

Environmental and Social Impact Assessment

PUBLIC

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Bhutan: Bunakha Green Power Development Project

Annexes 1 and 2

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1. Current Firm	Jade Consult Pvt. Ltd.		
2. Name	Rojesh Timalisina		
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E-mail Address	rojesh.env@gmail.com		
4. Date of Birth	20-12-1993		
Citizenship	Nepali		
5. Education			
Degree	Institute/University	Year	
Master's Degree in Environmental Science	Central Department of Environmental Science, Tribhuvan University, Nepal	2018-2022	
Bachelors of Science in Environmental Science	Patan Multiple Campus, Tribhuvan University, Nepal	2014-2018	
6. Membership in Professional Associations:	-		
7. Other Trainings:	- Advanced Environmental Safeguards Monitoring and Reporting, Nepal Administrative Staff College (October 2022) - E-course on Policy Analysis and Forest Governance, RECOFTC (June 2022) - Developing SDGs Youth Champions at Local Level, National Campaign for Sustainable Development (6-12 January 2021) - Six-Week Sustainable Development Goals Training, Bagmati River Basin Youth Program (April, 2020) - One-week Hazard Identification and Risk Assessment (HIRA) Training in the Workplace, Occupational Health and Safety Center (September 2019)		
8. Countries of work Experiences:	Nepal, Bhutan		
9. Languages			
Name of languages	Speaking	Reading	Writing
Nepali	Excellent	Excellent	Excellent
English	Excellent	Excellent	Excellent
Newari	Excellent	Fair	Fair
10. Employment Record			
From	To	Employer	Position Held
August-2022	Till Date	Jade Consult Pvt. Ltd.	Assistant Manager-Environment
Jan 2022	July 2022	Grid Consult Pvt. Ltd.	Environmentalist
Jun 2021	Dec 2021	Mountain Thoughts Pvt. Ltd.	Environment Expert
11. Detailed Tasks Assigned	12. Work Undertaken that Best Illustrates Capability to Handle Tasks Assigned		
As per ToR	Name of Assignment or Project: 220 kV TLP for Manang Marsyangdi HEP; Month & Year: Feb 2024 - Till Date; Location: Manang; Client: Manang Marshyangdi Hydropower Company Pvt. Ltd./Q.Y.E.C. Construction Pvt. Ltd. Main Project Features: Feasibility, ToR and IEE study of approx. 2.2 km, 220 kV, TLP for Manang Marsyangdi HEP (Double Circuit); Position held: Environment Coordinator/Team Leader; Activities Performed: Prepared feasibility report for submission to DNPWC to get consent for environmental study; Responsible for preparation of ToR and IEE as per requirement of national legislation; Provided guidance to the forester during tree enumeration along the project alignment; Coordinated with Annapurna Conservation Area Project (ACAP) representative for tree enumeration verification; Conducted public hearing;		
Name of Assignment or Project: West Seti Storage Hydroelectric Project, 800 MW and its 400 kV TLP Year: Jun 2024 - Till Date Location: Doti, Dadeldhura, Bajhang and Baitadi districts, Nepal Client: NHPC Ltd., India, Main Project Feature: Construction of 800MW hydropower along with 400kV transmission line from switchyard of Hydropower to West Seti Pooling Station (proposed by RPGCL); Positions: Environment Coordinator/GIS Expert; Activities performed: Responsible for overall project coordination with client; Assist the experts to carry out the environment documentation of the project; Preparation of EIA and IEE as per the national laws and standards;			

Preparation of project related maps;
Organize site visit for baseline data collection;
Facilitate public consultations and public hearings;
Responsible for coordination with concerned line agencies for the approval of environmental study report.

Name of Assignment or Project: SASEC (South Asia Sub-Regional Economic Cooperation) Power System Expansion Project – Project Supervision Consultant (Funding: ADB); **Month & Year:** July, 2023 – Till Date; **Location:** All over Nepal; **Client:** NEA; **Main Project Features:** 220 kV Dana-Kusma-New Butawal (approx. 110 km), 400kV New Butwal-Bardaghat (approx. 45 km) transmission lines & associated substations; Manang-Khudi-Udipur-Marki Chowk- Bharatpur 220kV transmission line (125 km) & associated substations; Markichowk-Matatirtha 220kV transmission line (82 km) & associated substations. **Position held:** Environmentalist;

Activities Performed:

Reviewed and updated of periodic (monthly, quarterly & semi-annual) Environmental & Social Safeguard Monitoring Reports in coordination with safeguard experts.

Name of Assignment or Project: Simbuwa Khola HEP (70MW); **Month & Year:** July 2022 – Till Date; **Location:** Taplejung; **Client:** Remit Hydro Ltd.; **Main Project Features:** Preparation of Supplementary EIA; **Position held:** Environmentalist;

Activities Performed:

Responsible for preparation of SEIA, Preparation of land acquisition & compensation plan (LACP) of project;
Enumeration of affected structures in the project footprint;
Coordination with experts and clients.

Name of Assignment or Project: Mugu Karnali Storage Hydroelectric Project; **Month and Year:** November 2022 - Till Date; **Location:** Mugu, Bajura, Humla, Kalikot and Jumla Districts; **Client:** Vidhyut Utpadan Company Limited; **Main Project Features:** Mugu Karnali Storage Hydroelectric Project (MKHEP-1902MW); **Position held:** Environmentalist/GIS expert;

Activities Performed:

Preparation of Scoping Document (SD), and Terms of Reference (ToR) reports in compliance with national legislation;
Prepared site mobilization plans and coordinated with the field team for baseline data collection;
Presentation at MoFE for approval of SD and ToR;
Preparation of project related maps;

Name of Assignment or Project: Kaligandaki Storage HPP (640.40 MW); **Month & Year:** Aug 2023 – Till Date; **Location:** Baglung, Parbat, Syangja, Gulmi; **Client:** DoED; **Main Project Features:** Feasibility & EIA study of Storage type with a capacity of 640.40 MW; **Position held:** Environment Coordinator/GIS expert;

Activities Performed:

Responsible for overall project coordination
Assist the experts to carry out the environment documentation of the project.
Preparation of reports as per the national laws and standards;
Site visit for baseline data collection;
Preparation of project related maps;
Preparation of mitigation measures for the anticipated adverse impacts due to implementation of proposed project and its Environmental Management Plan (EMP) in coordination with experts;
Conducted public hearing in coordination with concerned stakeholders;
Responsible for the coordination with concerned line agencies for the approval of environmental study report.

Name of Assignment or Project: Dododhara – New Attariya 400kV Transmission Line Project; **Month and Year:** Dec 2023 - Till Date; **Location:** Surkhet, Bardiya and Kailali; **Client:** Nepal Electricity Authority (ADB Funding); **Main Project Feature:** Construction of 190 km, Chhinchu – Dododhara – New Attariya 400 kV D/C (Quad Moose) TL; **Position held:** Environmentalist;

Activities Performed:

Preparation/Review of ToR and IEE report;
Review SIA, IPP, RP report as per the requirement of ADB and client;
Facilitated stakeholder consultations;
Preparation of site visit plans for expert for baseline data collection;
Preparation of tree cutting plan and EMP.

Name of Assignment or Project: Lamahi-Chhinchhu 400kV Transmission Line Project (ADB Funding); **Month and Year:** Dec 2023 - Nov 2025; **Location:** Dang, Salyan and Surkhet Districts; **Client:** Nepal Electricity Authority; **Main Project Feature:** Construction of 98.5 km long 400 kV D/C (Quad Moose) Transmission Line; **Position held:** Environmentalist;

Activities Performed:

Responsible for preparation of IEE as per the requirement of national legislation and review SIA, IPP, RP report as per the requirement of ADB and client;

Responsible in qualitative and quantitative analysis of the anticipated changes to the baseline to determine the direct, indirect, induced, and cumulative impacts of the project; Involved in site assessment; Presentation at DoED;
Name of Assignment or Project: Super Lower Bagmati HPP 132kV Transmission Line Project; Month and Year: Nov 2023 – Nov 2025; Location: Makwanpur and Rautahat; Client: Super Bagmati Hydropower Limited; Main project features: approx. 30 km, 132kV Transmission Line and approx. 400 m underground cabling (XLPE cable); Position Held: Environment Expert; Activities Performed: Preparation of the IEE report. Facilitated public consultations and public hearings. Developed EMP for integration into environmental reports.
Name of Assignment or Project: Phukot - Rachuli 132kV Transmission Line Project and New Khimti-Rakathum 132kV Transmission Line Project; Month and Year: Dec 2023 to Jan 2025; Location: Kalikot District of Karnali Province & Dolakha and Ramechhap Districts of Bagmati Province; Client: Nepal Electricity Authority (ADB Funding); Main project features: Environment Study of approx. 34 km, Phukot-Rachuli 132 kV Double Circuit Transmission Line and approx. 28 km, New Khimti-Rakathum 132 kV Double Circuit Transmission Line; Position held: Environmentalist; Activities performed: Preparation of IEE reports in compliance with national legislation; Review SIA, IPP, and RP reports as required by ADB and the client; Prepared tree-cutting plans; Developed EMP in coordination with experts for integration into environmental reports.
Name of Assignment or Project: Revised IEE preparation Mewa Khola Hydropower Project, 24 MW Year: Aug, 2023 – Jan, 2025; Location: Taplejung district, Nepal; Client: Union Mewa Hydro Limited, Main Project Feature: Hydropower Project Position: Environmentalist/GIS Expert; Activities performed: Prepared of R-IEE; Coordinated and facilitated site visit plans for public hearing and tree enumeration.
Name of Assignment or Project: Power Transmission & Distribution Efficiency Enhancement Project (Funding: ADB); Month & Year: July 2022 - Mar 2025; Location: Kathmandu; Client: NEA; Main Project Features: Voltage Level: 220 kV, 132 kV, Substation capacity in MVA: 2*45 MVA (3 nos.), 4*53.33 MVA (1 nos.) & 1*45 MVA, Transformation voltage levels: 220/132/11kV; Position held: Environmental Safeguard Officer; Activities Performed: Responsible for frequent site visit to monitor safeguard compliances & effective implementation of EHS plan; Preparation & review of periodic (semi-annual) environmental & Social safeguard monitoring reports in coordination with safeguard experts; Coordination with client to comply environmental & social indicators at site; Preparation of specific EMP for substation package.
Name of Assignment or Project: Damauli-Kushma-Bafikot 400 kV Double Circuit TL Project & associated Substations Project; Month & Year: Sept 2020 - Jun 2024; Location: Tanahun, Kaski, Parbat, Syangja, Baglung, Gulmi, East Rukum & West Rukum; Client: NEA (ADB funding); Main Project Features: Detailed design & study of approx. 226 km, Damauli – Kusma – Burtibang – Bafikot 400 kV Double Circuit (Quad Moose) TL with associated 400 kV substations. Position held: Environmentalist; Activities Performed: Responsible for preparation of IEE as per requirement of national legislation & review of SIA, IPP, RP report as per requirement of client of NEA; Preparation of tree cutting plan.
Name of Assignment or Project: Tingla Hub-New Khimti-Sunkoshi Hub-Dhalkebar 400 kV Double Circuit TL Project & associated Substations Project (Funded by ADB); Month & Year: July 2020 - Apr 2024; Location: Solukhumbu, Okhaldhunga, Ramechhap, Dolakha, Sindhuli, Dhanusha; Client: NEA (ADB funding); Main Project Features: Detailed design & study of approx. 135 km, Tingla Hub – New Khimti – Sunkoshi Hub – Dhalkebar 400 kV Double Circuit (Quad Moose) TL with associated substations; Position held: Environmentalist; Activities Performed: Responsible for preparation of IEE as per requirement of national legislation & review of SIA, IPP, RP report as per requirement of client of NEA; Preparation of tree cutting plan; Conducted public hearing at Sindhuli and Dhanusa.

Name of Assignment or Project: Dailekh Kalikot Jumla 132kV Transmission Line and associated Substations, **Year:** Dec 2022 – May 2024; **Location:** Dailekh, Kalikot, and Jumla districts, Nepal **Client:** Nepal Electricity Authority (ADB funding); **Main Project Feature:** Transmission Line Project **Position:** Environmentalist;

Activities performed:

Responsible for Environmental data collection, environmental data analysis;

Preparation of IEE, tree cutting plan, EMP and review of RAP and SIA;

Formulation of mitigation measures in coordination with experts.

Name of Assignment or Project: Philim-Gumda-Ratmate 400kV Transmission Line and associated Substations, **Year:** Aug, 2022 – Feb 2024; **Location:** Gorkha, Dhading and Nuwakot districts, Nepal **Client:** Nepal Electricity Authority (ADB funding) **Main Project Feature:** Transmission Line Project; **Position:** Environmentalist;

Activities performed:

Responsible for Environmental data collection and data analysis;

Led team of environmentalists and sociologists for environmental data collection and public consultations

Conducted and participated in public hearings.

Prepared IEE, tree cutting plan, EMP and review of RAP and SIA.

Name of Assignment or Project: Consulting Services for Detailed Survey and updated Line Design for 30km of Changes in 400kV Transmission Line Route Alignment (Environmental and Social Assessment); **Month and Year:** May 2022 to Nov 2023; **Location:** Nuwakot, Hetauda, Makwanpur, Dhading Districts; **Client:** MCA-Nepal; **Main Project Features:** 30 km changes in 400kV transmission line route alignment; **Position held:** Environmentalist;

Activities Performed:

Visited the transmission line alignment at Thaha Municipality, Makwanpur to collect detailed baseline environmental data and support comparative analysis with the original alignment.

Conducted consultations with Community Forest User Groups (CFUGs) to understand local concerns, forest-use patterns, and potential project impacts.

Prepared a comprehensive comparative analysis report evaluating the original and revised transmission line route as suggested by MCA-Nepal, highlighting key environmental and social implications.

Name of Assignment or Project: Lamosanghu-Kavre/Ramechhap 132kV Transmission Line and associated Substations, **Year:** Oct 2022 – Jan 2023; **Location:** Sindhupalchowk, Kavrepalanchowk, Ramechhap districts, Nepal **Client:** Nepal Electricity Authority (ADB funding); **Main Project Feature:** Transmission Line Project; **Position:** Environmentalist;

Activities performed:

Responsible for environmental data analysis;

Preparation of IEE, tree cutting plan, EMP and review of RAP and SIA;

Formulation of mitigation measures and preparation of report for the project in coordination with experts.

Name of Assignment or Project: Construction of Birauta Substation & 600m Underground Cable Line in existing Kaligandaki-Lekhnath (Pokhara) 132kV TL Project (Funded by JICA); **Month & Year:** July 2022 – May 2023; **Location:** Kaski; **Client:** NEA; **Main Project Features:** Construction of Birauta Substation & 600m Underground Cable Line in existing Kaligandaki-Lekhnath (Pokhara) 132kV TL Project; **Position held:** Environmentalist;

Activities Performed: Responsible for preparation of IEE as per requirement of national legislation.

13. Publications

- **Timalsina, R.,** Maharjan, S., Kandel, S., Awasthi, M. P., Bishwakarma, K., Dhami, U., Thapa, L.B., Singh, V.B., & Pant, R. R. (2025). Ramsar wetlands in Nepal: Status, uses, challenges, and conservation strategies – a review. *Nepalese Journal of Zoology*, 9(1), 55–66. <https://doi.org/10.3126/njz.v9i1.81393>
- **Timalsina, R.,** Acharya, S., Durin, B., Awasthi, M. P., Pant, R. R., Joshi, G. R., Byanju, R. M., Panthi, K. P., Joshi, S., Kumar, A., Thakur, T. K., & Saqr, A. M. (2025). An Assessment of Seasonal Water Quality in Phewa Lake, Nepal, by Integrating Geochemical Indices and Statistical Techniques: A Sustainable Approach. *Water*, 17(2), 238. <https://doi.org/10.3390/w17020238>
- **Khawiwada, S. S., Timalsina, R.,** Pant, R. R., Bishwakarma, K., & Bhatta, K. (2022). Wetland-based Tourism and Livelihoods Strategies in the Pokhara Valley, Nepal. *Curriculum Development Journal*, 30(44), 84–98. <https://doi.org/10.3126/cdj.v30i44.54983>
- **Pathak, L., Timalsina, R.,** Khanal, B., Shrestha, N., Bhatta, K.D., Poudel, S., Bishwakarma, K., Pal, K.B., Thapa, L.B., & Pant, R.R. (2021). Insights on hydrochemistry, flood and livelihood nexus: A case from Indrawati River Basin, *Nepal. Tribhuvan University Journal*, 12, 101–115.

14. Certification

I, the undersigned, certify that to the best of my knowledge and belief that

(i) This CV correctly describes my qualifications and experience;

(ii) I have not been found guilty or convicted of any violation of law that is not a minor traffic violation.

A handwritten signature in black ink, appearing to be "S. J. [unclear]", written over a horizontal line.

Signature

Date: 20/12/2025

Day/Month/Year

1. **Position** Environmental Expert
2. **Name of firm** **Jade Consult Pvt. Ltd.,**
3. **Name of staff member** **Bokepalli Kanaka Durga Raja**
4. **Current Residential Address:** India
- Telephone No.** +977 (01) 5347237
- Fax No.** + 977 (01) 5332171
- E-Mail Address** info@jadeconsult.com.np
5. **Date of Birth** 17 October 1958
- Citizenship** Indian
- Type of government ID and ID Number:** Passport Number: Z3978907

6. Education

Period: college/university, degree(s)/diploma(s)

1975-80	B Tech (Bachelor of Technology)	Sri Venkateswara University, Tirupati, India
1992-93	PG Diploma in Environmental Studies	Andhra University, Waltair, India
1994-96	M S (Master of Science)	Birla Institute of Technology and Science, Pilani, India
1997-2004	Ph.D.	Birla Institute of Technology and Science, Pilani, India

7. Membership in professional associations

- Life Member, Indian Sociological Association
- Life Member, Indian Management Association
- Fellow, Institution of Engineers (India)
- C.Eng. (Chartered Engineer) (P.E., Professional Engineer)

8. Further training courses

- Environmental and Social Safeguards program at The World Bank, Colombo, Sri Lanka, in August 2016.
- The World Bank Operations at The World Bank, New Delhi, India, in June 2017.
- Environmental and Social Safeguards training at The World Bank, Bangkok, Thailand, in September 2017.
- Environmental and Social Standards by The World Bank, New Delhi, India, in February 2018.
- Environment and Social Framework of The World Bank course at The World Bank, Dubai, UAE, in June 2019.
- Gender-Based Violence at The World Bank, Bangkok, Thailand, in January 2020.

9. Countries of work experience

India, Saudi Arabia, Sultanate of Oman, The Netherlands, Kenya, United Kingdom, Bhutan, Nepal, Bangladesh, Thailand, Sri Lanka, Afghanistan, Dubai, Kenya

10. Languages	speaking	reading	writing
English	Excellent	Excellent	Excellent
Telugu	Excellent	Excellent	Excellent
Hindi	Good	Good	Fair
Kannada	Good	Good	Fair

11. Employment record

Period: 2012 – Till date

Employer: Center for Excellence in Management & Technology Pvt. Ltd.

Position Held: International Consultant/ Director – International Consultant

Period: 2001 – 2011

Employer: Samaj Vikas Development Support Organisation, Hyderabad, India

Position Held: President – International Consultant

Period: 1999 – 2001

Employer: Elmcrest Projects Pvt. Ltd., United Kingdom

Position Held: Managing Director (International Development Management Consultant)

Period: 1998 – 1999

Employer: WS Atkins (India) Pvt Ltd., United Kingdom

Position Held: Business Development Manager

Period: 1991 – 1998

Employer: BKH Consulting Engineers, Delft, The Netherlands

Position Held: Deputy Team Leader/ District Project Advisor/ Design Engineer

Period: 1987 – 1989

Employer: Irrigation & Power Dept., Government of Andhra Pradesh, India

Position Held: Assistant Executive Engineer

Period: 1986 – 1987

Employer: Groenlose Meubel Industries b.v., The Netherlands

Position Held: Project Leader

Period: 1985 – 1986

Employer: Oman Building & Contracting Co. Ltd., Sultanate of Oman

Position Held: Site Engineer

Period: 1984 – 1985

Employer: Bitcon India Ltd., Mumbai, Maharashtra

Position Held: Project Engineer

Period: 1982 – 1984

Employer: Al-Hoty Stanger Ltd., Saudi Arabia

Position Held: Materials Engineer

Period: 1980 – 1982

Employer: Panchayat Raj Dept., Government of

Period: 1989 – 1991

Employer: Capet Management Services, UK

Position Held: Head of Building Department

Andhra Pradesh, India

Position Held: Junior Engineer

12. Detailed Tasks Assigned

As per ToR

13. Work undertaken that best illustrates capability to handle these tasks

Upper Arun Hydro Electric Project (1,040 MW)– Environment and Social Due Diligence (ESDD) for investment by OPEC Fund for International Development (OFID), WB ADB kfw and EIB; Period: March 2024 – Present; **Location:** Nepal; **Client:** OPEC Fund for International Development (S. Basu, +43-1-515 64-0); **Main Project Features:** The key components of the 1040 MW UAHEP are an access road of about 23 Km (which includes a tunnel of about 2 Km and two bridges), a Dam of 100 m height, river diversion tunnel and two coffer dams, about 8 Km long head race tunnel, a Powerhouse, Transmission line, offices & quarters for staff, etc; **Position Held:** Senior Consultant-Environmental & Social Specialist; **Activities Performed:** The tasks are reviewing environmental & social impact assessment, conducting an audit cum due diligence of proposed project and associated works, field assessment of already completed works & assessing environmental & social compliances. Provide relevant inputs to environmental flow assessment & cumulative impact assessment. Preparation of Environmental and Social Due Diligence Report & Environmental & Social Corrective Action Plan (ESCAP) for implementation by Upper Arun Hydro Electric Limited. Assisting client in review & updating of ESIA, ESMPs, Tender Documents for works, etc.

Gramri I & Bamukparongchhu Integrated Hydropower Project (54 MW) and Begana Integrated Multipurpose Small Hydropower Project (25 MW); Period: March 2024 – ongoing; **Location:** Bhutan; **Client:** OPEC Fund for International Development (S. Basu, +43-1-515 64-0); **Main Project Features:** Project involves two hydropower initiatives: i) Gramri I & Bamukparongchhu Integrated Hydropower Project (54 MW); ii) Begana Integrated Multipurpose Small Hydropower Project (25 MW), Bhutan– Environment & Social Due Diligence (ESDD) for investment by OPEC Fund for International Development. **Position Held:** Senior Consultant-Environmental & Social Specialist; **Activities Performed:** The tasks are reviewing environmental & social impact assessment, conducting an audit cum due diligence of proposed project & associated works, field assessment of already completed works & assessing environmental & social compliances. Preparation of Environmental & Social Due Diligence Report & Environmental & Social Corrective Action Plan (ESCAP) for implementation by DRUK Green Power Corporation. Assisting client in review and updating of ESIA, ESMPs, Tender Documents for works, etc.

Development of a whitelist of eligible investment measures under the Revamped Power Distribution Sector Scheme (RDSS); Period: July 2023 – August 2023; **Location:** India; **Position Held:** Senior Environment and Social Safeguards Lead; **Main Project Features:** Development of a whitelist of eligible investment measures under the Revamped Power Distribution Sector Scheme (RDSS) and drafting the E&S Annex for the Project Appraisal Report for REC Limited; **Activities Performed:** Responsible for conducting Environmental and Social Due Diligence (ESDD), preparing Lean Environmental and Social Management Framework (ESMF), Environmental and Social Management Plans (ESMP), E&S Annexure to Project Appraisal Report, Monitoring Formats, and participation in appraisal mission. Provided all physical environmental data for the ESIA. Ensured the report met all TOR requirements (including ESIA requirements in Appendices A and B) in terms of content, timeliness, and quality. Documented project compliance with ADB's Safeguard Policy Statement (2009) and government regulations.

Meghalaya Power Distribution Sector Improvement Project funded by ADB. Period: May 2023 – May 2024; **Location:** Meghalaya, India; **Client:** ADB; **Main Project Features:** Project involves construction of new substations, upgrading existing substations, installation of new transmission lines, reconductoring of existing lines, & implementation of a smart metering scheme; **Position Held:** Senior Environment & Social Safeguards Lead; **Activities Performed:** Responsibilities include supporting ADB & Meghalaya Power Distribution Corporation Limited in conducting Environmental & Social Due Diligence (ESDD), & preparing addenda to Initial Environmental Examination (IEE) reports after design finalization for specific sections of distribution lines.

Assam Intra-State Transmission System Enhancement Project; Period: February 2022 – December 2022; **Location:** Assam, India; **Client:** Asian Infrastructure Investment Bank (AIIB); **Main Project Features:** The project aims to enhance the intra-state transmission system in Assam, funded by AIIB and implemented by Assam Electricity Grid Corporation Limited (AEGCL). It involves the preparation of Environmental and Social Impact Assessment (ESIA), Environmental and Social Management and Monitoring Plan (EMSP), Resettlement Action Plan (RAP), and Training and Development Plan (TDP). The project also includes training EPC contractors in preparing Comprehensive Environmental and Social Management Plans (CESMPs) for implementation. **Position Held:** Senior Consultant-Environmental and Social Specialist; **Activities Performed:** Assisting AEGCL in the preparation, review, and approval of ESIA-ESMPs, RAP/TDPs, and CESMPs. Providing implementation supervision and monitoring assistance to ensure compliance with environmental and social safeguards. Conducting training sessions for AEGCL staff on Environmental and Social safeguards and monitoring the overall progress of the project. Provide relevant inputs related to environmental aspects of the tender documents.

Assam Distribution System Enhancement and Loss Reduction Project; Period: February 2022 – December 2022; **Location:** Assam, India; **Client:** Asian Infrastructure Investment Bank (AIIB); **Main Project Features:** The project aims to enhance the distribution system and reduce losses in Assam, funded by AIIB and implemented by Assam Power Distribution Company Limited (APDCL). Key tasks include the preparation of Environmental and Social Impact Assessment (ESIA), Environmental and Social Management and Monitoring Plan (EMSP), Resettlement Action Plan (RAP), and Training and Development Plan (TDP). The project also involves training EPC contractors in preparing Comprehensive Envi-

ronmental and Social Management Plans (CESMPs) for implementation. **Position Held:** Senior Consultant-Environmental and Social Specialist; **Activities Performed:** Assist in APDCL in the preparation, review, and approval of ESIA-ESMPs, RAP/TDPs, and CESMPs. Providing implementation supervision and monitoring assistance to ensure compliance with environmental and social safeguards. Conducting training sessions for APDCL staff on Environmental and Social safeguards and monitoring overall progress of project. Provide relevant inputs related to environmental aspects of the tender documents.

Scaling Up Demand Side Energy Efficiency Sector Project (SDSEESP); Period: February 2022 – March 2022; **Location:** Maharashtra, India; **Client:** The Asian Development Bank (ADB); **Main Project Features:** The project, funded by ADB, aims to support high-priority areas under Energy Efficiency Services Limited's (EESL) ESCO business, focusing on smart metering, electric vehicles and charging systems, distributed solar power, and increasing awareness of energy efficiency. **Position Held:** International Environmental and Social Specialist; **Activities Performed:** Conducting an Environmental Audit and updating the Environmental Assessment and Review Framework (EARF). Preparation of the Initial Environmental Examination (IEE) to assess and manage potential environmental impacts associated with the project's activities in Maharashtra, India.

