project. 2023. "Environmental impact assessment". 4 vols., 15 reports. Nalgad Hydropower Company Limited. Kathmandu, Nepal.
- Norwegian Water Resources and Energy Administration (NVE). 1998. "Legal framework related to hydropower development in Nepal". Report 1-98. Oslo, Norway.
- Soeftestad, Lars and Steve Gorzula. 2021. "Involuntary resettlement in Nepal: A portfolio review". Paper presented at the conference of the International Association for Impact Assessment (IAIA), 18-21 May 2021. URL: <https://supras.academia.edu/Lars>
- Vanclay, Frank and Ana Maria Esteves, eds. 2024. *Handbook of social impact assessment and management*. Edward Elgar Publishing. Cheltenham, UK.