Himachal Pradesh Power Sector Development Program; Period: December 2021 – June 2022; **Location:** Himachal Pradesh, India; **Client:** The World Bank; **Main Project Features:** The project is focused on identifying barriers and opportunities for women's employment and workforce participation within the Himachal Pradesh power sector. It involves a comprehensive review of gender gaps and opportunities across four key pillars: (i) demand side, (ii) conducive work environment, (iii) supply side, and (iv) aspirations and awareness. The study utilized methods such as Secondary Literature Review, Focus Group Discussions (FGDs), Key Informant Interviews (KIs) with supply side institutions and demand side organizations, data analysis, validation of findings, and presentation of recommendations to the client; **Position Held:** Consultant, Coordinator cum Gender Specialist; **Activities Performed:** Conducting Secondary Literature Review, organizing FGDs and KIs, analyzing data, and engaging in dialogue with stakeholders to validate findings and provide recommendations aimed at enhancing women's participation in the Himachal Pradesh power sector. Provide all physical environmental and work with the social experts to provide the socioeconomic/physical cultural resources inputs to the ESIA to ensure that the report meets all the TOR requirements (including the ESIA requirements in Appendices A and B).

100 MW Solar Photo Voltaic Project with Battery Storage; Period: October 2020 to October 2021; **Location:** Dongargaon Tehsil, Rajnandgaon District, Chhattisgarh, India; **Client:** Solar Energy Corporation of India Limited (SECI), with funding assistance from The World Bank and French Development Agency (AFD); **Position Held:** Team Leader and Environmental and Social and Climate Change Specialist; **Main Project Features:** The project involves setting up a 100 MW Solar PV project with up to 150 MWh battery storage and a 132 kV transmission line for energy evacuation. **Activities Performed:** Conducting Environmental and Social Impact Assessment (ESIA) in compliance with Government of India (GoI), Government of Chhattisgarh (GoC), The World Bank Environmental and Social Framework, and IFC EHS Guidelines. Preparation of Environmental and Social Management Plan (ESMP), Resettlement Action Plan (RAP), Gender Action Plan (GAP), Stakeholder Engagement Plan, Labour Management Plan, Procedures for Environmental and Social Audit, and other relevant management plans. Ensuring adherence to environmental and social regulations throughout the project lifecycle. Facilitating stakeholder engagement processes to gather feedback and ensure transparency. Monitoring and auditing environmental and social performance to identify and address issues promptly. Review the DPR studies and available environmental and social impact assessments (ESIA) reports.

Bengaluru Smart Energy Efficient Power Distribution Project; Period: May 2019 – October 2020; **Location:** Bangalore, India; **Client:** Bengaluru Electricity Supply Company Limited (BESCOM), Government of Karnataka; **Position Held:** Team Leader and Senior Environmental Social Specialist; **Main Project Features:** The project, funded by the Asian Development Bank and implemented by BESCOM, aims to convert high and low voltage overhead power distribution lines to underground lines with optic fiber communication cables, and install a distribution automation system in urban areas of Bengaluru. The project, estimated at \$270 million, seeks to reduce carbon and pollutant emissions from the power distribution system, contributing to the development of a livable Bengaluru city. **Activities Performed:** Responsibilities include preparing the Initial Environmental Examination (IEE), conducting field visits for data collection, assessing environmental impacts, preparing an Environment Management Plan (EMP) for mitigating impacts, identifying critical environmental parameters for monitoring post-implementation, conducting public consultations, and preparing an Environment Monitoring Plan (EMoP) for regular reporting to ADB. Other tasks involve preparing Environmental and Social Management Framework (ESMF), Environmental and Social Management Plan (SMP), Resettlement Plan (RP), Gender Plan, Communications Plan, Grievance Redress Mechanism (GRM), and conducting Environmental and Social Audits as per ADB SPS and IFC EHS guidelines.

Nepal School Sector Development Program (SSDP); Period: July 2016 – January 2017; **Location:** Nepal; **Client:** The World Bank; **Main Project Features:** The project aimed to improve the quality of education, equitable access, and efficiency in basic and secondary schools in Nepal through the Nepal School Sector Development Program (SSDP). **Activities Performed:** As a Consultant for The World Bank, the key tasks included: Reviewing Nepal's existing legal, regulatory, and institutional framework for environmental and social management systems. Identifying and assessing potential environmental and social impacts/risks associated with the SSDP interventions. Assessing the performance of the SSDP system with respect to the core principles of the Program-for-Results (PforR) instrument and identifying gaps. Developing measures and action plans to strengthen the system, integrating these measures into the SSDP to improve social practices and ensure positive inclusion of disadvantaged populations. Identifying specific actions for social inclusion (women, Dalits, indigenous groups, poor, elderly, disabled, and other vulnerable groups), participation, transparency, citizen feedback, grievances, and environmental issues to be included in the Program Action Plan (PAP).

Mainstreaming Coastal and Marine Biodiversity Conservation into Production Sectors in the East Godavari River Estuarine Ecosystem (EGREE); Period: March 2015 – August 2016; **Location:** Andhra Pradesh, India; **Client:** UNDP, GEF, Government of India, Government of Andhra Pradesh; **Main Project Features:** The project aims to mainstream biodiversity conservation into various economic production sectors including fisheries, aquaculture, tourism, oil and gas, fertilizers, ports and shipping, and salt pans in the East Godavari River Estuarine Ecosystem (EGREE). **Position Held:** Consultant – Biodiversity: Seascape and Landscape Planning Specialist **Activities Performed:** Prepared a biodiversity-friendly Strategic Plan (SP) for EGREE. Developed an implementable coastal and marine landscape and seascape plan that addresses biodiversity conservation concerns. Integrated SP into relevant district-level plans to ensure sustainability and conservation of biodiversity in region.

Jammu and Kashmir Disaster Recovery Project; Period: July 2014 – June 2015; **Location:** Jammu and Kashmir, India; **Client:** The World Bank; **Main Project Features:** The project aims to reconstruct the assets lost and damaged during the floods that occurred between 2nd to 6th September 2014 in Jammu and Kashmir. It includes rebuilding urban infrastructure such as water supply, sewerage, storm water drains, roads and bridges, underground cabling, parks, markets, public buildings, and public utilities. Additionally, the project involves rehabilitation of lakes, plantation initiatives, and improvements in power generation and transmission; **Position Held:** Consultant – Environmental and Social Safeguards Management Specialist; **Activities Performed:** Conducted Rapid Damage and Needs Assessment Mission to estimate the damage and losses. Addressed environment and social safeguards issues in project implementation. Prepared Environment and Social Management Framework (ESMF), Environment Management Plan (EMP), and Social Management Plan (SMP)/Resettlement Action Plan (RAP). Developed procedures for environmental and social audits in accordance with World Bank policies and IFC EHS guidelines. Assisted client governments/departments in implementing policies and processes related to environmental and social safeguards.

Bhutan Urban Development Project-II; Period: 2013; **Location:** Bhutan **Client:** The World Bank; **Main Project Features:** The Bhutan Urban Development Project-II, funded by The World Bank, aimed to enhance urban development in Bhutan. The project focused on improving urban infrastructure and services to support sustainable urban growth and development. **Position Held:** Consultant - Asset Management Specialist; **Activities Performed:** Developed formats for urban asset registers to effectively manage urban infrastructure and facilities. Designed guidelines for the preparation and maintenance of urban asset registers to ensure consistency and accuracy in asset management practices. Provided expertise and support in asset management strategies to enhance efficiency and effectiveness in urban development initiatives under the project.

Dam Rehabilitation and Improvement Project; Period: Jul 2013 – Jul 2017; **Location:** Chhattisgarh, Kerala, Madhya Pradesh, Odisha, and Tamil Nadu, India; **Client:** The World Bank; **Main Project Features:** The Dam Rehabilitation and Improvement Project, funded by The World Bank, focuses on enhancing the safety and operational efficiency of approximately 250 existing dams across five states in India. These dams serve various purposes including irrigation, power generation, domestic and industrial water supply, and tourism. The project aims to rehabilitate and improve these dams and their associated structures to mitigate risks and enhance their performance. It also aims to strengthen Dam Safety Organizations (DSOs) at the national level within the Central Water Commission (CWC) and at the state level in each participating state; **Position Held:** Consultant – Environmental and Social Safeguards Management Specialist; **Activities Performed:** Conducting assessment and appraisal of dam rehabilitation and improvement proposals. Addressing environmental and social safeguards issues associated with the project activities. Assisting client governments and departments in formulating policies and processes related to dam safety and rehabilitation. Providing implementation support through monitoring missions to ensure compliance with environmental and social safeguards, as well as project objectives. Collaborating with Dam Safety Organizations (DSOs) and Water Resources Departments (WRDs) at national and state levels to strengthen their capacity in dam safety and management practices.

Monitoring and Evaluation of Resettlement Action Plan; Period: 2010 – 2012; **Location:** Karnataka, India; **Client:** The World Bank; **Main Project Features:** The assignment focused on monitoring and evaluating the implementation of the Resettlement Action Plan (RAP) for the Karnataka State Highway Improvement Project-II, funded by The World Bank. The project aimed to improve highways in Karnataka, ensuring that resettlement activities were conducted in compliance with environmental and social safeguards. **Position Held:** President - Environmental and Social Safeguards Advisor; **Activities Performed:** Conducted concurrent monitoring of the implementation of Environment Management Plans (EMPs) and Resettlement Plans (RPs). Guided implementation agencies and NGOs on environmental and social aspects and project policies. Provided training to staff of implementation agencies and NGOs on environmental and social safeguards. Conducted field visits to verify that affected people received compensation and resettlement and rehabilitation (R&R) benefits. Documented good practices and lessons learned from the implementation process. Prepared Quarterly Monitoring Reports documenting progress and challenges. Conducted Mid-term Reviews and Final Evaluations to assess project performance and compliance with RAP objectives.

Mid Term Review of The World Bank Assisted Tamil Nadu Rural Poverty Reduction and Empowerment Project (Pudhu Vaazhvu Project); Period: 2008 – 2009; **Location:** Tamil Nadu, India; **Client:** World Bank; **Main Project Features:** Pudhu Vaazhvu Project aimed to reduce rural poverty and empower communities in Tamil Nadu through various interventions including skill development, institution building, savings and credit initiatives, and empowerment programs for the rural poor and ultra-poor segments of population; **Position Held:** President – Team Leader; **Activities Performed:** **Review Process:** Conducted a mid-term review of the ongoing Pudhu Vaazhvu Project to assess its progress, achievements, challenges, and impacts. **Evaluation Criteria:** Evaluated effectiveness and efficiency of project interventions in providing livelihood opportunities and empowering rural communities. **Data Collection:** Gathered data through field visits, stakeholder consultations, and review of project documents and reports. **Analysis:** Analyzed the

socio-economic impacts of the project on targeted communities and beneficiaries. **Recommendations:** Provided recommendations for enhancing project outcomes and addressing any identified gaps or challenges. **Reporting:** Prepared a comprehensive mid-term review report outlining findings, conclusions, and recommendations for project stakeholders and The World Bank.

14. Other assignments in the company: N/A

1. **Position** Biodiversity Expert
2. **Name of firm** **Jade Consult Pvt. Ltd.**
3. **Name of staff member** **Dr. Khadak Singh Mahata**
4. **Current Residential Address:** Kathmandu, Nepal
Telephone No. +977 (01) 5347237
Fax No. + 977 (01) 5332171
E-Mail Address info@jadeconsult.com.np
5. **Date of Birth** 28.11.1979
Citizenship Nepalese
Type of government ID & ID Number Citizenship No.: 22650 (Nepal)

6. Education

Period: college/university, degree(s)/diploma(s)

2014 -2021 University of Potsdam; Environmental Science; Degree "PhD"

2002-2004 Tribhuvan University, Nepal; Environmental Science; Degree "Master's"

1999 -2002 Tribhuvan University, Nepal; Environmental Science; Degree "Bachelor's"

7. Membership in professional associations

- Member, Nepal Environment Society, Kathmandu, Nepal

8. Further training courses

- 7 days training on covering gender issues during project design phase conducted by ICIMOD in Jun 2019
- 3 days training on application of R-programming organized by Institute of Advanced Sustainability Studies, Germany in Apr 2014
- 10 days training on GIS organized by Tribhuvan University in 2003
- 2 weeks of Training on Environmental Impact Assessment organized by Tribhuvan University in 2002

9. Countries of work experience: Nepal, India, Germany, USA

10. Languages	Speaking	reading	writing
Nepali	native speaker	native speaker	native speaker
English	Excellent	excellent	excellent

11. Employment record

Period: Jan 2020 – present
Employer: Jade Consult Pvt. Ltd.
Position held: Project Coordinator/ Environmental Expert/ Biodiversity Expert

Period: Feb 2012 to Dec 2019
Employer: Alpine Consultancy Private Limited
Position held: Environmental Expert

Period: Jul 2012 – Dec 2016
Employer: Institute for Advanced Sustainability Studies (IASS), Germany
Position held: Project Scientist/ Research Fellow

Period: Jan 2012 – Mar 2013
Employer: Jade Consult Pvt. Ltd
Position held: Environmental Expert

Period: Oct 2009 - Jun 2012
Employer: University of Virginia, USA
Position held: Research Associate

Period: Mar 2008- Aug 2009
Employer: School of Environment & Management Services
Position held: Environmentalist

Period: Feb 2008- Apr 2008
Employer: ITECO Nepal
Position held: Environmentalist

Period: Jan 2007- Dec 2007
Employer: CEMECA Consultants Pvt. Ltd./ Resources Himalaya Foundation
Position held: Environmentalist/ Program Coordinator

Period: Sep 2005- Oct 2006
Employer: Environment Conservation Initiative/ Himal Consult Private Limited/ CEMECA Consultants Pvt. Ltd.
Position held: Project Officer/ Environmentalist

Period: Jan 2005-Jun 2005
Employer: University of Virginia
Position held: Research Assistant

Period: Feb 2004- Mar 2005
Employer: Sagarmatha Environment Development Center (SEDC)
Position held: Program Coordinator

12. Detailed Tasks Assigned: As per FORM TECH 6-A: Team Composition, Assignment & Key Expert's Inputs

13. Work undertaken that best illustrates capability to handle these tasks

Environmental & Social Baseline Data Collection, Downstream Impact Assessment & E-flow Assessment Study, Rapid Cumulative Impact Assessment (CIA) for Upper Karnali Hydropower Project (HPP) 900 MW, Nepal; Year: May 2022 – Jul 2023; Location:

Dailekh, Achham; **Client:** GMR, India & EDF; **Main Project Features:** Upper Karnali Hydropower Project (UKHPP) is a hydropower scheme using water from Karnali River, Nepal with live storage capacity of about 6.66 million cubic metres, envisaged for installation of eight generating units of 112.5 MW each, giving a total installed capacity of 900 MW. A 2 MW small HPP is also proposed at toe of dam. It shall use a maximum of 10 cumecs out of mandatory E-flow release downstream of Upper Karnali dam for power generation. Project is currently developed by GMR. EDF, a French international energy company, shall work as Owners Engineer to Project. Project will seek funding from international finance institutions (IFIs) such as IFC or Asian Development Bank (ADB), etc.; **Position Held:** Environmental Expert/ Biodiversity Expert; **Activities Performed:** Environmental monitoring & baseline survey for impact data collection. Environmental impact mitigation plan preparation as per national laws & provide input in CIA preparation. Analyzing project details & environmental/social impacts. Conducting & managing critical habitat evaluations, surveys of aquatic & terrestrial ecosystems, & ecological analyses.

Consulting Services for External Monitoring of Lower Kopili Hydroelectric Project (120 MW), Assam, India; Year: May 2022 to Present; **Location:** India; **Client:** Assam Power Generation Corporation Limited (APGCL)/ Asian Development Bank; **Main Project Features:** LKHEP involves construction of 120 MW hydroelectric power plant & associated 50 km long 220kV power evacuation (transmission) line in northeastern State of Assam, India. LKHEP is designed to operate as a run-of-river power plant with diurnal storage with a total capacity of 120 megawatts (MW) comprising a main plant rated at 110 MW (2X55MW) & an auxiliary plant rated at 10 MW (1x5 MW+2x2.5 MW) at toe of dam for utilizing mandatory releases for ecological purposes. scheme has been contemplated to run at full potential in monsoon season & operate as a peaking station in non-monsoon season. project will use hydropower potential of Kopili River, a south bank tributary of Brahmaputra River. proposed LKHEP is downstream development of existing Kopili HEP. LKHEP is located in KarbiAnglong & Dima Hasao districts of Assam. Project location (dam site at Longku) is defined by 25°39'57.39" N latitude & 92°46'53.62" E longitude. project envisages utilization of regulated discharge from Kopili HEP, spills of Khandong & Umrong Dam & discharge from intermediate catchment. **Position Held:** Project Manager/Sr. Environmentalist/ Biodiversity Expert; **Activities Performed:** Overall coordination & management of project from Jade Consult's side. Monitoring project's progress. Reviewing & checking quality of reports & deliverables. Conducting field visits as & when required. Planning mobilization of experts. Review EIA report prepared for project to understand background of conservation issues & project activities; Based on wildlife conservation related activities proposed in EIA, further prepare a detailed Biodiversity Conservation & Wildlife Management Plan (BCWMP) including activities on compensatory afforestation & habitat enhancement. Undertaken pre-construction biodiversity assessment. Provide technical guidance to contractor for implementing BCWMP. Coordinate with local forestry officials, wildlife officials & local Panchayat & Women self-help groups to implement afforestation; program so as to generate employment for local people, especially women to extent possible. Monitor implementation of BCWMP on a periodic basis & prepare semi-annual monitoring reports for submission to APGCL & ADB. After completion of construction works & implementation of all BCWMP activities, during project implementation period for at least two years continue monitoring effectiveness of habitat enhancement activities. Based on monitoring activities prepare annual monitoring reports during project operation stage. To facilitate easier monitoring of effectiveness of habitat enhancement activities, identify & procure necessary equipment such as camera traps, GPS tracking devices etc. & use them for monitoring during project operations.

Updating of Feasibility Study, Conducting Detailed Engineering Survey & Design & Preparation of Tender Documents of Simbuwa Khola Hydropower Project (70.3 MW); Year: Aug 2021 – Ongoing; **Location:** Taplejung District; **Client:** Remit Hydro Limited (RHL); **Main Project Features:** scheme is 70.3 MW Run-of-River type hydropower project with a gross head of 888.86m & design discharge of 9.24 m³/s at 40% probability of exceedance. Based on feasibility study, major structures of project are: 17m long & 5m high spillway weir, two intakes (3.2m x 2.5m), an undersluice & 80m length settling basin. headrace tunnel is 4.392 km long which leads flow to 26m high surge shaft. design flow will be directed through 2710.42m long inclined pressure shaft to underground powerhouse cavern. annual sellable energy generation from project will be 378.96 GWh & electricity generated will be evacuated through Koshi Corridor. **Position Held:** Team Leader/Environmental Expert; **Activities Performed:** Preparation of supplementary environmental impact assessment as per national laws & guidelines relating to environmental studies; Conducted consultation meetings & public hearings at project site & prepared EMP for project. Designing & executing critical habitat assessments, ecological surveys in aquatic & terrestrial settings, & detailed ecological studies.

Feasibility & Environmental Impact Assessment of Kaligandaki Multipurpose Storage Hydropower Project (844 MW); Year: Mar 2020 – ongoing; **Location:** Gulmi, Parbat, Baglung; **Client:** DoED; **Main Project Features:** Kaligandaki Storage HPP lies in western part of Nepal. It will inundate some area of province 4 & province 5, namely districts: Gulmi, Parbat & Baglung. project boundary covers area between latitudes 2832 '16" N to 2825 '09" N & longitudes 8332 '42" E to 8311 '36" E. project has catchment area of approximately 6934.15 km² at most downstream dam location most downstream location of dam for which a toe of dam power station can be built is about 2 km upstream of Setiben, confluence of Kaligandaki & Seti Khola. **Position Held:** Environmentalist; **Activities Performed:** Conduct desk study & field reconnaissance survey, analyze available data & identify data gap of previous study & recommend further additional study needed with justification by conducting environmental assessments for preparation of environmental baseline & EIA report as per national/Nepalese environmental law & guidelines relating to EIA study. Identify key environmental issues/impacts on physical, biological, socio-economic & cultural environment associated with project implementation. Prepare an environmental management plan to implement proposed mitigation measures. Leading & conducting critical habitat studies, ecological assessments of aquatic & terrestrial habitats, & thorough ecological evaluations. Prepare environmental monitoring plans & EMP to implement proposed mitigation measures. Monitor water quality, air quality, & noise levels for establishment of baseline monitoring data.

Preparation of Biodiversity Action Plan (BAP) for Tamakoshi V Hydroelectric Project (99.8 MW); Year: Feb 2020-Feb 2022; **Client:** Tamakoshi Jalvidyut Company Limited (Funded by Asian Infrastructure Investment Bank); **Main Project Features:** Tamakoshi V - Hydroelectric Project has been conceptualized as cascade project & will operate in tandem with UTHER. As per detail design, Project will have an installed capacity of 99.8 MW generated through a gross head of 173.45 m & a design discharge of 66 m³/s. Its total annual energy production is estimated at 512.33 GWh. Tamakoshi-V HEP is conceptualized as cascade project of Upper Tamakoshi HEP with tandem operation. project area will be located within longitude 86°10'30" E to 86°14'30" E & latitude 27°45'00" N to 27°49'50" N. under-construction UTHER is a high head peaking run-of-river plant developed by Tamakoshi Hydropower Limited a subsidiary company of NEA (Nepal Electricity Authority). TV-HEP components will include interconnection system with UTHER, headrace tunnel, surge shaft, penstock, powerhouse & tailrace tunnel. Tamakoshi-V HEP will be developed on Tamakoshi River in Dolakha District in Bagmati Province in Federal Republic of Nepal. Project will be situated approximately 170 km north east of Kathmandu. major components of Project will be arranged

on right bank of Tamakoshi River. **Location:** Dolakha District; **Position Held:** Environmental Expert/ Biodiversity Expert; **Activities Performed:** Responsible for overall project coordination & assist international experts to carry out environment & ecology, biodiversity study & preparation of reports as per national laws & standards. Planning & implementing critical habitat assessments, surveys of aquatic & terrestrial ecosystems, & ecological investigations. Preparation of Biodiversity Action Plan. Conducted critical habitat assessment. Undertake a systematic review of fauna & flora species present in area of influence of project. Develop & implement an aquatic & terrestrial biodiversity baseline study plan.

Preparation of Supplemental Environmental & Social Documentation (SESD) for Tamakoshi V Hydroelectric Project (99.8 MW); **Year:** Feb 2020- Feb 2022; **Client:** Tamakoshi Jalvidyut Company Limited (Funded by Asian Infrastructure Investment Bank); **Main Project Features:** Tamakoshi V - HEP has been conceptualized as cascade project & will operate in tandem with UTHEP. As per detail design, Project will have an installed capacity of 99.8 MW generated through a gross head of 173.45 m & a design discharge of 66 m³/s. Its total annual energy production is estimated at 512.33 GWh. Tamakoshi-V HEP is conceptualized as cascade project of Upper Tamakoshi HEP (UTHEP) with tandem operation. project area will be located within longitude 86°10'30" E to 86°14'30" E & latitude 27°45'00" N to 27°49'50" N. under-construction UTHEP is a high head peaking run-of-river plant developed by Tamakoshi Hydropower Limited a subsidiary company of NEA (Nepal Electricity Authority). Project (TV-HEP) components will include interconnection system with UTHEP, headrace tunnel, surge shaft, penstock, powerhouse & tailrace tunnel. Tamakoshi-V HEP (TV-HEP) will be developed on Tamakoshi River in Dolakha District in Bagmati Province in Federal Republic of Nepal. Project will be situated approximately 170 km north east of Kathmandu. Major components of Project will be arranged on right bank of Tamakoshi River. **Location:** Dolakha; **Position Held:** Environmental Expert/ Biodiversity Expert; **Activities Performed:** Responsible for overall project coordination & assist international experts to carry out supplemental environment documentation of project & preparation of reports as per national laws & standards. Planning & implementing critical habitat assessments, surveys of aquatic & terrestrial ecosystems, & ecological investigations. Preparation of Biodiversity Action Plan. Conducted critical habitat assessment. Undertake a systematic review of fauna & flora species present in area of influence of project. Develop & implement an aquatic & terrestrial biodiversity baseline study plan.

SASEC (South Asia Sub-Regional Economic Cooperation) Power System Expansion Project – Project Supervision Consultant; **Year:** Jan 2020 to Apr 2022; **Location:** Magdi, Parbat, Tanahun, Kathmandu, Dhading, Manang, Rupandehi & Nuwakot; **Client:** NEA; **Main Project Features:** It has 6 subprojects from distribution to TRL phase. (132kV & 220kV TL lines & 33/11kV distribution substations. **Position Held:** Environmental Expert; **Activities Performed:** Involved in reviewing of monthly monitoring report, quarterly monitoring report & semi-annual monitoring report & documentation of deliverables.

Environmental Impact Assessment (EIA) Study of Upper Seti-1 Hydroelectric Project (26 MW); **Year:** Jun 2019 to Dec 2019; **Location:** Kaski District; **Client:** Shree Shrestha Energy Solution; **Position Held:** Environmental Expert; **Activities Performed:** Responsible for collection of baseline information of physical, biological & socio-economic & cultural environment for EIA report preparation as per national laws relating to EIA. Responsible for data analysis work based on baseline data collection, vegetation sampling & river water sampling for chemical analysis. Assessment of downstream release based on downstream requirement for irrigation, drinking, & fish sustenance. Preparation of mitigation measures for anticipated adverse impact due to implementation of proposed project.

Supplementary Environmental Impact Assessment (EIA) Study of 132 kV Transmission Line of Nyadi Hydropower Project; **Year:** Feb 2013 to Mar 2017; **Location:** Lamjung District, Nepal; **Client:** Nyadi Hydropower Limited; **Position Held:** EIA Environmental Expert; **Activities Performed:** Coordinate EIA team of experts, environmental data collection, environmental data analysis, consultation with stakeholders & EIA report preparation as per national laws relating to EIA. Assessment of environmental impacts, formulation of mitigation measures & preparation of Environment & Social Management Plan (ESMP) & report preparation for project.

IEE study of 220 kV line of Upper Trishuli I Hydroelectric Project; **Year:** Jan 2012 to Mar 2014; **Client:** Nepal Water Electricity Development Company Private Limited; **Location:** Rasuwa Districts, Nepal; **Main Project Features:** Upper Trishuli-I Hydroelectric Project is located at Rasuwa District of Central Development Region of Nepal. proposed transmission line project is planned to evacuate 216 MW of electricity generated by UT-I HEP from its switchyard to Trisuli 3B Hub of NEA at Pairebesi Phat of Manakamana VDC through 220kV single circuit transmission line of approximate length 10 km. project is a run-off river scheme with an installed capacity of 216 MW. headwork's site lies in Haku VDC, 275m downstream of Bhotekoshi- Trishuli confluence of Rasuwa district. power house site lies in Haku VDC (Baluwaphat) about 500 m upstream of Mailung Dovan. proposed 220kV UT-I HEP-TL will start from switchyard of Upper Trishuli I Hydroelectric Project located at ward no. 5 of Haku VDC of Rasuwa district. Then it passes through Dandagaon & Thulogaon VDCs of Rasuwa district & finally connected to Trishuli 3B Hub at Manakamana VDC of Nuwakot District. proposed TL alignment passes through one of very difficult hilly terrain in country; **Position Held:** Environmental Expert/Physical Expert; **Activities Performed:** Responsible for Environmental data collection, environmental data analysis, consultation with stakeholders & IEE report preparation. Assessment of environmental impacts, formulate mitigation measures & prepare report for project. Performing & overseeing critical habitat assessments, ecological surveys & comprehensive ecological evaluations.

Environmental Impact Assessment (EIA) for Chheti-Chaulani Hydroelectric Project (HEP) of 85 MW; **Year:** Mar 2008 to Aug 2009; **Location:** Darchula District; **Position Held:** Environmentalist; **Activities Performed:** Responsible for collection of baseline information of physical, biological & socio-economic & cultural environment, collection of water sample & organize meeting & disseminate information about projects to local's people. Responsible for data analysis work based on baseline data collection, vegetation sampling & river water sampling for chemical analysis, assessment of downstream release based on downstream requirement for irrigation, drinking, religious activities & fish sustenance. Preparation of mitigation measures for anticipated adverse impact due to implementation of proposed project & ESMP of project. Responsible for coordination & assist in preparation of EIA report as per national laws relating to EIA.

Initial Environmental Examination (IEE) of ThapaKhola Hydroelectric project (18 MW); **Year:** Mar 2008 to Aug 2009; **Location:** Mustang District; **Client:** Mount Kailash Energy Co. Ltd.; **Main Project Features:** Thapa Khola Hydropower Project is a run of river type project with an installed capacity of 18 MW. general layout of proposed project comprises of a diversion weir with a gated undersluice, side intake, Gravel trap, settling basin, Headpond, Headrace pipe, Tunnel, Surge tank, Surface penstock & a Surface powerhouse located on right bank of Thapa Khola in Tukuche village of Mustang District. side intake diverts water through approach canal to surface settling basin, where silt particles up to 0.2 mm are settled down & flushed out. headrace pipe & a short tunnel conveys water to surge tank, &

finally to powerhouse through surface penstock. powerhouse accommodates two units of generating equipment. tailrace canal finally releases water back to Thapa khola.; **Position Held:** Environmentalist; **Activities Performed:** Responsible for collection of baseline information of physical, biological & socio-economic & cultural environment, collection of water sample & organize meeting & disseminate information about projects to local's people. Responsible for data analysis work based on baseline data collection, vegetation sampling & river water sampling for chemical analysis, preparation of mitigation measures for anticipated adverse impact due to implementation of proposed project. Responsible for coordination with concerned line agencies for approval of IEE report.

Environmental Impact Assessment (EIA) of Tamakoshi-3 HEP (600 MW); Year: Mar 2008 to Aug 2009; **Location:** Dolakha District; **Client:** TBI Holding Co. Ltd.; **Position Held:** Environmentalist; **Activities Performed:** Responsible for collection of baseline information of physical, biological & socio-economic & cultural environment, collection of water sample & organize meeting & disseminate information about projects to locals people. Responsible for data analysis work based on baseline data collection, vegetation sampling & river water sampling for chemical analysis, measuring water velocity & discharge of tributaries of Tamakoshi River using Current Meter (Pigmy type) & responsible for water sampling & analysis of tap water for public health study during EIA study. Preparation of mitigation measures for anticipated adverse impact & ESMP of project. Responsible for coordination with concerned line agencies for approval of EIA report as per national laws relating to EIA.

EIA of Upper Trishuli-1 Hydroelectric Project (216 MW); Year: Mar 2008 to Aug 2009; **Location:** Rasuwa District; **Client:** NWEDC; **Main Project Features:** Upper Trishuli-I Hydroelectric Project is located at Rasuwa District of Central Development Region of Nepal. proposed transmission line project is planned to evacuate 216 MW of electricity generated by UT-I HEP from its switchyard to Tri-suli 3B Hub of NEA at Pairebesi Phat of Manakamana VDC through 220kV single circuit transmission line of approximate length 10 km. project is a run-off river scheme with an installed capacity of 216 MW. headwork's site lies in Haku VDC, 275m downstream of Bhotekoshi-Trishuli confluence of Rasuwa district. **Position Held:** Environmentalist; **Activities Performed:** Responsible for collection of baseline information of physical, biological & socio-economic & cultural environment, collection of water sample & organize meeting & disseminate information about projects to local's people. Responsible for data analysis work based on baseline data collection, vegetation sampling & river water sampling for chemical analysis, responsible for water sampling & analysis of tap water for public health study during EIA study, preparation of mitigation measures for anticipated adverse impact due to implementation of proposed project & its ESMP. designing & undertaking critical habitat assessment, aquatic & terrestrial ecological surveys, & ecological assessment; Responsible for coordination with concerned line agencies for approval of EIA report as per national laws relating to EIA.

IEE for Khimti Hydropower; Year: Jan 2006 to Jul 2006; **Location:** Nepal; **Client:** Khimti Hydropower Project; **Main Project Features:** **Position Held:** Environmentalist; **Activities Performed:** Responsible for preparation & approval of Initial Environmental Examination Report of Khimti Hydropower. Involved in baseline data collection of Physical Environment, Biological Environment & socio-economic & cultural environment, responsible for data analysis work based on baseline data collection, preparation of mitigation measures for anticipated adverse impact due to implementation of proposed project. Responsible for coordination with concerned line agencies for approval of IEE study.

14. Other assignments in company: N/A



1. Name of Firm:	JADE Consult P. Ltd. (Nepal)		
2. Name of Expert:	Alok Paudel		
3. Proposed Position:	Aquatic and Critical Habitat Expert		
4. Current Residential Address	Birtamod Municipality-3, Jhapa		
Telephone no.:	9851061421		
Fax no.:	+97714232171		
E-mail Address:	alokpaudel2000@gmail.com		
5. Date of Birth:	18th November 1978		
Citizenship:	Nepali		
Type of government ID and ID Number	Citizenship, 01282785		
6. Education:			
	Degree	Institute/University	Year
	Master of Science (M. Sc.), specialization in Ecology (Zoology)	Tribhuvan University	2003
	Bachelor of Science (B. Sc.) in Zoology	Tribhuvan University	2000
	Intermediate of Science (I. Sc.), Biology	Tribhuvan University	1996
7. Membership in Professional Associations:			
	Life member of Bird Conservation Nepal		
8. Other Trainings:			
	-		
9. Countries of work Experiences:			
	Nepal		
10. Languages:			
	Name of languages	Speaking	Reading
	Nepali	Excellent	Excellent
	English	Excellent	Excellent
	Hindi	Excellent	Good
11. Employment Record:			
	From	To	Employer
	Mar 2024	Till date	ES Safeguards Compliance Services Private Limited, Haryana, India
	Mar 2025	Apr 2025	Bird Conservation Nepal
	Aug 2023	Dec 2023	Total Management Services Pvt. Ltd., Nepal and Hydro Tunneling Research Pvt. Ltd., Nepal
	May 2023	Aug 2024	Pact Consultant Pvt. Ltd., Kathmandu, Nepal
	Mar 2023	Apr 2023	Bird Conservation Nepal
	Dec 2022	Jun 2023	Asian Development Bank (ADB), Manila Philippines
	Dec 2021	Jul 2022	ELC/GEOCE Consultants (P.) Ltd., Kathmandu, Nepal
	Oct 2021	Oct 2023	Asian Development Bank (ADB), Manila Philippines
	Oct 2021	Feb 2022	Pact Consultant (P) Ltd., Kathmandu, Nepal
	Nov 2020	Aug 2021	Raft Consultant (P) Ltd., Kathmandu, Nepal
			Position
			Senior Biodiversity Specialist
			Aquatic Life Expert / Ecologist
			Aquatic Life Expert
			Biodiversity Specialist (Wildlife/Ecology)
			Aquatic life Expert / Ecologist
			Resource Person (TA-9584)
			Aquatic Life Expert
			Environment Specialist / Aquatic Life Expert (TA-9852)
			Wildlife Expert
			Wildlife Expert

Aug 2020	Oct 2021	Bharosa Nepal (P) Ltd., Balaju, Kathmandu	Wildlife Expert
Jul 2020	Aug 2021	Pact Consultant (P) Ltd., Tripureshwor, Kathmandu	Wildlife Expert
Feb 2020	Apr 2021	Pact Consultant Pvt. Ltd., Kathmandu, Nepal	Biodiversity Specialist (Wildlife / Ecology)
Dec 2019	Dec 2023	GEOCE Consultants (P.) Ltd., Kathmandu, Nepal	Fishery Expert (National)
Aug 2019	Aug 2019	ES Safeguards Compliance Services Pvt. Ltd., Gurgaon India	Terrestrial Wildlife & Aquatic Life Expert
Apr 2019	Aug 2019	Total Management Services Pvt. Ltd., Kathmandu, Nepal	Terrestrial Wildlife & Aquatic Life Expert
Mar 2019	Apr 2019	Pact Consultant Pvt. Ltd., Kathmandu, Nepal	Terrestrial Wildlife & Aquatic Life Expert
Sept 2018	Dec 2021	ELC Electroconsult S.p.A., Italy	Wildlife & Aquatic Life Expert
Jan 2018	Nov 2018	Pact Consultant (P) Ltd., Kathmandu, Nepal	Wildlife Expert
Apr 2017	Aug 2018	Pact Consultant (P) Ltd., Kathmandu, Nepal	Wildlife Expert
Jan 2017	Sept 2018	Fichtner GmbH & Co. K.G., Silt Consultants (P.) Ltd. and Insight Engineering Consult (P.) Ltd. Kathmandu, Nepal	Terrestrial Wildlife & Aquatic Life Expert
Jan 2017	Jan 2019	EPTISA in association with TSE, SILT, TMS, and GeoCom (JV)	Terrestrial Wildlife & Aquatic Life Expert
Dec 2015	Jan 2017	Pact Consultant (P) Ltd., Kathmandu, Nepal	Wildlife Expert
Feb 2014	Sept 2015	Pact Consultant (P) Ltd., Kathmandu, Nepal	Wildlife Expert
Jul 2013	Sept 2013	Orient Consultancy (P) Ltd., Kathmandu, Nepal	Wildlife Expert
Jan 2013	Apr 2013	Pact Consultant (P) Ltd., Kathmandu, Nepal	Terrestrial Wildlife & Aquatic Life Expert
May 2012	Jul 2012	Madhya Midim Jalavidyut Company Pvt. Ltd	Terrestrial Wildlife & Aquatic Life Expert
Oct 2011	Nov 2011	Midim Hydropower Pvt. Ltd	Terrestrial Wildlife & Aquatic Life Expert
Mar 2011	Mar 2012	Jade Consult (P) Ltd., Kathmandu/ Nepal Water & Energy Development Company (P) Ltd.	Terrestrial Wildlife & Aquatic Life Expert
Nov 2009	Dec 2009	Nepal Environmental & Scientific Services (NESS) (P) Ltd.	Terrestrial Wildlife & Aquatic Life Expert
Apr 2008	Jun 2008	Nepal Environmental & Scientific Services (NESS) (P) Ltd.	Wildlife Expert
Jan 2008	Mar 2008	Nepal Environmental & Scientific Services (NESS) (P) Ltd.	Terrestrial Wildlife & Aquatic Life Expert
May 2006	Jun 2006	International Centre for Integrated Mountain Development (ICIMOD), Kathmandu, Nepal	Data Collection and Analysis Assistant

Mar 2006	Aug 2006	Nepal Environmental & Scientific Services (NESS) (P) Ltd.	Aquatic Life Expert
Feb 2006	Aug 2008	Nepal Environmental & Scientific Services (NESS) (P) Ltd.	Aquatic Life Expert
12. Detailed Tasks Assigned		13. Work Undertaken that Best Illustrates Capability to Handle the Tasks Assigned	
- As per ToR - Perform activities as per ToR in close association with International Expert. - Perform other functions as assigned or delegated by Team Leader/Deputy Team Leader from time to time during the time of assignment.		Name of Assignment or Project: Environmental and Social Support Services for the Nepal Energy Portfolio, South Asia Sub-Regional Economic Cooperation (SASEC), Nepal Power System Expansion Project- 220 kV transmission line (Manang to Markichowk) & substations/Switchyard (Manang, Khudi & Udipur) and Tanahu Hydropower Project (140 MW) Year: March 2024 – Till Date Location: Nepal Client: Nepal Electricity Authority; Main Project Features: A 220 kV transmission line & three substations and Tanahu Hydropower Project (140 MW). Part of the project is located within the Annapurna Conservation Area (IUCN Category VI) Position held: Environmental Safeguard Expert Activities Performed: Review of national legislation, EIB E&S standards, and E&S documents related to the project; review of the contractor's bidding documents and complaint documents received through the EIB complaint mechanism; preparation of an inception report; on-site inspections or assessments; consultations, discussions, and communications with related stakeholders to evaluate the project's adherence to the E&S Standards of the EIB; preparation of monthly reports showcasing how the project aligns with EIB's E&S Standards; provision of training sessions to build the capacity of promoters; preparation of checklists to guide inspections; and development of metrics for rating changes against the baseline.	
Name of Assignment or Project: Sustainable Management of Wetlands and Grasslands: Enhancing Biodiversity and Livelihoods, in Koshi Tappu Wildlife Reserve (KTWR) (financed by Darwin Initiatives UK) Year: March 2025 - April 2025			

Client: Tanahu Hydropower Limited, Nepal

Main Project Feature: Storage type project with an installed capacity of 140 MW

Position Held: Fishery Expert (National)

Activities Performed: Conducted aquatic life surveys (fish, plankton, and benthos) and **habitat assessments**, prepared the Fish Conservation and Management Plan, and fish monitoring reports, performed catch-and-haul activities, and **conducted fish awareness and aquatic offset programs**.

Name of Assignment or Project: Environmental Impact Assessment (EIA) Study of Budhi Gandaki Hydroelectric Project (341MW), Gorkha District, Nepal

Year: April 2019 - August 2019

Location: Nepal

Client: Time Energy Pvt. Ltd., Kathmandu, Nepal

Main Project Feature: The PROR Hydropower Project (341-MW installed capacity). It is partially situated within the Manaslu Conservation Area (IUCN Category VI)

Position Held: Terrestrial Wildlife & Aquatic Life Expert

Activities Performed: Conducted **baseline terrestrial and aquatic life surveys (mammals, birds, reptiles, amphibians, fish, planktons, and aquatic macroinvertebrates) and habitat assessments**, and assisted the Team Leader in preparing the EMP and drafting the EIA report.

Name of Assignment or Project: Environmental Impact Assessment (EIA) Study of Dudhkoshi Storage Hydroelectric Project (635 MW), Nepal (Funded By: ADB)

Year: September 2018 - December 2021

Location: Nepal.

Client: Nepal Electricity Authority

Main Project Features: Storage Hydroelectric Project of 635 MW capacity.

Position held: Wildlife & Aquatic Life Expert

Activities Performed: Conducted **baseline terrestrial and aquatic life surveys (mammals, birds, reptiles, amphibians, fish, plankton, and benthos) and habitat assessments**; facilitated stakeholder consultations and FGDs; performed impact assessments; and **assisted the Team Leader in preparing the EMP and drafting the EIA report to align with ADB safeguards**. Collaborated with national and international experts and the **ADB Panel of Experts (POE)** through workshops to validate **methodologies and refine mitigation strategies**. Addressed stakeholder feedback to ensure compliance with international standards.

Name of Assignment or Project: Environmental Impact Assessment (EIA) Study of Lower Arun Hydroelectric Project (679 MW), Sankhuwasabha District, Nepal

Year: January 2017 - September 2018

Location: Nepal

Client: Nepal Electricity Authority

Main Project Feature: A ROR project of 679 MW installed capacity

Position Held: Terrestrial Wildlife & Aquatic Life Expert

Activities Performed: Conducted baseline terrestrial and aquatic life surveys (mammals, birds, reptiles, amphibians, fish, plankton, and benthos) and habitat assessments, performed **impact assessments**, and assisted the Team Leader in preparing the EMP and drafting the EIA report.

Name of Assignment or Project: Initial Environmental Examination (IEE) Study of Madhya Midim Jalavidyut Aayojana (3.1 MW), Lamjung District, Nepal

Year: May 2012 - July 2012

Location: Nepal

Client: Madhya Midim Jalbidhyut Company P. Ltd., Nepal

Main Project Feature: Run-of-River project of 3.1 MW capacity

Position Held: Terrestrial Wildlife & Aquatic Life Expert

Activities Performed: Conducted baseline terrestrial and aquatic life surveys (mammals, birds, reptiles, amphibians, fish, plankton, and benthos) and habitat assessments, performed impact assessments, and assisted the Team Leader in preparing **EMP (biodiversity)** and drafting IEE report.

Name of Assignment or Project: Environmental Impact Assessment (EIA) Study of Upper Trishuli-1 Hydroelectric Project (216 MW), Nepal

Year: March 2011 - March 2012

Location: Nepal

Client: Nepal Water and Energy Development Company (P) Ltd (NWEDC)

Main Project Feature: ROR project with 216 MW installed capacity

Position Held: Terrestrial Wildlife & Aquatic Life Expert

Activities Performed: Conducted baseline terrestrial and aquatic life surveys (mammals, birds, reptiles, amphibians, fish, plankton, and benthos) and habitat assessments, impact assessments, and assisted Team Leader in preparing the EMP and drafting EIA report.

Name of Assignment or Project: Initial Environmental Examination (IEE) Study of 50 MW Balephi Hydroelectric Project, Sindhupalchowk District, Nepal

Year: November 2009 - December 2009

Location: Nepal

Client: Balephi HEP Ltd., Nepal

Main Project Feature: ROR project of 50 MW capacity

Position Held: Terrestrial Wildlife & Aquatic Life Expert

Activities Performed: Conducted **baseline terrestrial and aquatic life surveys (mammals, birds, reptiles, amphibians, fish, butterflies, plankton, and benthos) and habitat assessments**, performed impact assessments, and assisted the Team Leader in preparing the EMP and drafting the EIA report.

1. **Position:** E-Flow Modelling Expert
2. **Name of firm:** **Jade Consult Pvt. Ltd.**
3. **Name of staff member:** **Mehvish Rehman**
4. **Current Residential Address:** Lahore, Pakistan
Telephone No.: +977 (01) 5347237
Fax No.: + 977 (01) 5332171
E-Mail Address: info@jadeconsult.com.np
5. **Date of Birth:** 11.02.1982
Citizenship: Pakistani
Type of government ID & ID Number: Passport No.: KF9158711 (Pakistan)
6. **Education:**

2017	NCBA & E, Lahore, Pakistan; Environmental Management; M.Phil.
2003	University of Punjab, Lahore, Pakistan; Environmental Chemistry; M.Sc.
2001	University of Punjab, Lahore, Pakistan; Chemistry, Ecology; B.Sc.
7. **Membership in professional associations:**
 - P-OSHA (Pakistan Occupational Safety & Health Association)
 - Kilmatech Environmental Club
 - Environmental Consultants Association of Pakistan
8. **Further training courses:**
 - Post Graduate training course on "Environmental Management within Framework of River Basin Management" conducted by CEDDET Foundation, WB Global Development Learning Network (GDLN), Spain. (Jan-Jun 2014)
 - Completed Workshop on "HCFC's" conducted by Ozone Cell, Ministry of Climate Change, Government of Pakistan, UNDP & UNEP. (Feb 2013)
 - Participated in International/National Stakeholders workshop on HCFC phase out management Plan (UNDP UNIDP UNEP 2012)
 - Participated in final workshop of Mercury & Mercury containing waste in Pakistan. (UNEP 2010)
 - Completed training course on "Environmental Impact Assessment" conducted by Global Environmental Lab (Pvt) Ltd. (GEL). (2009)
 - Completed training course on "ISO 9001 2008; Quality Management System" conducted by, Center for Improvement of Working Conditions & Environment, Govt. of Punjab.
 - Conducted training as a resource person on "Emergency Response & Preparedness", conducted by British Council & L.C.W.U. (Jul 2007)
 - Completed training course on "Social Accountability 8000 & Labor Law" conducted by, Center for Improvement of Working Conditions & Environment, Govt. of Punjab
 - Completed training course on "NEQS Implementation" conducted by Global Environmental Lab (Pvt) Ltd. (GEL)
 - Completed one week training on "Recovery & Recycling of Oil & Greases from sewage treated sludge of kitchen & canteens" conducted by Global Environmental Lab.
 - Completed training on "Monitoring & Control of Stack Emissions" conducted by Global Environmental Lab
 - Conducted one week training as resource person on "Ambient Air Quality & its Monitoring" by Global Environmental Lab (Pvt) Ltd.
 - Organized & participated in several environmental awareness seminars.
9. **Countries of work experience:** Pakistan
10. **Languages:**

	Reading	Speaking	Writing
English	Excellent	Excellent	Excellent
Urdu	Excellent	Excellent	Excellent
11. **Employment record:**

Period: Oct 2019 – Till Date (Intermittent)
Employer: Irrigation Department, Govt of Punjab/ KFW Development Bank/ NTDC/ WAPDA/ ADNOC UAE
Position held: Environmental Expert/ Environmental, Social & Resettlement Expert/ Environment & Social Safeguards Expert/ Community & Gender Expert

Period: Sept 2021 - Till Date (Intermittent)
Employer: Korea Southeast Power Co./ Multi Consult (funded by KFW)/ Shangai Electric Power/ Power Development Board AJK
Position held: Sr Manager Environment (Team Leader Env)/ Environment & Social Safeguards Expert/ Technical Coordination/ Environmental Expert

Period: Jan 2020 – May 2021 (Intermittent)
Employer: The Prism Energy/ Barqaab Consulting Services Pvt. Ltd
Position held: Environment, Health & Social Safeguards Expert/Technical Coordinator/ Sr. Environmental & Social Safeguards Expert

Period: Jan 2017 – Jun 2020 (Intermittent)
Employer: ILF Pakistan/ Sustainability Through Environmental Professional Services (STEPS)
Position held: Environmental & Social Safeguard Expert/Deputy Team Leader/ Technical Coordination

Period:	Jan 2015 – Jun 2017 (Intermittent)
Employer:	Mirza Associates Engineering Services (MAES)/ Barqaab Consulting Services Pvt. Ltd./ Project Environmental Consultant (NTDC)/ AJ Solar Power Company (Pvt) Ltd/ ILF Pakistan (Pvt) Ltd
Position held:	Environmental & Social Expert/ Technical Coordinator/ Sr. Environmental & Social Expert/ Sr. Environmental & Social Officer/ Environmentalist & Resettlement Expert/ E-Flow Modelling Expert
Period:	Sept 2008 - Feb 2015 (intermittent)
Employer:	Mirza Associates Engineering Services (MAES)
Position held:	Environmental & Social Specialist/ Sr Environmentalist & Resettlement Expert/ E-Flow Modelling Expert
Period:	Aug 2006 - Aug 2008
Employer:	Barqaab Pvt Ltd
Position held:	Sr. Environmentalist
Period:	Jan 2005 – Jul 2006
Employer:	Environmental Consultancies & Options, Pakistan
Position held:	E&S Officer/ Sr. Environmentalist
Period:	Feb 2004 – Jan 2005
Employer:	Global Environmental Lab (Pvt) Ltd, Pakistan
Position held:	Team Leader, Environmental Monitoring

12. **Detailed Tasks Assigned:** As per FORM TECH 6-A: Team Composition, Assignment and Key Expert's Inputs

13. **Work undertaken that best illustrates capability to handle these tasks:**

Construction of 500kV Transmission Line from Suki Kinari HPP to Neelum Jhelum Interconnection (Lot-1); Year: Aug 2020 – Till Date (Intermittent); **Location:** KPK; **Client:** NTDC; **Main Project Features:** This 500 kV EHVT/L, LOT-1 starts from terminal tower of Suki Kinari HPP switching station near Paras, District Mansehra & ends at interconnection point near village Sangal, District Abbottabad, total length of Lot-1 T/L is about 72.3 km with 204 No. of towers; **Position Held:** Environmental Expert; **Activities Performed:** Responsible for preparation of site-specific environmental management plan & implementation; Preparation of HSE Plans (including multiple sub plans & implementation; Ensuring that day-to-day construction activities are carried out in an environmentally & safety sound & sustainable manner; Preparing training materials & implementing programs; Labor training, toolbox talks, HSE trainings; Capacity building trainings for management staff; First aid & EHS maintenance & monitoring for workforce; Labor camp management, welfare & housekeeping; Monitoring of incident, accidents & near miss record & development of corrective actions; Ensure implementation of mitigation measures suggested in EMP; To supervise & monitor environmental activities being performed at site; Periodic reporting as mentioned in EMP; Plan, manage, monitor & coordinate entire construction phase in term of HSE.

Dasu Hydropower Project (4,320 MW); Year: Jan 2023 – May 2023; **Location:** Dasu, Kohistan, KP; **Client:** WAPDA, World Bank; **Main Project Features:** Dasu Dam is a large hydroelectric gravity dam currently under construction on Indus River near Dasu in Kohistan District, Khyber Pakhtunkhwa Province, Pakistan. It is developed by Pakistan Water & Power Development Authority, as a key component of company's Water Vision 2025; **Position Held:** Community Development & Gender Adviser; **Activities Performed:** Monitoring & Implementation of M&E Plan & Local Area Development Plan of Dasu HPP; monitoring & evaluation of Dasu Hydropower project as described in project's Monitoring & Evaluation (M&E) Plan May 2021, in order to comply with WB Policies; Conduct evidence-based impacts attributable to project activities & identify gender gaps in implementation activities and, document outcome; Conduct meetings with client (WAPDA) & DHC in accordance with implementation status, priorities, geographic focus, etc.; Develop situation-specific tools (e.g. survey questionnaires, focus group discussion guides, key informant interview guides, etc.), conduct pilot test & use in day-to-day assessment & monitoring activities; Critically examine baseline, mid-term impact assessment & other studies & bridge gaps as required; Conduct field visits, focus group discussions, & interviews; Training of Labor, management staff, research Associates & local staff & share training outcomes; Reporting to World Bank.

215 MW Asrit Kedam HPP / 238 MW Kalam Asrit HPP; Year: Nov 2021 – Dec 2022 (Intermittent); **Location:** Swat, KP; **Client:** Korea Southeast Power Co.; **Main Project Features:** Asrit-Kedam Hydropower & Kalam Asrit Hydropower Projects are a 215MW & 238 MW hydro power projects, respectively, planned on Swat River/basin in Khyber Pakhtunkhwa, Pakistan. ESIA & associated documents including, ESMS, ESMP, RAP & HSE Plans were developed at detailed design stage; **Position Held:** Sr Manager Environment (Team Leader Env); **Activities Performed:** Liaison & Coordination with Client, community, technical team, internal & external reviewers & project affected people; Supervision of Environmental, Biological, Social Baseline data gathering & analysis; Communication to stakeholders; Vulnerability & Gender Surveys & Analysis; ESIA including RAP & ESMS; Livelihood Restoration, Capacity Building, Employment & Procurement Planning for PAP & Vulnerable groups; Plan & design implementation phase of policies, programmers, from HSE/OHS perspective; Preparation of health safety of Labor & workplace management plans, & cost calculation; Report Writing; Presentation to Client & EPA; Public Hearing & Approvals.

Feasibility Studies of Mini Hydropower Projects in KPK; Year: Jan 2018 to Mar 2019; **Location:** KP; **Client:** Markhor Energy Pvt. Ltd (funded by WB); **Main Project Features:** Markhor Energy Pvt Ltd is issued with LOIs for three hydropower projects in KP, namely Ratti Gali Hydropower Project in Naran & Sakhra-I & Sakhra-II Hydropower Projects in Swat districts. A complete Feasibility & detailed design studies will be prepared along with Environmental, HSE, Social, Biodiversity, & Resettlement Studies; **Position Held:** Environmental & Social Expert; **Activities Performed:** Environmental monitoring to satisfy environmental requirements of Pakistan Environmental Protection Act (PEPA), 1997, KP Environmental Protection Act 2014, & WB/IFC environmental safeguards as stipulated in OP/BPs; Liaison & coordination of project activities,

Development of Survey tools, Establishment of Survey teams, Impact prediction & preparation of mitigation plan. Established environmental monitoring & evaluation system during & after construction of project. Preparation of Compensation Matrix for environmental & social impacts, gender capacity building, Review of inputs from all disciplines; Preparation of Inception, Monthly, Site Visit & Interim report; Preparation of Stakeholder Engagement Plan; Preparation of HSE Management Plan; Plan & design implementation phase of policies, programs, from HSE/OHS perspective; Preparation of health safety of Labor & workplace management plans, & cost calculation; Coordination & assistance in preparation of ESIA, SEIA, ESMP & RAP reports; Presentation to Client.

Environmental and Social Impact Assessment (ESIA) & Resettlement Action Plan (RAP) of Feasibility Studies of 640 MW Mahl Hydropower Projects; Year: May 2016 - Jun 2017 (intermittent); **Location:** Jhelum River, Pakistan; **Client:** SIDRI, China (World Bank Funded Project); **Main Project Features:** 640MW Mahl Hydropower Project is located on Jhelum River, intended for power generation with specific technical details & environmental considerations; **Position Held:** Environmental & Social Expert/ E-Flow Modelling Expert; **Activities Performed:** Liaison & coordination of project activities, development of survey tools, establishment of survey teams; Impact screening & preparation of mitigation plan; Establishment of E&S monitoring & evaluation system; Preparation of Compensation Matrix for environmental & social impacts; Collaborated with hydrologists to ensure all necessary inputs for e-flow modelling were collected. **Employed holistic modeling techniques, including DRIFT method, to assess impacts & inform alternatives, impact, & cumulative impact assessments.** Review of inputs & preparation of various reports (Inception, Monthly, Site Visit, Interim); Preparation of Stakeholder Engagement Plan; Preparation of HSE Management Plan & health safety plans; Planning & design of HSE/OHS policies & programs; Assistance in Preparation of Biodiversity Management Action Plan; Coordination & assistance in preparation of ESIA, SESIA, ESMP, SEP, & RAP reports; Presentation to Client, PPIB, EPAs, & WB/IFC. Directed comprehensive environmental flow assessments, incorporating insights from environmental, biodiversity, & social experts. **Worked with technical teams to incorporate environmental flow assessment results into project design decisions.**

Feasibility Studies of 18 MW Dhaddar Hydropower Project; Year: Jun 2015 - Jan 2016 (intermittent); **Location:** Dhaddhar Nullah, Kaghan Valley, KPK; **Client:** Dhaddhar Hydropower Company (Pvt) Ltd; **Main Project Features:** Dhaddhar hydropower project is located on Dhaddhar Nullah which is left bank subsidiary of Kunhar River; **Position Held:** Sr. Environmental & Social Expert / Technical Coordinator; **Activities Performed:** Environmental & Social Assessment Studies as per Pak-EPA, EPA-KP & WB/IFC; Development of Environmental & Social Survey Maps, Preparation of field survey questionnaires & checklists, Baseline data gathering & data analysis Socio-economic & resettlement studies; Establishment of GRM documents; Preparation of HSE Management Plan; Preparation of inception report of project & presentation to PEDO; Preparation of IEE & ESMP report & Presentation to Client & EPA; Review of inputs from all disciplines, quality assurance of documents; Assistance in Preparation of Draft Feasibility report & Presentation to PEDO.

Environmental and Social Impact Assessment (ESIA) & Feasibility Studies of Batakundi Hydropower Project (102 MW); Year: Jun 2013 - Dec 2014 (intermittent); **Location:** Kunhar River, Khyber Pakhtunkhwa; **Client:** PEDO, KPK; **Main Project Features:** Batakundi Hydropower Project has been proposed 17Km upstream of Naran on Kunhar River, a right bank tributary of Jhelum River & joins with Jhelum River. design discharge of Project is 52.0 cumecs, Reservoirs Capacity at 2787 m.a.s.l is 3.50 MCM, Project has composite dam (Rockfill/concrete Gravity) with dam height of 58-meter, plant factor of 43.8% & Mean annual Energy (average 53 years) 368.7 GWh. Width & Length of Tailrace Tunnel is 5m x 110m. Power evacuation is through 132 kV substation & transmission system. Full power system studies were carried out with load flow analysis for purpose. **Position Held:** Sr Environmentalist & Resettlement Expert/ E-Flow Expert; **Activities Performed:** Environmental & Social Assessment Studies; Conducted detailed high-resolution environmental flow assessments, collaborating with specialists in environment, biodiversity, & social domains. Development of Environmental & Social Survey Maps, preparation of field survey questioners & check lists; Teamed up with hydrologists to acquire critical inputs for e-flow modelling; Liaised with technical teams to ensure environmental flow assessment outcomes were included in project design decisions. **Leveraged Tennant method for holistic modeling of impacts to inform alternatives assessment, impact assessment, & cumulative impact assessment.** Baseline data gathering & secondary data analysis Socio-economic & resettlement studies; Preparation of health safety of Labor & workplace management plans, & cost calculation; Plan & design implementation phase of policies, programs, from HSE/OHS perspective; Preparation of detailed Environmental & Resettlement cost estimates; Stakeholder Engagement & Public Consultations; Preparation of ESIA documents including HSE, ESMP & Resettlement Studies.

Environmental and Social Impact Assessment (ESIA) & Feasibility Studies of Naran Hydropower Project (188 MW); Year: Jan 2013 - Dec 2014 (intermittent); **Location:** Kunhar River, Khyber Pakhtunkhwa; **Client:** PEDO, KPK; **Main Project Features:** Naran Dam Hydropower Project is located near Naran. Naran is a village located in Kaghan Valley, Mansehra District of Khyber-Pakhtunkhwa province of Pakistan. Kunhar River is 166 kilometres long, primarily in Khyber Pakhtunkhwa province, northern Pakistan. It is in Indus River watershed basin. reach of reservoir will be up to village Battakundi. A head-race tunnel crosses mountain on right river bank. location of powerhouse is proposed near village Paludran at elevation of approximately 2200 masl. **Position Held:** Sr Environmentalist & Resettlement Expert/ E-Flow Modelling Expert; **Activities Performed:** Inception, Mid-term & Field visit Reports; Environmental & Social Impact Assessment Studies; Managed high-resolution environmental flow evaluations, integrating contributions from environmental, biodiversity, & social experts. Development of Environmental & Social Survey Maps; Preparation of field survey questioners & check lists Baseline data gathering & secondary data analysis Socio-economic & resettlement studies; Cooperated with hydrologists to secure necessary information for e-flow modelling; **Utilized physiographic principles in holistic modeling to inform impact assessments & evaluate alternatives & cumulative impacts.** Collaborated with technical teams to integrate findings from

environmental flow assessments into project design decisions. Preparation of HSE Management Plan; Preparation of health safety of Labor & workplace management plans, & cost calculation; Plan & design implementation phase of policies, programs, from HSE/OHS perspective; Preparation of detailed Environmental & Resettlement cost estimates; Stakeholder Engagement & Public Consultations; Preparation of ESIA documents including ESMP & Resettlement Studies.

Environmental and Social Impact Assessment (ESIA) & Feasibility Studies of Balakot Hydropower Project (300 MW); **Year:** May 2012 - Dec 2013; **Location:** Kunhar River, Khyber Pakhtunkhwa; **Client:** PEDO, KPK; **Main Project Features:** proposed Balakot Hydropower Project is located near Balakot. Balakot is a town located in Kaghan Valley, Mansehra District of Khyber-Pakhtunkhwa province of Pakistan. Balakot is located at 34°33'N 73°21'E Coordinates: 34°33'N 73°21'E about thirty-eight kilometers north-east of city of Mansehra, in Khyber-Pakhtunkhwa. **Position Held:** Sr Environmentalist & Resettlement Expert/ E-Flow Modelling Expert; **Activities Performed:** Inception, Mid-term & Field visit Reports; Collection of existing available data & information including satellite images; Ecological impact assessment studies; Oversaw precise environmental flow assessments, utilizing inputs from experts in environment, biodiversity, & social fields. Environmental survey & data collection Environmental & Social Impact Assessment Studies; Partnered with hydrologists to gather required data for e-flow modelling; **Applied DRIFT method & other holistic models to analyze impacts for alternatives assessment, impact assessment, & cumulative impact assessment.** Coordinated with technical teams to factor environmental flow assessment results into project design decisions. Development of Environmental & Social Survey Maps; Preparation of field survey questioners & check lists; Baseline data gathering & secondary data analysis; Socio-economic & resettlement studies; Preparation of HSE Management Plan; Preparation of health safety of Labor & workplace management plans, & cost calculation; Plan & design implementation phase of policies, programs, from HSE/OHS perspective; Preparation of detailed Environmental & Resettlement cost estimates; Stakeholder Engagement & Public Consultations; Preparation of ESIA documents including ESMP & Resettlement Studies.

Feasibility Study of Kaigha Hydropower Project (548MW); **Year:** Aug 2010 - Mar 2011; **Location:** Kandiah River, Khyber Pakhtunkhwa; **Client:** PPIB; **Main Project Features:** Kaigha Hydropower Project is located on Kandiah River, a Tributary of Indus River near Dasu. dam site located near Karrang village with reservoir spread 4 km upstream in Kandiah valley. scheme envisages construction of a 65 m high Concrete Gravity Dam. direct benefits of project will be 475 MW of electrical power & 1885 GWh of electrical energy on average per year. concrete lined headrace tunnel of approximately 21.50 Km with finished diameter 7.30m crosses mountains on Left River bank to powerhouse cavern, which is situated about 12 km upstream confluence of Kandiah River with Indus River. **Position Held:** Environmentalist & Social Expert; **Activities Performed:** Collection of existing available data & information including satellite images, etc.; Environmental & Social Impact Assessment Studies including ESMP, Resettlement Studies & Mitigation plan; Preparation of HSE Management Plan; Preparation of health safety of Labor & workplace management plans, & cost calculation; Plan & design implementation phase of policies, programs, from HSE/OHS perspective; Vulnerability Assessment, calculation of Transitional Hardship & permanent Impact on vulnerable females; Preparation of Capacity Building plan.

Feasibility Study of Shushgai Hydropower Project (144 MW); **Year:** Jan 2010 - Jul 2010; **Location:** Chitral, Khyber Pakhtunkhwa; **Client:** PPIB; **Main Project Features:** Shushghai-Zhendoli Hydropower Project located in Tirich Gol in Chitral Valley. Tirich Gol is a right bank tributary of Turkho River & joins with Rosh Gol some 25 km North-east of Buni Town. concept of development is to construct a 26.4 m high Concrete Gravity Dam. It was estimated that project would provide some 144 MW (Installed Capacity) in an underground powerhouse through 8.46 km long headrace tunnel with gross head of 615.4 m, design discharge of 28 m³/s, & with mean annual energy of 613.27 GWh. Power evacuation is through 132 kV substation & transmission system. Full power system studies were carried out with load flow analysis for purpose. **Position Held:** Environmental & Social Officer; **Activities Performed:** Collection of existing available data & information including satellite images, etc.; Preparation of HSE Management Plan; ESIA documentation including ESMP, Resettlement Studies & Mitigation plan.

Feasibility Study of Shogoin Hydropower Project (132 MW); **Year:** Aug 2009 - Dec 2009; **Location:** Chitral, Khyber Pakhtunkhwa; **Client:** PPIB; **Main Project Features:** Shogo-Sin Hydropower Project located on Lutkho River in Chitral District. Lutkho River is a right bank tributary of Mastuj River & joins it about five (5) kilometers upstream of Chitral Town. concept of development is to construct a 20 m high Concrete Gravity Dam. It was estimated that project would provide some 132 MW (Installed Capacity) in an underground powerhouse through 10.500 km long headrace tunnel with gross head of 248.5 m, design discharge of 65 m³/s, & with mean annual energy of 583.92 GWh. Power evacuation is through 132 kV substation & transmission system. **Position Held:** Environmental & Social Officer; **Activities Performed:** Primary & Secondary survey, data analysis; Preparation of HSE Management Plan; Preparation of Environmental & Social Management Plan; Environmental studies in accordance with recommendations of PAK-EPA & ADB, including preparation of reports ESIA, ESMP to implement recommended mitigation measures.

Detail Design of Kohala Hydropower Project (1100MW); **Year:** Sept 2008 - Jul 2009; **Location:** Jhelum River, AJ&K; **Client:** WAPDA; **Main Project Features:** project area lies in Muzaffarabad District of AJK. area of interest for study lies between Chakothi & about three kilometers downstream of Kohala bridge on Jhelum River. project includes a 52m high concrete gravity dam located at Siran, concrete lined twin headrace tunnels each 17 km long conveying 425 m³/s from dam to power complex. underground power complex comprises four units, each 275 MW, with an average annual energy output of 5457 GWh. project is estimated to cost about US\$ 2200 million. **Position Held:** Environmental & Social Officer/ E-Flow Expert; **Activities Performed:** Collection of existing available data & information including satellite images, etc. Primary & secondary data analysis; Preparation of HSE Management Plans & sub plans; Census & asset inventory; Vulnerable & livelihood restoration surveys; Environmental & Social Impact Assessment Studies including SEMP, Resettlement Studies &

Mitigation plan. Executed advanced environmental flow assessments, drawing on expertise from environment, biodiversity, & social professionals. Worked closely with hydrologists to obtain essential inputs for e-flow modelling. Partnered with technical teams to embed environmental flow assessment conclusions into project design decisions. **Utilized holistic models, such as DRIFT method, to evaluate impacts & support alternatives assessment, impact assessment, & cumulative impact assessment.**

14. Other assignments in company: N/A



1. **Position** Social Expert
2. **Name of firm** Jade Consult Pvt. Ltd.
3. **Name of staff member** Shiva Prasad Dhakal
4. **Current Residential Address:** Kathmandu, Nepal
- Telephone No.** +977 (01) 5347237
- Fax No.** + 977 (01) 5332171
- E-Mail Address** info@jadeconsult.com.np
5. **Date of Birth** 30.12.1975
- Citizenship** Nepalese
- Type of government ID and ID Number** Passport No. 09728536 (Nepal)

6. Education

Period: college/university, degree(s)/diploma(s)

1998-2001 Tribhuvan University, Nepal, Sociology of Economic Development and Gender Studies, Degree "Masters"

1994-1998 Tribhuvan University, Nepal, Economic and English, Degree "Bachelors"

7. Membership in professional associations

- Member, Sociological/Anthropological Society of Nepal
- Founder Secretary, Development of Society and Public Awareness Center (DSPAC)

8. Further training courses

- Hydropower Sustainability Training" 10 Feb to 27 March, International Hydropower Association and Hydropower Sustainability Training Academy.
- ADB Safeguards, Training of Trainers (ToT) (2017), Asian Development Bank – Bhutan
- Automated Safeguard Monitoring Training (2013), ADB/NRM – Nepal
- Social Planning and Resettlement Action Plan Preparation Program (2010), WB and ADB –Nepal
- Project Proposal and Report Writing in Social Projects (2005), Central Department of Socio/Anthropology – Nepal
- Participatory Rural Appraisal (PRA) (1999), Nepal Participatory Action Network – Nepal
- Training on Environment Protection (1999), DSPAC (National NGO) – Nepal

9. Countries of work experience

Nepal, India, Mongolia, Palau and Federated States of Micronesia

10. Languages

	speaking	reading	writing
Nepali	native speaker	native speaker	native speaker
English	excellent	excellent	excellent
Hindi	good	excellent	good

11. Employment record

Period: May 2023

Employer: Department of Finance and Administration, Government of Micronesia

Position held: International Social Safeguard Specialist

Period: Feb 2023 – Present

Employer: ES Safeguard Consult/ ADB

Position held: International Social Safeguard Specialist

Period: Jun 2022 – May 2023

Employer: Upper Karnali HP Project ADF/ GMR Pvt. Ltd

Position held: Social Expert:

Period: May 2022 – Apr 2023

Employer: Asam Power Grid Company Ltd.

Position held: International Resettlement and Indigenous People Specialist

Period: Oct 2020 – Jun 2023

Employer: ADB Nepal Resident Mission

Position held: Social Safeguard Specialist

Period: Oct 2021 – Mar 2023

Employer: Department of Roads/ SILT NESS JV

Position held: DTL cum Social Safeguard Specialist

Period: Jul 2022 – Feb 2023

Employer: Urja Developers Pvt. Ltd. Jade Consult

Position held: Senior Indigenous People Expert

Period: Jan 2021 – Apr 2023

Employer: European Investment Bank

Period: Dec 2016 – Jul 2017

Employer: Department of Roads ITECO TMS JV

Position held: Social Development / Resettlement Specialist

Period: Sept 2016 – May 2017

Employer: Department of Roads Full Bright Consultancy

Position held: Social Safeguard Specialist

Period: Feb 2012 – Nov 2015

Employer: Panchewhwar High Dam Project/ Shah Consult Pvt. Ltd.

Position held: Social Safeguard Specialist

Period: Feb 2015 – Dec 2016

Employer: MMM Canada in association with ITECO Nepal, TMS and Material Test JV

Position held: Social Development Specialist

Period: Feb 2015 – Jan 2016

Employer: DoR Kunuwa Korea in association with ERM

Position held: Senior Social Development / Resettlement Specialist

Period: Aug 2013 – Dec 2014

Employer: CDM SMITH in association with TACE ICON JV

Position held: Social Development Specialist

Period: Nov 2012 – Dec 2013

Employer: SNC LAVALIN in association with SPAN India & Silt & ERM

Position held: Social Development Specialist

Period: Nov 2009 – Oct 2012

Employer: CMS in association with ICON Consultants Pvt. Ltd.

Position held: Social Development and Resettlement Specialist

Position held: Environment and Social Safeguard Specialist

Period: Jun 2020 – Dec 2022

Employer: ADB/Municipality of Ulanbatar, Mongolia

Position held: International Social Safeguard, and Gender

Period: Mar 2019 – Jul 2020

Employer: Millennium Challenge Account – Nepal

Position held: Environment and Social Performance Specialist

Period: Aug 2018 – Mar 2019

Employer: ADB Nepal Resident Mission

Position held: Social Development/Safeguard Specialist

Period: Dec 2020 – Mar 2021

Employer: Jade Consult pvt. Ltd.

Position held: Social Development Expert

Period: Dec 2016 – Dec 2018

Employer: ERM US JV TMS

Position held: Social Development & Resettlement Specialist

Period: Jun 2017 – Dec 2018

Employer: Melamchi Watersupply Project EPTISA JV TSE

Position held: Social Development Specialist

12. Detailed Tasks Assigned

As per FORM TECH 6-A: Team Composition, Assignment and Key Expert's Inputs

13. Work undertaken that best illustrates capability to handle these tasks

Department of Finance and Administration All active Projects financed by World Bank (~ 300 million); Year: May 2023; **Location:** Federated States of Micronesia; **Client:** World Bank; **Main Project Features:** Overall portfolio management in Environment and Social Safeguards (preparation, assessment and monitoring) instruments in World Bank Financed Project in Islands. Climate Resilience infrastructure development, maritime management, green energy and skill enhancement including information communication and technology transfer; **Position held:** International Social Safeguard Specialist; **Activities Performed:** Provide specific expertise to the Department of Finance and Administration in preparing, executing and reporting social safeguard of WB portfolio in the Federated State of Micronesia, Assess potential environment and social risk and provide guidance to prepare appropriate mitigation plan to address the impact, Provide support in project management, scope and develop/prepare social safeguard instruments, screen project impacts, facilitate to recruit and manage social consultants, support in preparation of stakeholder engagement plan and execute it, organize stakeholders consultation and disclosure meetings, ensure the compliance of WB ESF in community participation, participatory project development and implementation, community engagement and information dissemination. Support capacity development in ESMS planning executing and reporting. Focal person for Grievance Handling, Focal point to ensure the safeguard compliance to the WB portfolio in energy, road/bridge, maritime, marine, school infrastructure and oceanic fisheries.

TA-9772 REG: Preparation of the Palau Proposed Smart Grid Project; Year: Feb 2023 Till; **Location:** Palau; **Client:** Asian Development Bank; **Main Project Feature:** Preparation of Project documents including RRP for energy projects; **Position held:** International Social Safeguard Specialist; **Activities Performed:** Review the scope and activities of the proposed project and screen their potential impact on land acquisition/involuntary resettlement and indigenous people in the selected sites to confirm project categorization, conduct a stakeholder analysis and prepare a project communication strategy and consultation and participation plan to ensure effective engagement, If the involuntary resettlement safeguard policy is triggered, the consultant will prepare the social assessment and resettlement plan (RP) (based on social/risk analysis, surveys, inventory of losses, and consultation and participation with potentially affect persons and stakeholders). Institutional arrangements to implement the social safeguards plans will be defined and costing to supervise, implement and monitor them will be provided. If the involuntary resettlement policy is not triggered, a due diligence report (DDR) summarizing consultations and findings of the due diligence will be prepared including a compliance audit of existing facilities in line with the SPS, Appendix 4 paragraph 12., In coordination with environment and gender specialist, assist the EA and IA and relevant government agencies, undertake adequate consultations with affected persons and other stakeholders and assist in disclosing relevant information in accordance with country's laws, ADB's Safeguard Policy Statement (2009) and Access to Information Policy (2018), Identify specific training needs for EA and IA safeguard staff or consultants on all aspects of social safeguard assessment and management with inputs to the project capacity development plan and deliver necessary capacity building trainings at the project level, Submit draft safeguard planning documents to EA, IA and ADB and finalize these incorporating comments.

Upper Karnali HP project (600 MW) downstream Impact Study, EFlow Assessment and Rapid CIA IFC PS Standard; Year: June 2022 to May 2023; **Location:** Nepal; **Client:** EDF Asia/GMR company Limited; **Main Project Feature:** Update Environment and Social data, Collection of downstream Impact study, EFlow Assessment and Rapid Cumulative Impact Assessment for 600 MW HP project; **Position held:** Social Expert. **Activities Performed** Undertake field visit and engage in stakeholder consultation meetings, Update socio-economic baseline information, assess the requirement of FPIC process and recommend further action, assess river diversion impact in livelihood, culture and religious. Organize stakeholder meetings, conduct cumulative impact assessment and reporting.

Lower Kopili Hydropower Project ADB funded; Year: May 2022 to April 2023; **Location:** India; **Client:** Assam Power Generation Corporation Limited (APGCL)/ Asian Development Bank; **Main Project Features:** Construction 120 MW hydropower project, 200 kV 85 km transmission line associated facilities and 25 KM access roads; **Position held:** International Resettlement and Indigenous People Specialist; **Activities Performed:** Review RIPP and all monitoring reports prepared for the project to understand the resettlement and indigenous issues in the project area and mitigation and monitoring requirements of the project. (ii) Assess the capacity of APGCL in implementing of RIPP, Livelihood Restoration and Rehabilitation, and provide necessary guidance. (iii) Review compensation and entitlement policy compliance; adequacy of organizational mechanism for implementing the RIPP; settling complaints and grievances; and provisions for adequate budgetary support for implementing the RIPP. (iv) Assess whether resettlement objectives, particularly vulnerable group assistance and restoration of livelihoods and living standard of the affected persons have been fulfilled. (vi) Assess resettlement efficiency, its effectiveness, impact and sustainability in relation to policy and practices and to suggest any corrective measures. (vii) Appraise the

accounting documents used in recording the payments of compensation to APs by APGCL. (viii) Visit project sites to assess resettlement impacts, mitigation measures, and conduct surveys/interviews/public consultations/focus group discussions with APs including the affected indigenous households to ascertain their views on RIPP implementation. (ix) Review the time schedule for impounding, site development, land allocation, compensation, infrastructure development in the resettlement sites and assess whether the schedule is appropriate for effective implementation relocation activities of the affected people and whether it is in compliance with safeguard policies; (x) Assess the operation of the grievance redress mechanism for dispute resolution. Review grievance redress mechanism (GRM) consultative notes, decisions and comments to ascertain its adequacy, impartiality and timelines, provide inputs into the RIPP and assist RIPP update, if necessary. (xi) Share findings and knowledge with APGCL and financiers, and contribute to initiate a dialogue amongst project stakeholders on resettlement, socioeconomic development and project impacts on APs including indigenous peoples. (xii) Resettlement; timely disbursement of funds. (xiii) Social adaptability after resettlement. (xiv) Rehabilitation of vulnerable groups. (xv) Special items related to the vulnerable groups. (xvi) Condition and quality of land temporarily acquired when it is returned to the original land users. (xvii) Measures taken to restore affected livelihoods. (xviii) Living conditions and economic status of APs following resettlement.

Monitoring ADB safeguard performance in country operation –ADB TA 9800; Year: October 2020 to June 2023; **Location:** All Nepal; **Client:** ADB; **Main Project Features:** Support and monitor IA/EA performance in social safeguard implementation in county operation; **Major Projects worked:** Rural Connectivity Improvement project RCIP (Construction of 250 Km asphalt pavement), SASEC Highway Improvement Project (Construction/improvement of 220 KM national highway in Asian highway standards), SASEC Roads Improvement Project (Construction/improvement of 120 KM national highway into Asian Highway standards), SASEC Power system expansion project (construction of 155 KM 220 kV transmission line and 220 kV 6 associated sub stations Energy Transmission Expansion and Supply Improvement (ETESIP) Project, construction of 400 kV TL, and associated S/S; **Position held:** Social Safeguard Specialist; **Activities Performed:** Assess EA/IA's preparedness on involuntary resettlement and indigenous people impact assessment and preparing safeguard planning documents. Review the adequacy of safeguards due diligence reports, resettlement plan, and provide recommendations for improvements. Review project related past ADB mission aide memoires, corrective actions, quarterly reports and semi-annual social monitoring report. Review safeguard mechanism established in the projects, ensure if they are according to project requirements. Facilitate EA/IA for timely submission of updated resettlement plans and monitoring reports; and provide input to improve quality of the reports and safeguards performance. Conduct monitoring visit to verify information provided in monitoring reports and planning documents on involuntary resettlement impact, affected persons and sufficiency of proposed mitigation measures in the RP, if needed. Develop and update field monitoring toolkit and checklist for social safeguard compliance review of the projects. Collect information and progress on implementing resettlement plan, follow up and coordinate with government agencies for timely land acquisition and compensation. Monitor performance of design and supervisions consultants in implementing safeguards plan and compliance reporting. Support in preparing a consolidated social safeguard compliance and project performance report of the year 2020-2023 covering all projects. Prepare 5-7 good practice case studies and 5-7 major lessons from the project performance review on social safeguards, Work as resource person in carrying out capacity development activities to the EA and IA staff as and when necessary. Organize workshops involving concerned government agencies, EA/IAs and projects' safeguards consultants for preparing assessment reports, developing filed monitoring toolkits, and sharing findings

Update Environment and Social Management Framework (WB Financed); Year: 10/2021 ~ March 2023; **Location:** Nepal; **Client:** Department of Roads/World Bank; **Main Project Features:** Update ESMF in line with changing contest of Nepal and World Banks Safeguard Standards, **Position held:** Deputy Team Leader cum Social Safeguard Specialist; **Activities Performed:** As deputy team leader, coordinator with team of experts and coordinate with them for timely delivery of report, presentation with DoR, review Acts & Rules, Guidelines, manual and directives, environmental standards, and international policies and conventions and instruments, for environmental and social, issues Identify and Integrate the environmental and social issues and safeguard mechanism including procedures of obtaining of Free Prior Informed Consent (FPIC) of affected Indigenous Peoples communities when needed in the project cycle for road and bridge projects, Review, adapt and include the 10 Environmental and Social Standards (ESS) identified in the Environmental and Social Framework (ESF) published by the World Bank Group as well as the World Bank Group's Environmental Health and Safety (EHS) Guidelines, and E & S policies used by other intentional partners, applicable to road and bridge sector. In doing this ensure that the revised ESMF includes key procedures that are consistent with the objectives of the ESSs, Review and consolidate field E&S management practices/experiences in different terrains, organize a workshop to present the draft ESMF to the GESU, Develop a Capacity Building Plan and training materials for implementation of updated ESMF in all Road Divisions

Social Impact Assessment of Maibeni and Lowerjogmai HP project IFC PS standards; Year: 07/2022 to Feb 2023; **Location:** Eastern Nepal; **Client:** Urja Developers / IFC; **Main Project Features:** Social Impact Assessment of two HP project (9.5+6.2 MW); **Position held:** Senior Indigenous People Expert; **Activities Performed:** Review project environment and social documents, prepare consultation methods survey plan, consult with project stakeholder, field visit, appraise land purchasing approach, assess impact to indigenous communities and their livelihood, Review River dependency, livelihood, cultural and religious sectors. Prepare Social Impact Assessment Report. Propose impact mitigation plan to restore livelihood, Propose GRM, and SEP process and status.

Nepal Power System Enhancement Project / EIB E&S standards; Year: 01/2021 ~ April 2023 t (Intermittent); **Location:** Nepal; **Client:** European Investment Bank, Luxembourg; **Main Project Features:** Energy generation, transmission and distribution Generation: Tanahun Hydropower Project (Construction of 140 MW reservoir project and transmission line) Transmission: Nepal Power System Expansion Project (Construction of 185 KM 220 kV TL and 220 kV 3 GIS Substation and associated facilities) Distribution: Distribution System Upgrade and Expansion Project (Construction 13 33kV S/S and expansion of distribution networks); **Position held:** Environment and Social Safeguard Specialist; **Activities Performed:** Review environment and social impact assessment documentation and provide suggestion/comments (if any) and ensure the documents are in line with EIB standards, Establish ESMS in the EIB portfolio and review compliance monitoring, Monitor promoters performance in the implementation E&S including involuntary resettlement, compensation payment and livelihood restoration packages, Review the implementation stakeholder engagement plan (SEP) and its adequacy to engage stakeholders and information dissemination, Review cumulative impact assessment (CIA), biodiversity impact assessment (BIA) and ensure that meets EIB standards, Conduct periodic field visits and undertake compliance monitoring, Conduct due diligence, assess and evaluate project associated risks, categorized them and provide guidance/ advise approached to address/mitigate, Review contractor's performance in environment and social impact management, Assess the adequacy/effectiveness of grievance redresses mechanism, Monitor promoters performance in implementation of ESAMP as advise of EIB complaint mechanism to address complaint filed by FPIC forum district chapter, Conduct field visit and follow up action for environment and social clearance, Mission visit with regulatory authority and provide corrective action plan (if necessary), participate in contract negotiations and ensure contract document adequately address E&S standards,

Affordable Housing and Resilient Urban Renewable Project facilities (Road, Drainages, solar energy and housing) / ADB Fund

Year: 06/2020 ~ December 2022 (intermittent); **Location:** Mongolia; **Client:** Municipality of Ulaanbaatar/ ADB Manila; **Main Project Features:** Construction of Resilient urban infrastructure and public facilities (Road, Drainages, Water supply and housing) Municipality of Ulaanbaatar / ADB; **Position held:** International Social Safeguard, and Gender; **Activities Performed:** Conduct a social impact assessment of project-affected people, land, and assets, prepare Resettlement Plan, identify potential impoverishment risks and vulnerable groups, update the Consultation and Participation Action Plan (CPAP) and implement, Conduct land survey and prepare resettlement plans, prepare and finalize the Voluntary Land Swapping Plans (VLSP), Ensure social and gender compliance in accordance with ADB SPS, monitor contractor performance in E&S implementation, Support's capacity in E&S implementation PMO for livelihood restoration programs, prepare semi-annual safeguard monitoring reports, carry out public consultation and community engagement, establish and operationalize Grievance Redressed Mechanism, support in implementation of resettlement plan and social and gender inclusion plan. Ensure all sub projects are implemented in compliance with ADB safeguard standards.

Millennium Challenge Account-Nepal / IFC performance standards; Year: 03/2019 ~ 07/2020 (18 months); **Location:** Kathmandu, Nepal; **Client:** Millennium Challenge Corporation Washington DC, USA; **Main Project Features:** Construction of 400kV 325 KM transmission line, 400kV 3 electric sub-station, and capacity development, upgrading/improvement of 90 KM national highway; **Position held:** Environment and Social Performance Specialist; **Activities Performed:** Responsible to prepare environment and social document in compliance with IFC performance standards, such as Preparation of Environment and Social Management System/Framework (ESMS/ESMF). Provided input in social components for study Environment Impact Assessment study team, Prepare Stakeholder Engagement Plan (SEP) in line with IFC standards and implement, Preparation of Resettlement Action Plan and ensure implementation of FPIC as triggered by IFC standards and GoN requirements, follow up action for environment and social clearance, Ensure inclusive participation of gender in ethnic minorities in project, Establish Grievance Redresses Mechanism (GRM) and activate for timely address project grievances. Prepare Social and Gender Action Plan (SGAP) and indigenous people consultation plan and engagement framework. Monitor E&S consultant commissioning and their performance, supervise the work of E&S consultants, ensure commissioning of E&S consultants and their review their performance, ensure the contract packaging maintain E&S standards

Tamakoshi V Hydropower Project /AIIB Financed; Year: December 2020 to March 2021; Location: Mid Nepal; Client: Tamakoshi V HP Project; **Main Project Features:** Environment and social documentation of 99 MW HP project; **Position held:** Social Development Expert; **Activities Performed:** Conduct high level assessment of the project from social perspective, engage in stakeholder consultation, review impacts on indigenous people, Contribute social components for Cumulative Impact Assessment (CIA) and project risk assessment and prepare labour management plan, resettlement plan, community support strategy, land acquisition and livelihood restoration plan, grievance redress mechanism, due diligence of ongoing compensation distribution, prepare local employment strategy. Prepared Resettlement Action Plan, Indigenous People Development Plan and Gender Action Plan

Cumulative Impact Assessment of Kabeli Hydropower Project; IFC PS standard; Year: October 2108 to February 2019 intermittent; **Location:** Eastern Region of Nepal; **Client:** DOED World Bank; **Main Project Features:** Environment and social impact (EIA) and Cumulative Impact Assessment (CIA) of HP projects of Kabeli Basin **Position held:** Senior Resettlement Specialist; **Activities Performed:** Assess project impact in social and indigenous communities and risks associated with project investment. Screening the project impacts, reviewed of documentation, Developed Environment and Social Management Framework ESMF in line with IFC PS standard 5 and 7. Developed consultation for consultation and engagement of project affected families and communities and Assessment of overall social/resettlement impacts of Kabeli hydropower Basin, Prepared potential displacement scenario of HP project and its negative impact on human life and social structure, Assessed potential appropriate mitigation plan reducing large number of resettlement issues and capacity building of DoED team on designing and implementation of social safeguard documents, Institutional assess of DoED in implementation of IFC PS standards and support in capacity development. Ensured documentation of resettlement impacts of hydropower project in Kabeli basin

Environmental and Social Study (ESIA) for Kathmandu (Nagdhunga) – Naubise – Mugling Road and Bridges and East – West Highway and Bridges (Kakarbhitta – Pathlaiya Section) / WB Fund; Year: 06/2017 ~ 12/2018 (5 months, Intermittent); **Location:** Nepal; **Client:** DoR / World Bank; **Main Project Features:** Environmental and Social Study of 4 lane Bituminous Highway for 150 KM road for Kathmandu – Naubise – Mugling Road (KNM) of Prithibi Highway Road Section and Kakarbhitta to Pathalaiya Section of East West Highway 336 KM; **Position held:** Social Development Specialist; **Activities Performed:** Responsible collecting data and Social assessment and social planning studies and preparation of ESIA including preparation of resettlement & Indigenous people plan (IPP), GAP, HIV/AIDS, Human Trafficking etc. and implementation and rehabilitation works and prepared ESIA reports

Earthquake Emergency Assistant Project - Construction Supervision of 150 km strategic roads and implementation of Resettlement Plan / ADB Fund;Year: 12/2016 ~ 07/2017 (5 months, Intermittent); **Location:** Kathmandu, Nepal; **Client:** DoR; **Main Project Features:** Construction Supervision of approx. 100 km strategic roads and implementation of Resettlement; **Position held:** Social Development / Resettlement Specialist; **Activities Performed:** Reviewed resettlement plan of three road and update (if necessary); (ii) Provided guidance to DOR for land valuation facilitate to acquisition process; (iii) Worked as team member reviewing social part in IEE/EIA reports; (iv) Facilitated environment expert to implement social components mentioned in EMP; (v) Facilitated the environment expert to prepare environmental monitoring reports; (vi) Facilitated DoR for land acquisition and title transfer; (vii) Implemented income restoration and livelihood programs for AP; (viii) Maintained database of affected persons and update it if necessary; (ix) Implemented Social and Gender inclusion Plan; (x) Prepared annual and semi-annual monitoring report of safeguard implementation; and (xi) Established and activated grievance redress mechanism for timely action of project related grievance

Pancheshwor High Dam Multipurpose Project; Year: Feb 2012 ~ Nov. 2015 (15 months); **Location:** Central Nepal; **Client:** Department of Electricity Development; **Main Project Features:** 6,480 MW power project and irrigation 5000 ha command area with 215m high dam, 3000 physically displaced households; **Position held:** Social Safeguard Specialist; **Activities Performed:** , Develop methodology/check-list/questionnaire and conduct baseline survey (ii) Analysis the impact, provide mitigation and enhancement measures(iii) Develop plans and programs for livelihood support, community development and income generation (iv) Develop safeguard measures for the project affected families (v) Prepare emergency response system and disaster preparedness system, (v) Cost estimate for proposed management, mitigation and enhancement and community development (vi) organize local, regional and national workshops and present reports, receive comments and feedback and finalize them incorporation of comments and suggestions, conceptualized grievance redresses system

Transport Project Preparatory Facility-2 / ADB Fund;Year: 02/2015 ~ 12/2016 (12 months, Intermittent); **Location:** Kathmandu, Nepal; **Client:** DoR/ Asian Development Bank; **Main Project Features:** Feasibility Study of 405km (DBST Road) and DPR for of 403km (DBST Road); Environment and social study; **Position held:** Social Development Specialist; **Activities Performed:** Designed methodologies for carrying out social and poverty survey 900km (i.e., census survey, socio- economic baseline survey, focused group discussion and public consultation, assessment of project affected areas explore potential income generation activities); (ii) Prepared reports on social and poverty status, and availing the safeguards clearances from concerned bodies along with development of Institutional mechanism for social and livelihood program implementation; (iii) Existing gender analysis, and developed plan to reduce gender imbalance; (iv) Prepared HIV / AIDS program and supported preparation of Resettlement Plan, Gender Action Plan and Social Action Plan; (v) Ensured the safeguard compliance of ADB in EA Preparation of Gender and social inclusion (GESI) Plan, Social Action Plan and Resettlement Action Plan; (vii) conducted social impact study to prepare EIA/IEE study and prepare reports as required to ADB SPS

14. Other assignments in the company: NA



1. **Position:** Climate Change Expert
2. **Name of firm:** **Jade Consult Pvt. Ltd.**
3. **Name of staff member:** Dr. Divas B. Basnyat
4. **Current Residential Address:** Kathmandu, Nepal
Telephone No.: +977 (01) 5347237
Fax No.: + 977 (01) 5332171
E-Mail Address: info@jadeconsult.com.np
5. **Date of Birth:** 19 Feb, 1963
Citizenship: Nepali
Type of government ID & ID Number: Passport ID: 11336444

6. **Education:**

Year: **College/University, Degree(s)/Diploma(s)**

2003-2004 Columbia University, USA (Fulbright Scholar); Post-doctoral Research

1993- 1998 Asian Institute of Technology, Thailand; Doctor of Engineering (Water Resources Engineering & Management).

1989- 1990 Asian Institute of Technology, Thailand; Master of Engineering (Water Resources Development).

1982- 1986 University of Roorkee, India; Bachelor of Civil Engineering (Honors).

7. **Membership in professional associations:**

- International Hydropower Association (IHA)
- International Assoc. of Hydrological Sciences (IAHS)

8. **Further training courses**

- Aug. 2009, International Workshop on Application & Validation of Global Flood Alert System (GFAS), Tsukuba, Japan, organized "IFNET" Secretariat & International Center for Water Hazard & Risk Management (ICHARM), Public Works Research Institute (PWRI), Japan.
- 21 Dec. 1998 (Nepal)- Training cum Workshop on "Real Kinematic Time Differential GPS (RTK-DGPS) - 21 Dec. 1998, ICIMOD, Organized by MENRIS/ ICIMOD & Keio University, Japan
- Nov. 1997 (Thailand)- Information Management, Center for Library & Information Resources (CLAIR), (two weeks).
- Sept. 1995 (Thailand)- Mechanism for Exchange of Technology Information (METI) organized by APCTT.
- Dec. 1994 (Thailand)- PC ARC/INFO (Geographical Information System), School of Environment, Resources & Development, AIT.
- Oct. - Nov. 1992 (Thailand)-MIKE-11: A Micro Computer based Modeling System for Rivers & Channels (developed Danish Hydraulic Institute) (two months).
- Jul. 1995 (India), Hydropower Generation, Karnataka Power Corporation Ltd (one month).

9. **Countries of work experience:** Nepal, India, Thailand, Cambodia, Lao PDR, Vietnam (Greater Mekong Subregion), Afghanistan, Papua New Guinea, Kenya, Somalia, South Sudan, Mozambique, Sri Lanka & USA

Languages:	Speaking	Reading	Writing
Nepali	Mother Tongue	Mother Tongue	Mother Tongue
English	Excellent	Excellent	Excellent
Hindi	Excellent	Good	Good

11. **Employment record:**

- Period:** 2000 to Till Date
Employer: Various Organizations
Position held: Independent/Freelancer Consultant
- Period:** Feb 2000 to 2013
Employer: Institute of Engineering, Tribhuvan University, Nepal
Position held: Visiting Faculty
- Period:** Aug 2008 to Till Date
Employer: Nepal Development Research Institute (NDRI), Nepal
Position held: Executive Director (Aug 2011 - Feb 2013) & Program Coordinator – Water & Climate (Intermittent Inputs)
- Period:** Nov 1998 to Jan 2000
Employer: Institute of Engineering, Tribhuvan University, Nepal
Position held: Lecturer (Water Resources Engineering)
- Period:** Mar 1992 to May 1998
Employer: Asian Institute of Technology (AIT), Thailand
Position held: Senior Information Scientist, Regional Energy Resources Information Center (RERIC) (1995 – 1998) & Research Associate (Hydrology/Water Resources Engineering) (1992 – 1995)
- Period:** Sep 1986 to Aug 1991
Employer: Nepal Electricity Authority (NEA), Nepal
Position held: Hydropower /Water Resources Engineer

12. **Detailed Tasks Assigned:** As per FORM TECH 6-A: Team Composition, Assignment & Key Expert's Inputs

13. **Work undertaken that best illustrates capability to handle these tasks:**

Irrigated Agriculture Improvement Project (IAIP), Cambodia (European Investment Bank (EIB) Funded); Year: May 2024 to Aug 2028 (31 MM); **Location:** Cambodia; **Client:** Ministry of Water Resources & Meteorology, Cambodia; **Main Project Features:** Implementation of an EIB funded IAIP with two key outputs: Output 1 – Efficiency & Climate Resilience of Irrigated Systems Enhanced, & Output

2- Water Resources Management Improved; **Position Held:** Team Leader/Water Resources Management Specialist; **Activities Performed:** As Team Leader of Project Management & Implementation Consultant (PMIC2): (i) Provide overall technical guidance & support to team, including preparation & implementation of work plans, expert inputs, ensure quality & timeliness of all deliverables, coordinate financial management, submission of periodic & technical reports, project performance monitoring system (PPMS), environmental monitoring reports & others.

World Bank Funded: Preparation of River Basin Plans & Hydropower Development Master Plans; Year: Aug 2019 – Feb 2024 (10 MM); **Location:** Nepal; **Client:** Water & Energy Commission Secretariat (WECS)/Lahmeyer International GmbH (World Bank funded); **Main project features:** Preparation of river basin plans, hydropower master plan & strategic environmental impacts assessment; **Position held:** International Climate Change Specialist (Aug 2019 – Dec 2021; Nov 2022 – Feb 2024); **Activities performed:** As CC Specialist: Provide a review, assessment & synthesis of suitable climate model projections under CMIP5 for Nepal. Perform downscaling & bias correction of climate model dataset based on historical meteorological data & project future climate in each basin/sub-basins in possible climate change scenarios; Identify tools & approaches to integrate climate change adaptation & mitigation measures in planning & investment process, underpinned by institutional capacity development. Perform a bottom-up decision tree approach for climate risk assessment. As Team Leader: Provide overall direction of team, coordination of inputs, & management of individual specialists; Review, check & verify land, water & other resources data, water balance computations in relation to existing & planned/proposed/potential water sector projects within river basins of Nepal; Lead development of river basin plans, hydropower master plans & strategic management plan; & Supervise development of an operational strategy for installation of Decision Support System.

TA-6568 NEP: Priority River Basins Flood Risk Management Project – TACF TA Consulting Firm for Flood Risk Management & Asset Management Support (52195-001); Year: May 2021 to Sept 2023 (11 MM); **Location:** Nepal; **Client:** ADB (for International Center for Environmental Management -ICEM); **Main Project Features:** Flood Risk Management & Asset Management Support; **Position Held:** Team Leader/ River Engineer; **Activities Performed:** Coordinating & overseeing technical activities to enhance flood risk management in Nepal. It begins with establishing a timeline for deliverables & ensuring alignment of TRTA consultant inputs with PIC & DWRI. Quality assurance measures are implemented across all TRTA team deliverables, supported by a thorough review of relevant policies & strategic directions in Integrated Flood Risk Management (IFRM). Developed a preliminary IFRM road map & investment program are to guide initiatives. Capacity building efforts include conducting a basin-wide training needs assessment for DWRI, provincial, & local governments. Regular progress reports, including midterm & final assessments, track project advancements. Implementation support during construction includes resolving design issues, managing contracts, & reviewing detailed designs prepared by PIC. Additionally, developed an asset management system through stakeholder consultation, analyzing implementation arrangements for O&M of infrastructure components across governmental levels. Liaison visits to provincial governments ensure alignment with local flood management needs & ongoing maintenance strategies.

Climate Resilient Guideline for Hydropower & its application in Narayani Basin (various size projects (30MW – 1000 MW); Year: Sep 2023 to Jan 2024; **Location:** Nepal; **Client:** ICIMOD; **Main Project Features:** Study of hazards under different climate change scenarios on hydropower development.; **Position Held:** Team Lead/ Climate Change Specialist; **Activities Performed:** Study of hazards (Landslides, GLOFs, Permafrost thaw, Floods, Sediment) under different climate change scenarios on hydropower development. Vulnerability & risk assessment of above-mentioned hazards (activity 1) on hydropower development in context of climate change; Impact of climate change on runoff with respect to hydropower production. Finalization of Guidelines for Climate Resilient Hydropower. Supplementary guidance & recommendations on equitable economic benefits & trade-offs to secure sustainable hydropower development.

Promove Energia I: Project Preparation Facility Energy Resource Centre –Technical Assistance (<10 MW); Year: Oct 2020 to May 2021 (37 days); **Location:** Mozambique (home-based); **Client:** Gabinete do Ordenador Nacional (GON) para a Cooperação entre Moçambique e a União Europeia, (Through: Application Européenne de Technologies et de Services (AETS), France); **Main Project Features:** Preparation of river basin plans, hydropower master plan & strategic environmental impacts assessment; **Position Held:** International Climate Change Specialist; **Activities Performed:** Undertake training & capacity building activities to key stakeholders (Ministry of Mineral resources & Energy (MIREME), National Energy Regulator (ARENE), National Utility (EDM - Electricidade de Moçambique), Mozambican Energy Fund (FUNAE), & selected Mozambican private sector & financial institutions representatives) on Renewable Energy Assessment, Feasibility studies & proposal evaluation, & in particular: Technical knowledge on distributed RE technologies (mini-hydro-power) & application models; Execution & evaluation of Pre-feasibility & Feasibility studies; Supporting development of RE Projects Portfolio.

Project: ADB Loan - GMS Flood & Drought Risk Management & Mitigation Project; Year: May 2015 - Sep 2019 (29 MM); **Location:** Cambodia; **Client:** Ministry of Water Resources & Meteorology, Cambodia (ADB Loan Project); **Main Project Features:** Project Implementation of 16,100 ha irrigation, national flood forecasting center & community based disaster risk management; **Position Held:** Team Leader/ Flood & Drought Risk Management Specialist; **Activities Performed:** Lead Project Implementation Consultant (PIC) team to support Ministry of Water Resources & Meteorology (MOWRAM), Cambodia to implement ADB Loan Project & supervise work of four international & national consulting teams working on following four key outputs: Enhanced regional data, information & knowledge base for management of floods & droughts - a flood/drought forecasting & early warning system in Pursat Sub-basin & Mainstream Mekong River within Cambodia using HECHMS (hydrological model) & HEC-RAS (hydrodynamic model), **design guidelines for climate resilient** hydraulic structures will be developed. Upgraded water management infrastructure – irrigation infrastructure to irrigate 16,100 ha of agriculture land including a Barrage, 16.5 km long main canal, 50 km of secondary canals & a number of tertiary canals & associated structures will be designed & constructed. Enhanced capacity for Community Based Disaster Risk Management – CDBRM model, safer village plans in 46 villages in Pursat province will be developed & Farmer Water Under Community (FWUC) will be established; & Effective project management –overall management of project including procurement of works, goods & services, financial management & project monitoring & evaluation etc.

Support to strengthening climate change activities in Nepal; Year: Nov 2016 – May 2017 (3 MM); **Location:** Nepal; **Client:** Climate & Development Knowledge Network (DFID funded); **Main project features:** Capacity building in climate finance; **Position held:** Team Leader (~Climate Change Specialist); **Activities performed:** Lead team to deliver following objectives of project: Enhancing understanding of potential National Implementing Entities (NIEs) with regards to accessing international climate finance through direct access modality through training workshops & production of knowledge products; Bridging divergent views /understanding among senior government officials from MoF, MoPE & others; Raising awareness regarding barriers towards accessing climate finance both within

Nepal (delivery mechanism) & internationally (access). It is expected that this will provide key actors with a broader understanding of global climate finance landscape.

Adaptation to Climate Change in Hydroelectricity Sector in Nepal; Year: Feb 2015 - Feb 2017 (8 MM); **Location:** Nepal; **Client:** Climate & Development Knowledge Network (CDKN) (DFID Funded); **Main project features:** Climate risk assessment & development of adaptation pathways in hydro sector in Nepal; **Position held:** Team Leader/Climate Change specialist; **Activities performed:** Lead team to undertake study with following objectives: Develop a solid evidence base on vulnerability of hydro-sector to climate change – **analysis of climate & hydrological data, climate modeling** including analysis of CMIP5 climate projections/GCM data, hydrological modeling using SWAT model, hydro-power generation calculations including reservoir operation simulation, database of hydro projects & **study of climate change impacts, case studies to study impacts of extreme events like flood & sediment hazards etc;** Identify **viable adaptation options** that enhance resilience- build responses in an **adaptation pathway** by first addressing current adaptation deficit, mainstreaming adaptation with uncertain future in mind & taking early actions for long-term impacts; Understand & address challenges of **mainstreaming adaptation in sector** – a communication strategy & knowledge management framework is used; **Build capacity & help enable adaptation action** amongst policy makers & private sector – institutional mapping is carried out to identify adaptation entry points as well as to identify barriers & private sector engagement plan is developed to engage private sector.

Irrigation Restoration & Development Project (IRDP) - (UTF/AFG/070/AFG); Year: Jan 2013 - Mar 2015 (24 MM); **Location:** Afghanistan; **Client:** Food & Agriculture Organization (FAO) of United Nations; **Main project features:** Strengthening hydrological services in Afghanistan; **Position held:** International Hydrology & Water Management Specialist; **Activities performed:** Provide technical services to implementation of hydro-meteorological activities defined in FAO technical assistance contract (UTF/AFG/070/AFG) under **Work Bank** funded Irrigation Restoration & Development Project (IRDP) in Afghanistan. Advise Water Resources Department, Ministry of Energy & Water, Afghanistan to strengthen hydro-meteorological services which include establishment & operation of a network of 127 automatic hydrological stations, 26 meteorological & 30 snow survey stations using data loggers & Iridium Satellite Telemetry. Serve as member of Independent Panel of Expert (POE) (Hydrology, Reservoir Operations & Dam Safety) to review feasibility studies of seven multi-purpose dams studies.

Research Study on Economic Cost of Climate Change in Nepal; Year: 2012-2014 (6 MM); **Location:** Nepal; **Client:** Climate & Development Knowledge Network (CDKN); **Main project features:** Economic cost assessment of climate change in hydro & water sector in Nepal; **Position held:** Climate Change/Water Resources Modeler; **Activities performed:** Model changes in streamflow's for different **climate change scenarios using** available Regional Circulation Model (RCM) data (including bias correction of climate data, rainfall-runoff modeling). Assess impact of Climate Change on water resources & long-term hydropower development

Disaster Risk Reduction & Climate Change Adaptation in Koshi River Basin; Year: 2012-2013 (3 MM); **Location:** Nepal; **Client:** Climate & Development Knowledge Network (CDKN) & System Analysis Research & Training (START); **Main project features:** Climate change impact study on water induced disasters & water availability; **Position held:** Climate Change Modeling Advisor; **Activities performed:** Coordinate steering committee to guide research team to meet research objectives. Advise research team on hydro-meteorological diagnostics & application of regional climate model (RCM) data including bias-corrections of RCM data, hydrological (snow & rainfall-runoff (SWAT) modeling) modeling & assessment of impacts of climate change on hydrology

ADB TA FFPR 9128-AFG: Development of Mini Hydropower Plants in Badakhshan & Bamyan Provinces 2MW (0.5MW×4); Year: 2011-2012 (3.5 MM); **Location:** Afghanistan; **Client:** ADB; **Main project features:** Mini-Hydropower feasibility study; **Position held:** Hydrologist; **Activities performed:** Analyze hydrometeorological data of candidate mini hydropower sites in two provinces. Analyse & prepare required hydrological design parameters including low & high flow analysis, reference hydrology, sediment analysis & environmental flows: (i) Simulate annual power generation; (ii) Provide on-the-job training to counterpart engineers & all reporting deliverables.

CGIAR Research Program on Climate Change, Agriculture & Food Security; Year: 2012 (2 MM); **Location:** Nepal; **Client:** International Centre for Tropical Agriculture- CIAT; **Main project features:** Climate change impact assessment on agriculture & food security; **Position held:** Climate Change Advisor; **Activities performed:** Advise & guide **analyses of impacts of climate variability** on various sectors for preparation of "Food Security & Vulnerability to Climate Risk in Nepal: An Online Decision-Support Tool" under CCAFS research project. objective of this project was to produce an informative & easily accessible reference on **risks due to climate variability & their current & potential impact on food security in Nepal.**

ADB-TA-8050 NEP: Preparing Bagmati River Basin Improvement Project; Year: 2011-2012 (7 MM); **Location:** Nepal; **Client:** ADB; **Main project features:** Project Preparatory Technical Assistance on river environmental improvement; **Position held:** Deputy Team Leader/Institutional Specialist; **Activities performed:** project aims to enhance water security & climate resilience in Bagmati River Basin. Working closely with Team Leader, I oversee TA team's direction, coordinate inputs, & manage specialists to deliver a detailed feasibility study report for ADB loan processing. Responsibilities include conducting policy dialogues on IWRM/RBO reforms, strategic stakeholder analysis, & proposing organizational improvements for effective basin management. At local level, I assess social & institutional factors impacting project participation & develop engagement strategies for stakeholders across civil society, academia, & private sector.

ADB TA 6456- REG: Preparing Greater Mekong Subregion (GMS) Flood & Drought Risk Management & Mitigation Project; Year: 2009-2011 (12 MM); **Location:** Cambodia, Lao PDR, Thailand & Vietnam (Greater Mekong Subregion-GMS); **Client:** ADB; **Main project features:** Regional PPTA on flood & drought risk management; **Position held:** Team Leader cum Chief Technical Advisor; **Activities performed:** Lead international & national consulting teams to prepare: Regional Road Map on Flood & Drought Risk Management; National Road Maps on Flood & Drought Risk Management for Cambodia, Lao PDR, Thailand & Vietnam; Prioritized list of country interventions to reduce risks of flood & drought (**including strategies & interventions for Climate Change Adaptation** & sea level rise & salt water intrusion in Mekong Delta); Investment Project Preparation for Flood & Drought Risk Management for Cambodia, Lao PDR & Vietnam (indicative budget of approximately 125 m\$).

Assessment of Flood & Inundations in Lower West-Rapti River Basin (LWRRB) of Nepal under effect of Climate Change; Year: 2010-2011 (6 MM); **Location:** Nepal; **Client:** International Center for Water Hazard & Risk Management (ICHARM), Japan; **Main project features:** Climate change impact assessment of river flooding & inundation; **Position held:** Climate Change Adaption Specialist; **Activities performed:** Lead NDRI Team to jointly undertake: Data collection at different levels (local, regional & national level) including field survey, household survey; Modification of existing 1D & 2D flood inundation simulation models; Runoff Simulation under **Climate Change Scenarios** (using GCM downscaling & IFAS model); **Assessment of climate change effect** on flood characteristics in LWRRB; Assessment of Countermeasures against Flood in Lower West-Rapti River Basin as a **Climate Change Adaptation Strategy**

"Sustainable Management of Shabelle & Juba Rivers in Southern Somalia" for Somalia Water & Land Information Management (SWALIM), Food & Agriculture Organization (FAO) of United Nations; Year: Jan – Mar 2009 (2 MM); **Location:** Nairobi, Kenya; **Client:** Food & Agriculture Organization (FAO) of United Nations; **Main project features:** Hydraulic study of Juba & Shabelle Rivers in Somalia; **Position held:** Senior Hydrologist; **Activities performed:** Lead & supervise processing of aerial photography data to create essential layers for Atlas of Juba & Shabelle Rivers. This includes analyzing river hydraulics crucial for flood forecasting, low flow scenarios, & irrigation planning. Building on SWALIM phase II Water Resources Assessment (GCP/SOM/045/EC), I detail hydrologic features of Juba & Shabelle river basins. This involves identifying catchments with a focus on flood hydrology & irrigation water demand. I assess available water resources, losses, & releases for irrigation & flood diversion, while also quantifying water availability for dry-season irrigation.

Community Based Flood Disaster Management in West Rapti, Nepal; Year: 2008 – 2009 (6 MM); **Location:** Nepal; **Client:** International Center for Water Hazard & Risk Management (ICHRM), Japan; **Main project features:** Community based disaster risk management & climate change; **Position held:** Co-Investigator; **Activities performed:** Assess flood situation in study area, history of flood, causes, aggravating factors, extent & effects; Assess flood hazard, vulnerability & capacities of community; Assess sustainable livelihood strategy of people in study area & activities required for improvement of assets; Study local knowledge, practices & beliefs on flood forecasting, early warning & flood management in community; Formulate community based plans for flood mitigation & flood disaster risk reduction; Assess impacts of **Climate Change on flood** risks & devise community-based adaptation strategies; Devise a broader framework of community based disaster management strategy targeting poverty alleviation & improved livelihood options.

ADB TA 4932 (PNG): Power Sector Development Plan; Year: 2008 (2 MM); **Location:** Papua New Guinea; **Client:** ADB; **Main project features:** Feasibility study of ROR hydropower projects; Ramu 2 hydropower project (Phase 2, 120 MW) & Ramu 1 tailrace hydropower project (10 MW). **Position held:** Hydrologist/Hydropower Specialist; **Activities performed:** Review recommendations & details of all existing reports- Shawinigan, Gibb & others – on possible hydropower development of Angabanga, Vanapa & Brown River Basins. Examine & analyze all available associated stream flow data. Critically analyze all alternatives available with respect to power potential at sites, as provided in reports. Develop cost estimates & timing for each development possibility on each river basin. Assist to develop/confirm an "optimum" development plan & to identify a possible first-stage development

ADB-TA-4776 (NEP): Enabling Private Sector to Undertake Poverty-Focused Water Distribution & Strengthening of Institutional Reforms in KV (Co-financed by Poverty Reduction Cooperation Fund); Year: Jun 2006 – Nov. 2010 (24 MM); **Location:** Nepal; **Client:** ADB; **Main project features:** Pro-poor water services strengthening; **Position held:** Team Leader /Institutional Development Specialist; **Activities performed:** Oversees pro-poor water service delivery & tap stand pilot program. Responsibilities extend to establishing organizational framework for Low-Income Consumer Support Unit (LICSU) within KUKL. Strategic direction is provided to consultants & NGO/CBO partners, ensuring alignment with project goals. Key tasks include generating detailed disbursement & expenditure reports, crafting pro-poor service delivery manuals, & formulating administration & customer service guidelines for Kathmandu Water. Additionally, management of consultancy contracts & ensuring prompt funding for TA contractors facilitates efficient project implementation.

Renewable Energy for Decentralized Power Supply of Rural Centres & Areas, Afghanistan; Year: 2008 (2 MM); **Location:** Afghanistan; **Client:** KfW; **Main project features:** Hydropower feasibility study; **Position held:** Consultant/Hydrologist; **Activities performed:** Hydrological Analysis of three potential hydropower sites (< 10 MW) in Northern Provinces of Afghanistan

Somalia Water & Land Information Management (SWALIM); Year: Aug 2007 – Oct 2007 (3 MM); **Location:** Kenya & Somalia; **Client:** Food & Agriculture Organization (FAO) of United Nations; **Main project features:** Water Resources Assessment of Somalia; **Position held:** Water Resources Consultant; **Activities performed:** Assess water resources of Juba & Shabelle river basins with special focus on water resources development constraints & potential. Assess surface & ground water resources & potential for meeting domestic, live-stock & small-scale irrigation water supply demands in whole of Somalia. Identify major problems & priority areas within which more detailed investigations may be carried out. Prepared a FAO Publication titled- "Water Resources of Somalia. FAO-SWALIM (GCP/SOM/EC045) Project Technical Report No W-11, Nairobi, Kenya" (http://www.faoswalim.org/ftp/Water_Reports/Cleared/W-11%20Water%20Resources%20of%20Somalia.pdf)

Design of a Micro Hydro System in Badakshan, Afghanistan; Year: 2006-2007 (3 MM); **Location:** Afghanistan; **Client:** Winrock International; **Main project features:** Mini Hydropower feasibility study 2 MW (0.5MW x 4); **Position held:** Hydrologist; **Activities performed:** Carry out hydrological study & estimate hydrological parameters (flow duration curves, reference flows, low flows, floods) for design of an appropriate micro hydro system in Badakshan, Afghanistan.

ADB TA 4662-AFG: Small & Medium Sized Hydropower Development (<50 MW); Year: 2006 (3 MM); **Location:** Afghanistan; **Client:** ADB; **Main project features:** Hydropower feasibility study; **Position held:** Hydrologist/Hydraulics Specialist; **Activities performed:** Review hydrometeorological data available for rivers of Afghanistan where hydropower plants are planned. Participate in reconnaissance survey & desk study. Supervise field investigations & hydrological studies. Assess impact of soil erosion of proposed project. Provide hydraulic design of structures. Assess likelihood of formation of sediment deposits in waterways. Carry out power studies, providing stream flow data & computer-generated energy production & available capacity. Assess project's technical risks, particularly with respect to hydrology. Contribute to preparation of reconnaissance & other reports.

African Development Bank -Training of Representatives of Bank's Regional Member Countries on Promoting Sustainable Energy Projects & Programs for Poverty Reduction; Year: 2006 (0.5 MM); **Location:** Kenya; **Client:** African Development Bank; **Main project features:** Training on small hydropower (<30 MW); **Position held:** Hydropower Expert/Resource Person; **Activities performed:** Develop training module on small hydro based on module outline approved by AfDB & needs assessment analysis. Prepare slides/presentation on training module on small hydro, which will be used in training course. Undertake training of module on small hydro at training course.

Jhimruk Hydroelectric Project (HEP) Dam (12 MW); Year: 2005 (2 MM); **Location:** Nepal; **Client:** Butwal Power Company; **Main project features:** Downstream water requirement assessment from a hydropower project; **Position held:** TL/Water Resources Specialist; **Activities performed:** Assess/update hydrological, environmental, legal & other water demands (mainly irrigation & water supply) downstream of Jhimruk HEP Dam. Assess available integrated water resources management options (including supply & demand side management) to resolve conflict between hydropower generation & downstream requirements. Assess optimal downstream release (in dry season) from dam considering hydrological risks & trade-offs of costs & benefits between downstream water management options & hydropower generation from Jhimruk HEP.

Nepal Irrigation Sector Project (Institutional Development of Department of Hydrology & Meteorology); Year: Feb 2000 – Dec 2002 (24 MM); **Location:** Nepal; **Client:** World Bank; **Main project features:** Institutional Strengthening of Department of Hydrology & Meteorology; **Position held:** Key Hydrologist/Project Director; **Activities performed:** Undertake & supervise project team in field &

main office undertaking hydrological studies, **basin wise water availability studies & database processing & management**. Undertake **hydrological analyses** including hydrological data collection & analysis from 92 hydrometric & 308 meteorological stations, data validation & screening, rating curve development, water balance studies, statistical analysis for derivation of **flow duration curves, low flows & high floods, probable maximum precipitation (PMP) & probable maximum flood (PMF) estimation, & rainfall runoff analysis**. Undertake basin study of 77 sub-basins including assessment of present water uses in basin & water balance. Prepare a suite of computer models/packages for hydrological analysis & sediment studies. Delivered an invited lecture entitled "Economic & Financial Analysis of Hydropower Project" in International Course on Small Hydropower organized by Alternate Hydro Energy Center (AHEC), Roorkee University in association with WECS, AEPC, & ITECO in Kathmandu (Apr 17 – 21, 2000).

National Water Resources Strategy Formulation; Year: 1999-2000 (12 MM); **Location:** Nepal; **Client:** World Bank; **Main project features:** National Water Resources Strategy Formulation; **Position held:** River Basin Planning & GIS Specialist; **Activities performed:** Prepare a National Water Resources Strategy, specific tasks included: Undertake water resources systems planning & management study on a river basin basis for formulation of national water resources strategy for country. Assess **hydro-meteorological network & data availability for water resources assessment of ten river basins of Nepal**. Assess present & potential water uses & undertake a water balance study & option assessment for meeting any gap in supply (surface & groundwater) & demand in ten river basins of Nepal. Develop a GIS based data base of supply & demands (water uses). Participate as a resource person on several regional & national stakeholder consultation meetings.

Various Hydropower Projects; Year: 1986 – 1991 (66 MM); **Location:** Nepal; **Client:** Nepal Electricity Authority; **Main project features:** Preparation, design & feasibility studies of various hydropower projects; **Position held:** Water Resources/Hydropower Engineer; **Activities performed:** Preparation, design & feasibility studies of various hydropower projects, namely Arun 3 (402 MW), Jhimruk (12 MW), Naumure (120 MW), Khimti Khola (60 MW)

14. Other assignments in company: N/A

CURRICULUM VITAE (CV)

Position Title and No.:	Geologist
Name of Expert:	Sanjeet Maka
Date of Birth:	22-09-2047
Citizenship:	Nepalese

Education:

- M.Sc. (Geology), Tri-Chandra Multiple Campus, Kathmandu, Nepal, 2020
- B.Sc. (Geology), Tri-Chandra Multiple Campus, Kathmandu, Nepal, 2015

Training: N/A

Employment Record Relevant to the Assignment

Period	Employing organization and your title/ position. Contact information for references	Country	Summary of activities performed relevant to the Assignment
Apr 2024 – Till date	Employer: Jade Consult Pvt. Ltd. Position Held: Assistant Manager Geologist	Nepal, Bhutan	Review and Update of Detailed Project Report and Environmental & Social Impact Assessment of Bunakha Hydropower Project Update DPR, DED and Construction Drawing of Upper Seti HPP DED and Construction Drawing of Machha Khola HPP (16 MW) DED and Construction Drawing of Supper Bagmati HPP
Sept 2023 – Apr 2024	Employer: SMEC Position Held: Engineering Geologist	Nepal	DED of Supper Trishuli HPP (100 MW)
Jan 2020 – Sept 2023	Employer: Jade Consult Pvt. Ltd. Position Held: Engineering Geologist	Nepal	Feasibility study of Dhaubadi Iron Ore Deposit Detailed Survey and updated Line Design for 30 km of Changes in 400 kV Transmission Line Route Alignment Update DPR of Upper Seti Hydropower Project Betan Substation of Karmadev- Phukot Substation 220 kV DC Transmission System Project Damauli-Kushma-Burrtibang-Bafikot 400 KV DC Transmission Line and Associated Substations. (CP-3) Feasibility Study of Upper Jueligad Small Hydroelectric Project (2.57MW) Feasibility and EIA Study of Kaligandaki Storage Hydropower Project (644 MW) Updating Feasibility Study, Conducting Detailed Engineering Survey & Design and Preparation of Tender Documents (70.3 MW) Feasibility and ESIA study Upper Chameliaya Hydropower Project (48 MW) DED and Construction Drawing of Karuwa Seti Hydropower Project (32 MW)
Jan 2015 –	Employer: Angel Engineering Consultancy Pvt. Ltd.	Nepal	Lower Hewa Khola Hydropower Project (21.6 MW)

Apr 2018	Position Held: Site Geologist		
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Membership in Professional Associations and Publications:

- Nepal Geological Society (LM997)

Language skills:	Speaking	Reading	Writing
Nepali	Excellent	Excellent	Excellent
English	Excellent	Excellent	Excellent
Hindi	Good	Good	Good

Adequacy for the assignment:

Detailed Tasks Assigned on Consultant's Team of Experts	Reference to prior Work/ Assignments that Best Illustrates Capability to Handle the Assigned Tasks
As per TOR	Name of Assignment or Project: Review and Update of Detailed Project Report and Environmental & Social Impact Assessment of Bunakha Hydropower Project Year: Nov 2024 – Till date Location: Bunakha, Bhutan Client: DGPC Main Project Features: Consultancy Services for Review & Update of DPR & ESIA of Bunakha HPP – 180 MW, 197 m height RCC Dam with Underground Powerhouse cavern. Position Held: Project Coordinator and Engineering Geologist Activities Performed: Coordinate and supervise DPR updates and ESIA studies, ensuring alignment with technical, environmental, and regulatory requirements for the hydropower project. Liaise with international JV teams, the Client, national partners, and relevant authorities to manage schedules and resources and ensure quality control of reports and deliverables. Review geological and geotechnical investigations at the feasibility and DPR stages, including assessment of rock mass conditions in drift tunnels for geological and geotechnical evaluation. Prepared engineering geological map, slope stability assessment of dam excavation planned new geotechnical investigation for updated layout.
	Name of Assignment or Project: DED of Supper Trishuli HPP (100 MW) Year: Sept 2023 – Apr 2024 Location: Chumlingtar, Trishuli Client: Blue Energy Limited Main Project Features: Barrage with toe power house Position Held: Engineering geologist Activities Performed: Review of core drilling and geophysical investigation at the DPR stage, and planning and execution of geophysical and geotechnical investigations through on-site stationing for slope stability assessment and structural design of project components. Conduct site investigation for construction material.
	Name of Assignment or Project: Update DPR, DED and Construction Drawing of Upper Seti HPP Year: April 2023 – Nov 2024 Location: Gorkha, Nepal Client: Upper Seti Hydro Pvt. Ltd. Main Project Features: 3.5 m diameter and 3,300m long tunnel Position Held: Project Coordinator and Engineering Geologist

Activities Performed: Design of support systems for underground structures, numerical modeling of underground structures; and design of slope excavations. Estimation of Explosive Quantities.
Name of Assignment or Project: DED and Construction Drawing of Machha Khola HPP (16 MW) Year: April 2023 – Nov 2024 Location: Gorkha Client: Water Energy Development Company Private Limited Main Project Features: 3.5 m diameter and 3,300m long tunnel Position Held: Project Coordinator and Engineering Geologist Activities Performed: Design of support systems for underground structures, numerical modeling of underground structures; and design of slope excavations. Design blasting pattern of HRT and Surgeshaft and estimation of explosive quantities.
Name of Assignment or Project: DED and Construction Drawing of Super Bagmati HPP Year: April 2023 – Nov 2024 Location: Makwanpur Client: Super Bagmati Hydropower Pvt. Ltd. Main Project Features: 6.00 m diameter and 6500m long tunnel Position Held: Engineering Geologist Activities Performed: Design of support systems for underground structures, including tunnel bypasses and junctions; numerical modeling of underground structures; and design of slope excavations. Design blasting pattern of HRT and Surgeshaft and estimation of explosive quantities.
Name of Assignment or Project: Feasibility study of Dhaubadi Iron Ore Deposit Year: June 2022 - 2023 Location: Nawalaparasi Client: Dhaubadi Iron Company Ltd. Main Project Features: Study of Iron Deposit Position Held: Engineering geologist/Project Coordinator Activities Performed: Involves is geological, Engineering geological study of project area Reserve Estimation, Field investigation planning and aerial survey.
Name of Assignment or Project: Detailed Survey and updated Line Design for 30 km of Changes in 400 kV Transmission Line Route Alignment Year: June 2022 - 2023 Location: Dhading, Tanahau, Makwanpur, Rupandehi, Nuwakot Client: MCA Nepal Main Project Features: 30 km long transmission line project and three 400 kV substation Position Held: Engineering geologist Activities Performed: Geological study of foundation of the transmission line tower/poles, mass wasting study, general geological mapping of transmission line alignment, Surface geological and geomorphological investigation for the 400 kV Transmission Line Project. Prepared the geological mapping report in accordance to the requirement of the project.
Name of Assignment or Project: Update DPR of Upper Seti Hydropower Project Year: 2021 - 2022 Location: Kaski Client: Upper Seti Hydro Pvt. Ltd. Main Project Features: 2425m long HRT Position Held: Engineering geologist Activities Performed: Involves is geological, Engineering geological study of project area. Planning of Geophysical and Geotechnical Investigation. Geophysical and geotechnical studies.
Name of Assignment or Project: DED and Construction Drawing of Karuwa Seti Hydropower Project (32 MW) Year: Aug 2017 – June 2018 Location: Kaski District Client: Jhyamalongma Hydropower Development Company

Main Project Features: 4.0 m diameter and 2200m long tunnel Position Held: Engineering Geologist Activities Performed: Geological and engineering geological mapping of the project area, planning of geophysical and geotechnical survey, access road survey, rock mass characterization and classification, design of support for surface and underground excavations of project components, numerical modelling of the underground excavation.
Name of Assignment or Project: Betan Substation of Karmadev - Phukot Substation 220 kV DC Transmission System Project Year: September 2020 - Till Date Location: Surkhet District Client: Rastriya Prasaran Grid company limited Main Project Features: Construction of transmission line Position Held: Engineering Geologist Activities Performed: Prepared the Geotechnical Investigation methodologies. Supervised the site activity and guided the Consultant's engineer witnessing the geological investigations at site. Analyzed the data recorded by the supervising engineer and compared the data mentioned in geotechnical investigation reports of the 220 kV Transmission.
Name of Assignment or Project: Damaulii-Kushma-Burrtibang-Bafikot 400 KV DC Transmission Line and Associated Substations. (CP-3) Year: August 2020 – 2023 Location: East and west Rukum, Baglung, Parbat, Gulmi Syangja and Tanahu Client: Nepal Electricity Authority / Asian Development Bank Main Project Features: 550 km long 440 kV Transmission Line Position Held: Engineering Geologist Activities Performed: Conducted a comprehensive walkover survey of the 550 km transmission line alignment, with mapping focused on the identification of slope instability and flood-prone areas. Performed detailed geological assessment of tower/pole foundation conditions, including mass wasting analysis, geological and geomorphological investigations for the 400 kV Transmission Line Project. Prepared geological mapping report and geotechnical investigation report in accordance with project requirements.
Name of Assignment or Project: Feasibility Study of Upper Jeuligad Small Hydroelectric Project (2.57MW) Year: March 2021- September 2021 Location: Bhajang Client: Woonsun Energy & Construction Co. Ltd. Main Project Features: 2.2m diameter and 735m long tunnel Position Held: Engineering geologist Activities Performed: Geological and engineering geological mapping of the project area, planning of geophysical and geotechnical survey, rock mass characterization and classification. Support Design of underground structures by numerical and empirical analysis.
Name of Assignment or Project: Feasibility and EIA Study of Kaligandaki Storage Hydropower Project (644 MW) Year: April 2020- 2023 Location: Syangja, Parbat, Gulmi, Baglung Districts Client: Department of Energy Development Main Project Features: 220m Height Rock Fill Dam with toe powerhouse. Position Held: Engineering geologist Activities Performed: Geological and engineering geological mapping of the project area, planning of geophysical and geotechnical survey, rock mass characterization and classification. Landslide Hazard mapping. Prepare Geophysical and Geotechnical investigation Report. Conduct GLOF hazard assessment report. Assist national and international expert for finalization of project components

Name of Assignment or Project: Updating Feasibility Study, Conducting Detailed Engineering Survey & Design and Preparation of Tender Documents of Simbhuwa Hydropower Project (70.3 MW)

Year: Jan 2021- 2023

Location: Taplejung

Client: Simbuwa Remit Hydro Limited

Main Project Features: Underground powerhouse and transformer cavern

Position Held: Engineering geologist

Activities Performed: Geological and engineering geological mapping of the project area, planning of geophysical and geotechnical survey, rock mass characterization and classification. Layout finalization of major structural component. Preparation of Geological Data Report and Geotechnical Baseline Report.

Name of Assignment or Project: Feasibility and ESIA study Upper Chameliya Hydropower Project (48 MW)

Year: Sept 2019 - Till Date

Location: Darchula District

Client: Department of Energy Development

Main Project Features: Feasibility Study and ESIA study

Position Held: Engineering Geologist

Activities Performed: Geological and engineering geological mapping of the project area, planning of geophysical and geotechnical survey, rock mass characterization and classification. Layout finalization of major structural component. Prepared geological and geotechnical investigation report.

Name of Assignment or Project: Lower Hewa Khola Hydropower Project (21.6 MW)

Year: Jan 2015 –April 2018

Location: Panchthar

Client: Mountain Hydro Nepal Pvt. Ltd.

Main Project Features: 4.0 m diameter and 5400m long tunnel

Position Held: Site Geologist

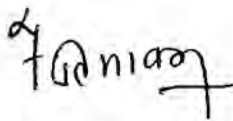
Activities Performed: Face map preparation, checking of face map prepared by the contractor's geologist and preparing the final face map, calculation of tunnel support and decision making, quality control of the support work and inspection of the other tunnel activities.

Expert's contact information: (e-mail: Sanjeet.maka@gmail.com; phone: +977-9860678565)

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience, and I am available, as and when necessary, to undertake the assignment in case of an award. I understand that any misstatement or misrepresentation described herein may lead to my disqualification or dismissal by the Client, and/or sanctions by the Bank.

Sanjeet Maka



04.05.2026

Name of Expert

Signature

Date

1. **Proposed position** Deputy ESIA Coordinator and Biodiversity Expert and Deputy PM (National)
2. **Name of firm** **Phuensum Consultancy Services**
3. **Name of staff member** **Dorji Rinchen**
4. **Current Residential Address:** Chang Gidaphu, Thimthrom, Post
Box No. 1172,
Thimphu, Bhutan 11001

Telephone No. +975 1711 0716
Fax No.
E-Mail Address khenrig@gmail.com
5. **Date of Birth** 15.05.63
Citizenship Bhutanese
Type of government ID and ID Number CID
12003001143
6. **Education**

Period:	college/university, degree(s)/diploma(s)
1987-1990	Indira Gandhi National Forest Academy, Dehra Dun, India Master of Science (M.Sc.) in Forestry
1985-1986	Sherubtse College, Kanglung, Bhutan Bachelor of Science (B.Sc.) in Biological Science

7. Membership in professional associations

-

8. Further training courses

- Certificate of participation and completion of training Course on environmental management (Bio-engineering, environmental assessment and environmental management plan) on power tiller tracks and farm roads, Khangma, Bhutan (2007);
- Certificate of participation in the ecotourism training workshop for South Asia Sub Regional Tourism trainers, Kathmandu, Nepal (2005); and
- Certificate on application of remote sensing and geographic information system in managing tropical forests and conserving natural resources in Southeast Asia, Indonesia (1994).

9. Countries of work experience

Bhutan

10. Languages

	speaking	reading	writing
English	excellent	excellent	excellent
Dzongkha	good	good	good
Khengkha	good	NA	NA

11. Employment record

- Period:** 2002-2024
Employer: RC Consultancy, Thimphu, Bhutan
Position held and description of duties: Team leader/Project Coordinator/Environmental Specialist/Forest Specialist/ Panel of Expert (Environment)/Terrestrial/ Ecological Expert/ Biodiversity Expert/National Climate Change Expert/ Resource Person/Flora & Fauna Consultant/ Environmental Monitoring Expert/National Environmental Consultant/Bioengineering Specialist/Grazing Specialist
- Period:** 1987-2002
Employer: Royal Government of Bhutan, Ministry of Agriculture and Forest

Position held and description of duties: Divisional Forest Officer/Assistant Director in the Department of Forests and Park Services, Thimphu, Bhutan

12. Detailed Tasks Assigned

As per FORM TECH 6-A: Team Composition, Assignment and Key Expert's Inputs

13. Work undertaken that best illustrates capability to handle these tasks

To carry out Environmental and Social Impact Assessment of Nyera Amari I & II Integrated Hydropower Project and Transmission Line, Bhutan

Period: June 2016 to March 2017

Location: Trashigang and Samdrupjongkhar

Client: Druk Green Power Corporation

Main Project Features: Main project features: ESIA and ESMP preparation for NA I, NA II and Transmission Line

Position Held: Team Leader/Environmental Specialist

Activities Performed: Overall co-ordination of the project & Client liaising, management of Environmental Impact Assessment, coordination EIA tasks between Specialists, liaison with Government Agencies, NGOs, local Government & communities, management of public relations, preparation & submission of Inception Report, preparation of time schedule for data collection, review of baseline data & analysis of Baseline data, collect information on Topography, geology of project area & surrounding, organization of Public Consultation Meeting, collection baseline data for water, soil, noise & air quality data from field, identification of potential environmental impacts & propose mitigation measures, conduct EIAs & write EIA report, compilation & Finalization of Draft EIA report & submission, finalization of EIA report, submission & presentation & technical assistance to DGPC in obtaining environmental clearance.

Bhutan Sustainable Hydropower Development Project (P174327) for updating and Completing the Environmental and Social Assessment and Planning of Dorjilung Hydropower Project

Period: January 2023 to March 2024

Location: Lhuentse & Mongar, Bhutan

Client: Druk Green Power Corporation Limited/World Bank

Main Project Features: To Revise and Update the ESIA and ESMP

Position Held: Terrestrial/Ecological Expert

Activities Performed: Conducted literature review of terrestrial biodiversity data from the available Dorjilung HPP ESIA & Kuri-Gongri CIA & reports from other HPPs in the region. Conducted 2 seasons terrestrial baseline surveys at various sites associated with project & ancillary facilities. Characterized & mapped terrestrial habitats within the project EAA based on species composition, ecological functions & levels and human-induced disturbance, & classified as either modified or natural habitats as per definitions in the ESS6 & assisted in the CHA.

To provide independent advisory and consulting services to THyE in the field of Environmental management Plan for implementation of 118 MW Nikachhu Hydropower Project.

Period: September 2014 to June 2024

Location: Tangsibji, Trongsa, Bhutan

Client: Tangsibji Hydro Energy Limited (THyE)

Main Project Features: To provide independent advisory & consulting services to THyE in the field of Environmental management Plan for implementation of 118 MW Nikachhu Hydropower Project, monitoring the implementation of environmental impact & mitigation measures outlined in the Environmental Management Plan of 118MW Nikachhu Hydropower Project & advise on any other matter deemed important by THyE.

Position Held: Environmental Expert (Panel of Expert)

Activities Performed: Review implementation of plan to determine if this fully compile with ADB safeguards & assess appropriateness of provisions in mitigation measures, monitoring plan, budget, institutional arrangements & compliance mechanisms; determine if the EMP provisions for mitigation & monitoring are being implemented properly by THyE & DGPC, all contractors & consultants; conduct site visits to assess the performance of THyE, DGPC & the contractors in implementation of environmental mitigation & monitoring measures specified in the EMP, consult with relevant stakeholders during field visits, record their concerns & expectations and develop recommendations to address valid concerns

Bhutan Green Transport Project

Period: January to December 2023

Location: Thimphu, Bhutan

Client: Thimphu Thromde/World Bank

Main Project Features: To introduce a high-quality bus priority service on a key corridor in Thimphu City & pedestrianize part of a main boulevard in the center of the city.

Position Held: Environmental Expert

Activities Performed: Developed scope & methodology for ESIA on review of the project scope, location & the requirements of the national legal framework & the World Bank ESF & the 10 standards; Conducted assessment of the environmental & social issues relating to Project's Component 1 (Priority bus service infrastructure, fleet, and systems) & Component 2 (Pedestrianization of Norzin Lam). Prepared the ESIA report (including identifying all potential E&S risk & impacts) in line with the World Bank ESF including mitigation measures & recommendations to ensure all environmental risks & impacts are duly attended & mitigated; all social risks & impacts are appropriately addressed to execute the main work, & associated & ancillary facilities; provide achievable alternatives to avoid/minimize potential environmental & social risks & impact.

Pre-feasibility (Dorjilung and Khomachhu) and Reconnaissance studies of selected Hydropower projects in Bhutan

Period: June 2009 to February 2011

Location: Bhutan

Client: Department of Energy, Ministry of Economic Affairs

Main Project Features: Identification, assessment and mitigation of environmental impacts of power projects, baseline data collection to assess environmental implication and preparation of Environmental management plan

Position Held: National Environmental Consultant through NORPLAN

Activities Performed: Conducted field investigations, surveys and interviews within and adjoining project sites and collected relevant baseline data to assess environmental impacts of the projects.

Project Management and Supervision Consultant for implementation of Secondary Towns Urban Development Project

Period: November 2018 to November 2024 (Intermittent)

Location: Sarpang, SamdrupJongkhar and Trashignag, Bhutan

Client: ADB/Department of Engineering Services, MoWHS, Bhutan

Main Project Features: Provide monitoring and supervision to assist the Royal Government of Bhutan in the efficient and effective implementation of the Secondary Towns Urban Development Project (STUDP).

Position Held: PMSC Environment Specialist

Activities Performed:

Ensured that all ADB and/or RGoB social, safeguard and environment regulations/statutory requirements and related issues are properly incorporated into the design and implementation phases of the project, carried out environmental safeguard due diligence appropriate to the proposed project and prepare/ update necessary safeguard documents. Undertook the reporting requirements of the projects encompassing all the statutory requirements of the ADB and/or the Government, Developed a grievance redressal mechanism and dispute resolution mechanism as and when they arise, Ensured and monitored implementation of the project, carried out by the PIU, Developed the M&E framework and conduct project monitoring as agreed with ADB in the project performance management system (PPMS), Developed/Revised Initial environmental examination (IEE) reports including associated environmental management plans (EMP) based on detailed design and ensure these are included in bidding and contract documents, and Prepared the semi-annual environmental monitoring reports to be submitted to ADB.

Supervision of land stabilization works under Phuentsholing Thromde (NAPA II Project)

Period: September 2016 to May 2018

Location: Phuentsholing, Chukha, Bhutan

Client: UNDP/Phuentsholing Thromde, Bhutan

Main Project Features: Provide construction supervision, environment management and monitoring of landslides stabilization works under taken by contractors at Rinchending check post, Reldri School, Rinchending Goenpa and old hospital areas.

Position Held: Environmental/Bioengineering Specialist

Activities Performed: Advise contractors in all matters covering safety and care of work, environmental management, organize meetings at site regarding progress, plan, labour, quality assurance, quality control and specifications, prepare and issue site visit report to Phuentsholing Thromde, ensure compliance with the

environment and social safeguards of civil works contract, provide on –job or on-site advice and training to site contractors where necessary and ensure safety working procedures, and Environmental Mitigation Plan and the Monitoring Plan is properly adhered.

Environmental Impact Assessment of Habrang (Bhangtar) Coal Mine Samdrup Choeling, Samdrup Jongkhar

Period: March 2015 to October 2015

Location: Habrang(Bhangtar),Samdrup Jongkhar, Bhutan

Client: State Mining Corporation Ltd, Samtse

Main Project Features: Baseline data collection and analysis, collect information on topography, geology of project area and surroundings, public consultations, identification of National Park/Wildlife park in Study area and Identification of endangered species of Flora and Fauna, collect information on Flora and fauna, collect baseline water, soil, noise and air quality data, identification of impacts and mitigation measures.

Position Held: Team leader/Environmental Specialist

Activities Performed: Identification of National Park/Wildlife park in Study area, identification of endangered species of Flora and Fauna, identify tree and vegetation species in forest areas, collect information on Flora and fauna, collect baseline water, soil, noise and air quality data from NEC/other Govt. Published sources, participate in Public Consultation meetings, identify impacts and mitigation measures, preparation of EMP, prepare landscape/tree plantation plans on benches, dump yard, identify suitable tree vegetation species for plantation and report compilation and preparation.

Chamkharchhu- I Hydro Electric Project EIA Study

Period: Jan 2012 to Nov 2012

Location: Bhutan

Client: Department of Energy, Ministry of Economic Affairs, Bhutan

Main Project Features: Identification, assessment and mitigation of environmental impacts of Chamkharchhu I H.E Project, baseline data collection to assess environmental implication and preparation of Environmental management plan.

Position Held: Environmental Specialist

Activities Performed: Conducted field investigations, surveys and interviews within and adjoining project sites and collected relevant baseline data to assess environmental impacts of the projects.

Pre-feasibility (Dorjilung and Khomachhu) and Reconnaissance studies of selected Hydropower projects in Bhutan

Period: June 2009 to February 2011

Location: Bhutan

Client: Department of Energy, Ministry of Economic Affairs

Main Project Features: Identification, assessment and mitigation of environmental impacts of power projects, baseline data collection to assess environmental implication and preparation of Environmental management plan

Position Held: National environmental Consultant through NORPLAN

Activities Performed: Conducted field investigations, surveys and interviews within and adjoining project sites and collected relevant baseline data to assess environmental impacts of the projects.

Shingkhar- Pephu Road EIA Study

Period: Mar 2012 to Aug 2012

Location: Bumthang and Lhuentse, Bhutan

Client: Department of Roads

Main Project Features: Baseline data collection and analysis, collect information on topography, geology of project area and surroundings, public consultations, identification of National Park/Wildlife park in Study area and Identification of endangered species of Flora and Fauna, collect information on Flora and fauna, collect baseline water, soil, noise and air quality data, review the alignment of bypass, Review Road design prepared by DoR from Environmental perspective and suggestion for engineering designs.

Position Held: Environmental/Forest Specialist

Activities Performed: Performed: Identification of National Park/Wild life park in Study area, identification of endangered species of Flora and Fauna, identify tree and vegetation species in forest areas, collect information on Flora and fauna, collect baseline water, soil, noise and air quality data from NEC/other Govt. Published sources, participate in Public Consultation meetings, identify impacts and mitigation measures and prepare EMP, prepare landscape/tree plantation plans for road slopes and vacant space in RoW, identify suitable tree vegetation species for plantation and report compilation and preparation.

14. Other assignments in the company- None

None

1. **Proposed position** Environmental Expert
2. **Name of firm** **Phuensum Consultancy Services**
3. **Name of staff member** **Karma Chogyel**
4. **Current Residential Address:** Thimphu, Bhutan 11001
Telephone No. +975 17765489
Fax No.
E-Mail Address chodgyelk@yahoo.com
5. **Date of Birth** 07.09.1972
Citizenship Bhutanese
Type of government ID and ID Number CID
11604001565
6. **Education**

Period:	College/university, degree(s)/diploma(s)
2001	International Institute for Aerospace Survey & Earth Sciences (ITC), the Netherlands Master in Geo-Information Science and Earth Observations
1997	Sherubtse College, Kanglung, Tashigang District, Bhutan B.Sc, Zoology, Botany, and Chemistry
7. **Membership in professional associations:** Ex-member of National GIS Coordination Committee (NAGISC)
8. **Further training courses**
 1. ADB National Safeguards Monitors/Trainers: Training Program (TA 8569) Kathmandu, Nepal (9-13 July, 2018)
 2. Joint Bhutan-Nepal Safeguards Training-of-Trainers: Improving Safeguard Policy Applications in South Asia Developing Member Countries, Thimphu (19-23 June, 2017)
 3. Training on Social Partnership for Business Development, Aarhus Tech, Aarhus, Denmark (Sep – Oct 2010)
 4. Training on Participatory Management of Resettlement and Rehabilitation by World Bank, Thimphu (May 2008)
 5. Training on Quantitative Research Methodology towards the conduct of Behavioral Surveillance Survey (BSS) of the High Risks Groups for HIV/AIDS Infection by icddr, Bangladesh in collaboration with the Ministry of Health (July 2008).
 6. Training on Qualitative Research conducted jointly by the Ministry of Health and icddr, as part of the overall consultancy of Pre-Surveillance and which is followed by the Behavioral Surveillance Survey of the High-Risk Groups for HIV/AIDS. Attended a five-day seminar on Sustainable Development of Forest Management, Thimphu (Sep 2007).
 7. On usage of Leica Total Station and latest Global Positioning Systems, (GPS) Conducted by Elcome Technology, India in Thimphu (2005).
 8. On GIS/RS application to location planning of infrastructures, ICIMOD, Nepal (Feb 1999).
 9. Training in GIS application in urban infrastructure management in Kampsax Geoplan, Denmark (Jan 1999)

9. **Countries of work experience:** Bhutan

10. **Languages**

	speaking	reading	writing
Dzongkha	Good	Good	Good
English	Good	Good	Good
Nepali	Good	Poor	Poor

11. **Employment record**

Period: March 2024 to June 2027
Employer: Dept of Infrastructure Division (DoID)/ADB, Bhutan
Position held: Environmental Monitoring Expert

Period: Dec 2023 – June 2024
Employer: Dept of Surface Transport (DoST)/ADB, Bhutan

Position held: Environmental Monitoring Expert

Period: Feb 2023 – Feb 2024
Employer: Druk Green Power Corporation (DGPC), Thimphu
Position held: Biodiversity Expert

Period: Jan 2019 – Dec 2021
Employer: Asian Development Bank
Position held: Environment Expert

Period: 2007 – 2010
Employer: Asian Development Bank/Dept of Roads
Position held: Environment Specialist

Period: Jan 2005 – May 2006
Employer: Dept of Roads/World Bank
Position held: Environmental Specialist

Period: June 1998 – June 2006
Employer: Dept of Urban Development & Engineering Sciences
Position held: GIS Officer

12. Detailed Tasks Assigned

As per FORM TECH 6-A: Team Composition, Assignment and Key Expert's Inputs

13. Work undertaken that best illustrates capability to handle these tasks

ADB Loan BHIU: Water Flagship Program Support Project (L-4281/G-0874/G-9233)

Year: March 2023 – June 2027

Location: Thimphu, Wangdue Phodrang and Zhemgang Bhutan.

Client: Department of Infrastructure Division / Asian Development Bank.

Main Project features: Project Management and Supervision Consultant under the Water Flagship Program Support Project (RFP No.: CS-01 LOAN 4281-BHU, GRANT 0874-BHU and GRANT 9233-BHU)

Position held: Environmental Safeguard Specialist / Monitoring Expert

Activities performed: Following activities are carried out under the assignment:

- Preparation of semiannual environmental monitoring report
- Update IEE/environmental management plans for the new or additional works under the project in consultation with the project design team and the borrower

SASEC Transport, Trade Facilitation and Logistics Project. -025

Year: Dec 2023 – June 2024

Location: Amochhu-Chamkuna, Chamkuna-Phuentsholing, and Pasakha-Manitar Roads

Client: Department of Surface Transport/Asian Development Bank

Main Project features: Construction and improvement of SASEC II road project

Position held: Environmental Safeguard Specialist / Monitoring Expert (intermittent basis)

Activities performed: Following activities are carried out under the assignment:

Following activities are carried out under the assignment:

- Preparation of semiannual environmental monitoring report
- Update IEE/environmental management plans for the new or additional works under the project in consultation with the project design team and the borrower

TA-6598 BHU: Preparing Renewable Energy for Climate Resilience

Year: Feb 2023 – Jun 2024

Location: Tang gewog, Bumthang, Bhutan

Client: Druk Green Power Corporation (DGPC)/Asian Development Bank

Main Project features: Installation of solar PV at Tang, Bumthang

Position held: Biodiversity Expert

Activities performed: Conduct baseline biodiversity and critical wildlife habitat assessment for the Wobthang Solar PV project.

Research and Monitoring of Wildlife Usage of wildlife underpasses under RPN II project funded by ADB**Year :** Jan 2019- May 2021**Location :** Lhamoizingkha, Dagana and Samdrupcholing, Samdrup Jongkhar**Client :** Asian Development Bank**Main project features:** Monitoring of wildlife underpasses constructed under Road Network Project (RNP) II as part of southern lateral highway**Position held:** Biodiversity Expert**Activities Performed:** Conducting research or monitoring the usage of highway underpasses constructed for the Asian Elephants on the ADB financed Road Network Project (RNP) II – Southern lateral Highways in Bhutan for the period of 2-year. With this study, we aim to determine the effectiveness of the various underpasses primarily the usage by the Asian Elephants as well as other wildlife.**TA-8708 BHU: South Asia Subregional Economic Cooperation Transport, Trade Facilitation and Logistics Project****Year :** July 2015 – September 2016**Location :** Phuentsholing, Bhutan.**Client :** Asian Development Bank / Department of Roads**Main project features:** The proposed Bhutan South Asia Subregional Economic Cooperation Transport, Trade Facilitation and Logistics Project includes three subcomponents:

Phuentsholing–Chamkuna road and Dry port, and Integrated Check post subprojects which require the Initial Environmental Examinations (IEE).

Position held: National Environmental Expert**Activities Performed:** The study was done under two stages: 1. Conduct baseline survey for physical (air, noise, water etc.); biological and socio-economic environment, and conduct public consultations. 2: Carry out IEE study on the selected options including a detailed and site-specific Environmental Management Plan**Data collection and Entry Activity into Geodatabase for preparation of Paro valley Plan****Year:** December 2014 – June 2015**Location:** Paro valley, Paro Dzongkhag**Client:** Department of Human Settlement**Main Project features:** Geodatabase development for Paro valley planning.**Position held:** Team Leader / GIS Specialist**Activities performed:** Carried out field assessments and prepared IEE for road improvement works. Impacts identified and presented in the EMP matrix.**To carry out Environmental Impact Assessment (EIA) for the establishment of Dhamdum Industrial Estate, Samtse.****Year:** 27th July 2015 – 31st January 2016**Location:** Dhamdum, Samtse Dzongkhag**Client:** IDD, Department of Industries, Ministry of Economic Affairs, Thimphu.**Main Project features:** Establish industrial estate for balanced regional development.**Position held:** Environmental Specialist**Activities performed:** **GIS Specialist/Team Leader** – Responsible for geo-database design and attribute data collection. The detailed tasks included:

- Designed and created specialized Geodatabase of Paro valley using enterprise architect and ArcGIS software.
- Prepared working maps for Paro valley for attribute data collection for all geographic features.
- Supervising attribute data collection for all geographic features
- Data compilation, cleaning and entry into the geodatabase.
- Prepared Technical Report and the complete Geodatabase of Paro valley.

SASEC Road Connectivity Project.**Year:** March, 2013 to September, 2013**Location:** Pemagatshel (Nganglam) and Phuentsholing**Client:** Asian Development Bank and Department of Roads, Ministry of Works and Human Settlement (MoWHS)**Main Project features:** The proposed Bhutan SASEC Road Connectivity Project includes four subcomponents: i) Nganglam– Deothang road, ii) Pasakha access road, iii) Mini dryport, and iv) Northern bypass road in Phuentsholing. The feasibility study for component i) was completed in 2012. IEE and EIA prepared during feasibility stage will be updated during the detailed design phase.**Position held:** Environmental Specialist (Climate Change)

Activities performed: Review the draft EIA report prepared for component of the project during the feasibility study stage

As required by the ADB SPS, the EIA and IEE report must cover all applicable national policies and regulations, an assessment of all potential impacts, analysis of alternatives, cumulative and induced impacts, suitable mitigation measures, consultation with affected people and other stakeholders

Road Network Project (RNP) II Additional Financing.

Year: October 2011 – March 2012

Location: Thimphu

Client: Asian Development Bank and Department of Roads, Ministry of Works and Human Settlement (MoWHS)

Main project features: Project preparatory technical assistance (TA) from the Asian Development Bank (ADB) to identify, formulate, and prepare an ensuing loan and grant for the Additional Financing for Road Network Project II (the Project).

Position held: Environmental Specialist

Activities Performed: Conduct environmental impact assessment (EIA) in accordance with (a) ADB's Environmental Assessment Guidelines (2003); (b) ADB's Environmental Policy (2002); and (c) the Government's environmental acts and regulations. Undertake the reconnaissance survey for all proposed roads and Collection of spatial data using handheld GPS

Preparing of GIS/Remote sensing Zoning Maps, preparation Land use Land cover & other thematic maps as a part of the EIA/EMP report preparation. Undertake data collection to describe the environmental conditions of the project areas. Undertake second consultation with people affected by construction of new roads. The EMP should identify (a) institutional arrangements necessary for its implementation, and potential.

Air Transport Connectivity Enhancement Project.

Year: July 2011 – February 2012

Location: Thimphu

Client: Asian Development Bank and Department of Civil Aviation, Ministry of Information and Communications (MoIC)

Main Project features: Project preparatory technical assistance (TA) from the Asian Development Bank (ADB) to identify, formulate, and prepare an ensuing loan and grant for the Additional Financing for Air transport connectivity enhancement project (the Project).

Position held: Environmental Specialist

Activities performed: Review and confirm the environmental classification of the project, and indicate if any part of the project sites falls in or near a National Park (NP), Wildlife Sanctuary (WS) or Protected Areas (PAs).

Preparing of GIS/Remote sensing Zoning Maps, preparation Land use Land cover & other thematic maps as a part of the EIA/EMP report preparation. If the project passes through ecologically sensitive areas, necessary primary data on ecology (vegetation analysis, rapid assessment on biodiversity) needs to be collected to be used as a basis for predicting the environmental impacts. Carry out public consultations with affected communities in and near the project site and other relevant stakeholders, government and nongovernment agencies, professionals etc. Recommend occupational and community health and safety measures, and proper Grievance

JFPR9164 BHU: Farm Roads to Support Poor Farmers' Livelihoods. Bhutan

Year: April – June 2011

Location: Trashigang & Chukha

Client : Department of Agriculture, Ministry of Agriculture and Forests

Main Project features: Feasibility studies, and followed by the Survey and Design of Jungley-Bongo-Phatsuma and Phegpari –Thungkhar farm roads.

Position held: Environmental Specialist

Activities performed: Responsible for carrying out IEE studies. The tasks included field surveys and data collection on Physical, Biological and Socio-economic environment for Phegpari –Thungkhar and Jungley-Bongo-Phatsuma farm roads. GIS analysis and mapping of environmental impacts, preparation of Environmental Management Plan and IEE as per the ADB policy and the RGOB's regulations.

ADB Grant, Detail Design of Road Network II Project

Year: January to June 2010

Location: Pemagatshel, Chukha, Sarpang, Samdrup Jongkhar and Zhemgang

Client: Asian Development Bank

Main Project Features: Assistance in the Detail Design of RNP II.

Positions held: Environmental Specialist

Activities Performed: Responsible for carrying out the detail environmental study and update of Environmental Management Plan.

14. Other assignments in the company

A handwritten signature in black ink, appearing to read 'Karma Chogyel', is written over a faint horizontal line.

1. **Proposed position** Social Development Expert
2. **Name of firm** **Phuensum Consultancy Services**
3. **Name of staff member** **Megay Penjore**
4. **Current Residential Address:** Olakha Thimphu, Bhutan
Telephone No. +975 17618624
Fax No.
E-Mail Address megaypenjore@hotmail.com /megay4penjore@gmail.com
5. **Date of Birth** 15.01.62
Citizenship Bhutanese
Type of government ID and ID Number CID 11810000599
6. **Education**
Period: **college/university, degree(s)/diploma(s)**
1984 -1986 Sherubtse College,
Bachelors Degree (Economics)
7. **Membership in professional associations**
- None
8. **Further training courses**
 - Global Environment Facility Country Dialogue on the procedure of Availing GEF funds. 13th - 15th March 2002. Thimphu
 - 'Communication Planning & Strategy Formulation' at the Nanyang Technological University in Singapore, organized by Cornell University. 1994.
 - Development of Curriculum for 'Non-Formal Education' organized by UNICEF/ Japanese Government at Paro (1992)
 - Training course on 'Training of Trainers' organized by UNDP at, Thimphu (1989)
 - Attended Workshop on "Identification & Monitoring of Most at Risk Population" on HIV/AIDS in Mumbai from 1st to 4th June 2010 funded by USAID, Mumbai, India
 - Attended a training course on General Sampling from 5th March to 14th March 2014, Paro
 - Joint Bhutan – Nepal Safeguards Training - of – Trainers 19th – 23rd June 2017 Thimphu Bhutan
 - Joint Bhutan, India & Nepal Safeguards Training of Trainers 9th July – 14 July, 2018 at Kathmandu, Nepal
9. **Countries of work experience**
Bhutan
10. **Languages**

	speaking	reading	writing
English	excellent	excellent	excellent
Dzongkha	excellent	good	good
Nepali	Native speaker	fair	fair
Hindi	good	fair	fair
Sharchop	excellent	NA	NA
11. **Employment record**
Period: 2004 - 2024
Employer: Self-employed
Position held and description of duties: Worked as a freelance consultant, primarily as a social expert for various firms.
12. **Detailed Tasks Assigned**
As per FORM TECH 6-A: Team Composition, Assignment and Key Expert's Inputs

13. Work undertaken that best illustrates capability to handle these tasks

ADB JFPR Grant 9211-BHU Alternative Renewable Energy Pilot Project

Period: 07.2021 - 2024 **Location:** Thimphu, Bhutan **Client:** ADB & Department of Renewable Energy

Main project features: The Department of Renewable Energy (DRE) with the grant financing from Japan Fund for Poverty Reduction (JFPR)1 through Asian Development Bank (ADB) intends to pilot test the installation of small-scale solar photovoltaic (PV) systems to the marginalized rural households and integrate it to the national grid to enable them to produce energy for their own consumption while also creating income generation opportunities through sale of excess power to the grid and introducing energy-based livelihood skills.

Positions held: Social and Survey Specialist

Activities performed: Preparation of field tools (Social baseline questionnaires) with gender segregated data formats and carried out baseline socio economic survey, needs assessment. Carry out the necessary site assessments to help the PMU in selecting the 300 potential solar PV beneficiaries from the list of 42 Villages provided by DRE. Provided necessary inputs to prepare awareness campaign materials and deliver related training and awareness programmes together with the Gender Specialist. Identified areas which need communities' support such as transportation and strengthening roof structures in consultation with the Procurement Specialist. Assisted PMU in information dissemination, consultation, and grievance redress activities.

ADB Project No.47284-002 Construction of Phuentsholing-Chamkuna-Amochhu Road Project

Period: 06.2019 - 07.2023 **Location:** Phuentsholing, Bhutan **Client:** ADB and DoR, MoWHS

Main project features: Construction of new road and upgrading of the existing road connecting Phuentsholing to Samtse Dzongkhag

Positions held: Social Safeguards Specialist

Activities performed: Social assessment of the area including assessing the impacts of the project to the adjoining land owners and road commuters during the course of the project implementation. Preparation of labor deployment protocol especially during the pandemic, ensure that Operation and Health Safety protocol was in place and followed during the project implementation, ensure that the national labor norms were followed. Carry out semi-annual monitoring of OHS, labor deployment and social aspects during the project implementation.

ADB BHU 50165 Phuentsholing township Development Project (PTDP)

Period: 11.2018 - 2026 (CW01 completed in 2022) **Location:** Phuentsholing, Bhutan **Client:** ADB and CDCL, DHI

Main project features: PTDP will ultimately develop 464 hectares (ha) of land near Phuentsholing Thromde located along both sides the Amochhu River on Bhutan's south-western border with India. The project will provide protection from floods and erosion, and construct smart urban infrastructure to allow phase-wise urban expansion. A modern township will be developed on sustainable principles of equity, livability, and competitiveness, and it will be integrated into the fabric of the existing municipality. The project will also protect the existing and new town from floods and riverbank erosion which currently threatens lives and livelihoods and disrupts connectivity with nearby communities. The new township development also provides space for public services such as health facilities and schools, and commercial businesses. A new township of walkways, eco-friendly road and water systems etc. which will be integrated into the fabric of the existing municipality and preserve Bhutan's unique architectural heritage. This will contribute to expansion of the country's services sector and diversify the economy from heavy reliance on hydropower.

Positions held: Communication and Health and Safety Specialist

Activities performed: Preparation and implementation overall Communications & Consultation Plan (CCP) for Zone A which includes sub-plans on community relaxations, labor and employment and project induced in-migration (PIIM) also referred to as influx. Preparation of labor deployment protocol especially during the pandemic, ensure that Operation and Health Safety protocol was in place and followed during the project implementation, ensure that the national labor norms were adhered to. Carry out semi-annual monitoring of OHS, labor deployment and social aspects during the project implementation. Lead the implementation of Grievance Redress Mechanism for the project by developing systematic recording claim, organizing meeting to resolve grievances. Organize and coordinate gender awareness periodic trainings for the PIU, and coordinate with PIU to conduct awareness programs among stakeholders and contractor's workers. Develop and manage effective public relations plan and implement. Prepare and implement social monitoring plan for Zone A. Prepare Health and Safety Manual, and provide information on Contractor Security Safety and Health Plan. Prepare and submit semi-annual reports.

ADB Project No. 47284-002 Pasakha to Manitar Road Improvement Project

Period: 07.2022 - 08.2022 **Location:** Phuentsholing, Bhutan **Client:** ADB and Department of Roads

Main project features: Road improvement and widening of the 30.31 Km of Pasakha to Manitar stretch that was once used by the Tala Hydropower project for the transportation of heavy machineries and equipment.

Positions held: Social Specialist

Activities performed: Preparation of Due Diligence Report for the 30.31Km road between Pasakha to Manitar. Activities entail site visits and interacting with the local people and see if there were any resettlement issues that would emerge during the course of project implementation or would trigger any aspects of compensations. Train the contractor engineers and site worker on social issues that could emerge during project implementation and brief them of the ADB norms on social aspects.

ADB TA-8569 REG: Improving Safeguard Policy Applications in South Asia Developing Member Countries (Bhutan Training) (46282-001)

Period: 10.2019 **Location:** Bhutan **Client:** ADB and Nikachhu Hydropower Project

Main project features: Comparison of ADB's SPS with Bhutan's Legal Framework for Involuntary Resettlement

Positions held: Trainer (Aspects of Resettlement)

Activities performed: Training of the staff of Nikachu Hydropower Project on the aspects of resettlement with comparison of ADB's SPS with Bhutan's Legal Framework for Involuntary Resettlement and the RGoB's guideline on compensations.

Construction of Secondary National Highway from Dagapela to Lhamoizingkha under Dagana Dzongkhag

Period: 06.2014- 04.2019 **Location:** Dagana **Client:** DoR and Orio Project Government of Netherlands

Main project features: Construction of 80.58 km of National Secondary Highway in the District of Dagana connecting the local communities along the villages for their economic benefits.

Positions held: Social Impact Expert

Activities performed: Monitoring of the construction of 80.58 km of National Secondary High from Dalbari to Dagapela Dagana Dzongkha/Monitoring the compensation component, assess the issues and come up with Grievance Redress Mechanisms for the project affected population. Preparation of a completion report through data collection of the project influenced villages and comparing it to the baseline scenario in order to measure the impacts of the project road to the communities. Ensure meaningful community involvement in the project including women of the communities.

ADB TA-8630 BHU: Promoting Clean Energy Development in Bhutan – F-002 Renewable / Master Plan (47275-001)

Period: 06.2014- 12.2015 **Location:** Bhutan **Client:** ADB and Department of Renewable Energy

Main project features: Feasibility study to assess the impact of the Renewable Energy Projects to the local communities and the role of women in the project.

Positions held: Social Specialist

Activities performed: Development of field tools and collection of data from the project sites and preparation of social assessment report. Conducted a preliminary feasibility study on addressing social issues, in collaboration with the rest of the consultant team. Carried out a social impact assessment in accordance with ADB SPS. Conducted a detailed field visit & assessed the risk & vulnerability of the communities & prepare report. Conducted public consultation. Prepared reports, provide inputs & recommendations based on the field visit finding.

Feasibility study of development of Hydro-power projects along Chamkhar Chhu

Period: 05.2011- 06.2013 **Location:** Chamkhar, Bumthang, Bhutan **Client:** Department of Hydro Power Systems, NHPC, WAPCOS (India)

Main project features: Social impacts of the project to the local communities residing within the vicinity of the areas.

Positions held: Social Development and Resettlement Specialist

Activities performed: Development of field tools, train enumerators, pretest the tools and carry out a detailed field study of the villages within the project influence area. Carried out public consultation with the project impacted communities and also other stakeholders. Prepared detailed social and resettlement report including grievance redressal mechanisms for people adversely affected by the project

14. Other assignments in the company

- None

A handwritten signature in black ink, consisting of a stylized 'M' followed by a series of loops and a final flourish.

1. **Proposed position** Lead ESIA Coordinator
2. **Name of firm** **FICHTNER GMBH & CO. KG**
3. **Name of staff member** **Sofia Gomes de Sousa**
4. **Current Residential Address:** Confidential (due to European General Data Protection Regulation 2016/679 (GDPR))
- Telephone No.** +49 711 8995-0
- Fax No.** +49 711 8995-459
- E-Mail Address** sofia.sousa@fichtner.de
5. **Date of Birth** 15.12.1983
- Citizenship** Portuguese
- Type of government ID and ID Number** ID Number: 12376126

6. Education

Period: college/university, degree(s)/diploma(s)

2006 - 2007 University of Aveiro, Portugal
Master Degree in Environmental Engineering
Minor field of study: Air pollution

2001 - 2006 University of Aveiro, Portugal
Degree in Environmental Engineering

7. Membership in professional associations

-

8. Further training courses

2010: Quality Management and Internal Auditing course – ISO 9001:2008 and ISO 19011:2002

2010: Environmental Management course – ISO 14001:2004

2007: Ambient noise course

9. Countries of work experience

Afghanistan, Albania, Argentina, Armenia, Austria, Bangladesh, Belize, Bosnia-Herzegovina, Brazil, Bulgaria, Chile, Costa Rica, Croatia, Democratic Republic of the Congo, Djibouti, Dominican Republic, Egypt, France, Georgia, Germany, Greece, Haiti, India, Indonesia, Iraq, Italy, Jordan, Kosovo, Kuwait, Laos, Malawi, Mexico, Moldova, Montenegro, Mozambique, Myanmar, Nigeria, North Macedonia, Palestine, Panama, Peru, Poland, Portugal, Puerto Rico, Qatar, Romania, Russian Federation, Rwanda, Saudi Arabia, Serbia, South Africa, South-East Asia, Sudan, Sultanate of Oman, Tajikistan, Tanzania, Tunisia, Turkey, Turkmenistan, Turks and Caicos Islands, Uganda, Ukraine, United Arab Emirates, United Kingdom, USA, Vietnam

10. Languages

	speaking	reading	writing
Portuguese	native speaker	native speaker	native speaker
English	excellent	excellent	excellent
German	good	good	good
Spanish	good	good	good
French	sufficient	sufficient	sufficient

11. Employment record

Period: 2011 - present

Employer: Fichtner GmbH & Co. KG

Position held and description of duties: Sofia Gomes de Sousa is at present Senior Consulting Engineer in Fichtner's Environment International Division. She graduated and completed a master's degree in environmental engineering with strong focus on atmospheric pollution, assessment and control. Topics such as quality and environmental management, noise assessment and control, waste management, and geographic information systems were part of Ms. Sousa's study plan. Her work experience covers various environmental topics, as Ms. Sousa has worked for five years for the Portuguese Ministry of the Environment as an external environmental expert. In parallel, Ms. Sousa has been collaborating with Fichtner as environmental team leader, environmental engineer, and project manager on air quality studies,



environmental and social impact assessments, feasibility studies, environmental and social due diligence reviews, and environmental audits from 2009 until now. During this time, Ms. Sousa has gained valuable experience in environmental studies for project permits, feasibility studies and impact assessments in many countries where Fichtner has provided consultancy services. Different energy-related fields are covered by her work: generation - solar, wind, hydropower, and thermal; transmission; and distribution. Ms. Sousa is presently a specialist in environmental and social standards of international financing organizations such as the World Bank and the Asian Development Bank, having provided specific consultancy services and training on the matter.

Period: 2006 - 2010
Employer: Portuguese Ministry of Environment , Portugal
Position held and description of duties: External Air Quality Consultant

12. Detailed description of tasks

As per FORM TECH 6-A: Team Composition, Assignment and Key Expert's Inputs

13. Work undertaken that best illustrates capability to handle these tasks

Environmental Consultant for Baghdara Hydropower Project in Afghanistan

Period: 09.2020 - 12.2020

Location: Afghanistan

Client: Ministry of Finance, Kabul, Afghanistan

Main project features: Fichtner is assigned as an environmental expert to assist the Public-Private Partnership Unit (PPP Unit) of the Government of Afghanistan (GoA) with strategic advice to guide the GoA on matters such as the drafting and finalization of the terms of reference and the structuring of the process for the production of an environmental and social impact assessment (ESIA) in connection with the Baghdara hydropower project.

Positions held: Project Manager, Lead Environmental Expert

Activities performed: RFP (Request for Proposal) Preparation, Report writing, Advisory services

(F#4056A01)

Update of existing studies on small hydropower projects in Indonesia - Part 2

Period: 11.2017 - 03.2020

Location: Indonesia

Client: PT PLN (Persero) Kantor Pusat, Jakarta, Indonesia

Main project features: Under the Thousand Islands Renewable Energies Electrification Program (REEP), various greenfield hydropower projects are being developed. Firstly, existing feasibility studies of eight hydropower sites were reviewed and the best projects were identified for further development. In the next step additionally required field investigations were undertaken for one site and the feasibility study was updated and upgraded to bankable feasibility study level. The scope comprised a hydrological study including the analysis of historic data and observed trends in view of climate change, sediment study, layout and design of the structures, cost estimate and financial analysis, as well as environmental and social impact assessment.

Positions held: Environmental Expert

Activities performed: Environmental impact assessment

(F#6071P04)

Conceptual and feasibility studies: medium-sized HPP

Period: 10.2012 - 04.2018

Location: Indonesia

Client: PT PLN (Persero) Kantor Pusat, Jakarta, Indonesia

Main project features: Under the terms of financial cooperation between Kreditanstalt für Wiederaufbau and PT Perusahaan Listrik Negara PLN, Fichtner prepares concept studies for the three hydropower plant sites Sibundong-4 (31.6 MW), Kumbih-3 (41.8 MW, 6706 m tunnel) and Ordi-5 (26.8 MW) in North Sumatra, with the best-placed site investigated further on feasibility level.

Positions held: Environmental Expert, Environmental Engineer

Activities performed: Report writing, Due diligence, Environmental impact assessment, Baseline Study

(F#4899P63)

Due diligence for two mini hydropower plants – environmental impact

Period: 08.2016 - 05.2017

Location: Peru

Client: Jenner Renewables, Madrid, Spain

Main project features: The client plans to acquire two mini hydropower plants in Peru and has contracted

Fichtner to check the environmental impact studies as part of a due diligence audit in order to ascertain whether they meet the required IFC Environmental and Social Performance Standard. Manta Hydropower Plant is to have an installed capacity of 19.8 MW and be built in the La Pampa District of the Ancash Region. The Colca project is to have an installed capacity of 12.05 MW and be built in Huancayo Province.

Positions held: HSE Expert, Social Expert, Lead Environmental Expert

Activities performed: Due diligence, Preparation of audits

(F#8477S02)

Independent Engineer for Mestiachala 1&2 Project

Period: 09.2016 - 02.2017

Location: Georgia

Client: Société de Participation et Promotion pour la Coopération Economique S.A. (PROPARCO), PARIS, France

Main project features: Mestiachala 1+2 Hydropower Plants are to be built on the River Mestiachala near the city of Mestia in the Svaneti region of Georgia. As independent engineer (IE), Fichtner advised the lender on all relevant aspects of the preparation for Mestiachala 1+2 HPP while also providing support and assistance.

Positions held: HSE Expert, Social Expert, Lead Environmental Expert

Activities performed: Due diligence, Preparation of audits

(F#8494A01)

Feasibility study for Hydro Power Plant of Spilje II

Period: 03.2014 - 03.2015

Location: North Macedonia

Client: AD ELEM-JSC Macedonian Power Plants, Skopje, North Macedonia

Main project features: Subject of the Feasibility study is the extension of the storage hydro power plant HPP Spilje with an additional 4th unit close to the existing one with current installed capacity 3x28=84MW and the additional services that the Consultant carried out included preparation of Pre-Feasibility Study for optimal utilization of hydropower potential of river basin Crn Drim.

Positions held: Environmental Expert

Activities performed: Due diligence, Environmental impact assessment, Review of documentation

(F#4899P69)

Balkan Renewable Energy Program: small hydropower capacity upgrading and project funding

Period: 04.2014 - 05.2014

Location: Albania, Bosnia-Herzegovina, Kosovo, Montenegro, North Macedonia, Serbia

Client: IFC International Finance Corp., Washington, DC, USA

Main project features: Under this program for capacity expansion through small hydropower plants to include project funding, instruction is given to financing institutes and partner banks in Bosnia-Herzegovina, Albania and Macedonia with preparation of course materials with the aim of building up local capacities in small hydropower and project financing. First, generic training materials are prepared that are then adapted to the specific country context and presented at special events. Finally, instruction courses are held at the partner banks with three typical projects processed and evaluated.

Positions held: Environmental Expert

Activities performed: Laws/regulations/guidelines

(FMC#701.701)

Environmental monitoring: Trung Son 260 MW HPP

Period: 09.2013 - 03.2014

Location: Vietnam

Client: Trung Son Hydropower Company Limited, Hanoi City, Vietnam

Main project features: Fichtner acts as Independent Environmental Monitoring Consultant for the construction phase of the Trung Son 260 MW Hydropower Project in Thanh Hoa Province in Vietnam as a multi-purpose project for power generation, flood control and supplementing downstream water flow in the dry season as well as infrastructural strengthening and promoting socio-economic development. Its mean annual electricity generation is 1018.6 GWh. The reservoir has a capacity of 348.5 million m3 and covers an area of 13,175 km2. Fichtner's services are review of project documentation, check for and assessment of compliance with the Environmental Management Plan through routine audits during field tours of inspection, and annual revision and updating of this plan.

Positions held: Lead Environmental Expert, Environmental Engineer

Activities performed: Report writing, Review of documentation

(F#8009A01)

Technical and economic appraisal of small hydropower potential

Period: 06.2013 - 09.2013

Location: Russian Federation

Client: IFC International Finance Corp., Washington, DC, USA as consultant to IFC Advisory Services Russia Renewable Energy Program, Moskau, Russian Federation

Main project features: The Nizhny Novgorod region has significant potential for electricity generation from renewable energy sources, in particular hydropower. To support exploitation of this as a pilot region, Fichtner assists IFC and the local administration by collecting and assessing available information, identifying suitable projects and drawing up a small hydro development master plan, with selection of the most promising sites for projects of various categories.

Positions held: Environmental Expert

Activities performed: Calculation of GHG reduction

(F#6537P08)

Environmental, Social and Climate Change Impact Assessments for Shereik & Kajbar Hydropower Plants

Period: 06.2011 - 01.2013

Location: Sudan

Client: DIU Dams Implementation Unit, Khartoum, Sudan

Main project features: In connection with the feasibility studies for these hydropower plants, Fichtner has been entrusted with the environmental and social impact assessments. As part of this task climate change impacts were assessed and climate risks analyzed. Additionally, an implementation schedule and environmental management plan are drawn up and an investigation made of the institutional and statutory framework. Beside the studies the tasks of Fichtner also included stakeholder consultations and capacity building of the executing agency DIU.

Positions held: Lead Environmental Expert

Activities performed: Calculation of GHG reduction, Report writing, Review of legislative framework, Ecological evaluation, Environmental impact assessment, Emissions calculation, Baseline Study

(F#7311P02)

Independent Engineer Project Hydromex: Two mini-hydro plants with a total capacity of 13 MW in Jalisco

Period: 07.2012 - 11.2012

Location: Mexico

Client: Hidroeléctrica Trigomil, S.A. de C.V. y Hidroeléctrica Tacotán, S.A. de C.V., Mexico D.F., Mexico as consultant to German Investment and Development Corporation (DEG), Cologne, Germany

Main project features: A Spanish consortium of project developers and investors is planning to implement two hydropower plants with a total capacity of 13 MW at existing dam sites in Jalisco. On behalf of DEG and Bancomext, Fichtner prepares a due diligence audit to (i) provide a general project overview, (ii) report on the project's technical feasibility for the lenders to take a decision on project financing, (iii) evaluate the social and environmental risks, and (iv) assist during award of the EPC contract. Climate change was considered in the assessment of future energy supply and within associated environmental and social effects.

Positions held: Environmental Expert

Activities performed: Report writing, Risk assessment, Review of documentation

(F#7832S01)

Various Activities

Period: 01.2006 - 12.2010

Location: Portugal

Client: Portuguese Ministry of Environment

Positions held: External Air Quality Consultant

Activities performed: Emission Measurements Expert, Cost estimate, Development of a monitoring concept, Economic evaluation of options, Emission measurements, Emissions calculation, Environmental impact assessment (EIA), Execution of workshops / seminars, Expert assessment, Feasibility study, Field collection of data, Financial analysis, General project coordination, Immission measurements, Immissions calculation, Preparation of seminar, Preparation of technical proposal, Preparation of training programs, Progress reports, Project monitoring and control, Report writing

14. Other assignments in the company

-

15. Certification

I, the undersigned, certify to the best of my knowledge and belief that

- (i) This CV correctly describes my qualifications and experience;
- (ii) I am not a current employee of the Executing or the Implementing Agency;



- (iii) In the absence of medical incapacity, I will undertake this assignment for the duration and in terms of the inputs specified for me in Form TECH-6 provided team mobilization takes place within the validity of this proposal;
- (iv) I was not part of the team who wrote the terms of reference for this consulting services assignment;
- (v) I do not have conflict of interest in accordance with ITC 3.0;
- (vi) I am not subject to any national or international sanctions, temporary suspension or debarment by ADB or other multilateral development banks (MDB);
- (vii) I certify that I have been informed by the firm that it is including my CV in the Proposal for the *Consultancy Services for Review and Update Detailed Project Report and Environmental and Social Impact Assessment of Bunakha Hydropower Project in Bhutan*. I confirm that I will be available to carry out the assignment for which my CV has been submitted in accordance with the implementation arrangements and schedule set out in the Proposal.
- (viii) I have not been found guilty or convicted of any violation of law that is not a minor traffic violation.
- (ix) I can accept payments through the international banking system or otherwise discharge ADB's obligation upon initiation of wire transfer.
- (x) I understand that it is my obligation to notify the Client and ADB should I become subject to any national or international sanction, including becoming ineligible to work with ADB or other MDBs, cannot accept payments through the international banking system, should integrity issues including conflict of interest arise and/or should we or the proposed consultant be convicted of an offence excluding minor traffic violations

If the answer to any of the declarations above is NO, please provide details:

If CV is signed by the firm's authorized representative

- (xi) I, as the authorized representative of the firm submitting this Proposal for Consultancy Services for Review and Update Detailed Project Report and Environmental and Social Impact Assessment of Bunakha Hydro-power Project in Bhutan, certify that I have obtained the consent of the named expert to submit his/her CV, and that s/he will be available to carry out the assignment in accordance with the implementation arrangements and schedule set out in the Proposal, and confirm his/her compliance with paras (i) to (v) above.

I understand that any willful misstatement described herein may lead to my disqualification or dismissal, if engaged.



Signature of expert or authorized representative of the firm

Date

26.06.2024

Full name of authorized representative

Mr. Michael Wimmer

16. Personal data

CVs contain personal data which must be kept confidential and must not be passed on to uninvolved third parties. Any such documents within the jurisdiction of the EU's General Data Protection Regulation (GDPR) concerning the protection of personal data must be deleted when the procedure has been completed or the purpose of processing such data has ceased to apply.





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CITIZEN CARD

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ASSINATURA DO TITULAR | HOLDER'S SIGNATURE
Sofia Gomes de Sousa



[Handwritten signature]

Kheytsun Rinchhen

མཁའ་སྤྱོད་རིན་ཆེན།

kheytsun@gmail.com • (+975) 77283234
Chubachu, Thimphu, Bhutan

Education

2005-2011	Early Learning Centre and Dr. Tobgyel School Primary and Secondary Schools	Thimphu, Bhutan
2015	Woodstock School High School Diploma (US Advanced Placement programme)	Mussoorie, India
2019	Colgate University Bachelor of Arts, Double Major in Environmental Economics and Geography • Six-time recipient of Dean's Award for Academic Excellence for achieving semester GPA of 3.6 or higher. • Relevant Coursework: Environmental Economics; Statistics; Geographic Information Systems; Econometrics; Earth, Society and Sustainability; Sustainable Livelihoods in Asia; Future of Food; Community-based Study of Environmental Issue; Micro and Macroeconomics.	Hamilton, New York, USA
2017	University of Wollongong Continued education while abroad on nature immersive Colgate Study Group semester.	Wollongong, Australia

Work Experience

July 2024 (Current)	Phuensum Consultancy Services Research Analyst • Deliver research findings and policy recommendations for Environmental and Social Impact Assessment (ESIA) reports for funded government projects, ensuring compliance with environmental and social safeguard standards of the Asian Development Bank, World Bank, and UN organisations. • Coordinate biodiversity, environmental and social surveys, including sampling design, methodology development, and research clearances, in collaboration with national and international consultants. • Organise and document public consultations and stakeholder interviews covering socio-economic, gender, environmental and cultural baselines, as well as affected communities and grievance redress mechanisms. • Support capacity-building and training programmes for ministry, district and local governments. • Selected Projects: Bunakha Reservoir and Hydropower Project; Nyera Amari Hydropower Project; Livable and Resilient Cities Project; Accelerating Transport and Trade Connectivity in Eastern South Asia; Mid-term Evaluation for Bhutan for Life water and climate resilience project, among others.	Thimphu, Bhutan
June 2021 (3 years)	Karma Pharmaceutical and Medical Supplies Procurement Manager • Optimised procurement workflows for annual Ministry of Health tenders reducing bid processing time for pharmaceuticals and medical equipment supply. • Managed distributorship agreements and ensured compliance with requirements from OEMs, pharmaceutical manufacturers, and international funding agencies, including Asian Development Bank, World Bank, JICA, and UN organisations. • Coordinated equipment installations and technical trainings for medical and biomedical professionals.	Thimphu, Bhutan

Certifications and Professional Trainings

Mar 2026	Bhutan–Singapore Article 6 Capacity-Building for Carbon Projects Certified Trainee. Jointly organised by Ministry of Environment and Natural Resources and Terrama. • 3-day programme to equip asset and project owners with practical, end-to-end understanding of developing article 6-aligned carbon projects in the Bhutan-Singapore corridor.	Thimphu, Bhutan
Sep 2025	UNEP-DHI Centre on Water and Environment x Cap-Net UNDP Certified Trainee of Integrated Water Resource Management (IWRM) for climate resilience. • Bridging IWRM and climate change adaptation; global and national frameworks; planning and management; data, technologies and financing for IWRM.	Online
May 2025	World Bank Environmental and Social Framework Certified Trainee of World Bank's training workshop on Environmental and Social Framework (ESF). • World Bank's ESF and ES standards; applicability to project and ESIA planning and implementation.	Thimphu, Bhutan

Kheytsun Rinchhen

མཁའ་འགྲུབ་རིན་ཆེན།

Dec 2024	World Bank x Druk Green Power Corporation Ltd (DGPC) Trainee of World Bank's Cumulative Impact Assessment (CIA). Foundations of CIA framework; methodology and analysis of Valued Components (VC) in line with International Finance Corporation (IFC) guidelines; contemporary challenges.	Thimphu, Bhutan
May 2024	NASA x Druk Holding and Investments (DHI) Certified Trainee of NASA ARSET's 1 week training on Building Capacity to Use Earth Observations in Addressing Environmental Challenges in Bhutan. Data acquisition of satellite and modelled data; methodologies on how to generate land-, water-, and disaster-related products from satellite data; accessing relevant existing products for assessing land use change, natural resource management, and climate mitigation.	Thimphu, Bhutan

Internships

Fall 2020 (7 mos)	Druk Holdings Investment (DHI) Innovation and Technology Department - Conducted market research and developed strategic marketing materials for National Digital Identity (NDI) and document-signing SaaS solutions, supporting Bhutan's digital transformation initiatives. - Designed a knowledge management framework to improve internal knowledge transfer and self-service.	Thimphu, Bhutan
Winter 2019 (5 mos)	United Nations Division of Inclusive Social Development Branch - Supported research, analysis and drafting of official reports, concept notes and publication chapters on key thematic areas related to the UN Permanent Forum on Indigenous Issues. - Provided administrative and logistical support for the closing event of the International Year of Indigenous Languages.	New York City, USA
Summer 2018 (3 mos)	Colgate University Economics Department - Designed contingent choice survey instrument on non-use values of American national parks by assessing park management priorities and resources. - Supported research that revealed higher existence values for wilderness and animal conservation across a nationally representative sample.	Hamilton, New York, USA
2015-2019 (4 yrs)	Colgate University Library and Archives - Gained knowledge on library management, Dewey Decimal system and library services as a part-time staff. - Operated Library Automated Storage and Retrieval (LASR) system that stores 50,000+ archival books and other materials in a 3-storey automated robotic system.	Hamilton, New York, USA
Summer 2016 (3 mos)	Loden Foundation - Supported aspiring entrepreneurs applying to zero-interest loan program of the civil-society organization. - Provided thorough information on requirements, expectations and mentorship options on day-to-day basis. - Conducted interviews with past loan recipients for public relations and donor marketing material.	Thimphu, Bhutan

Others

2020	Dzongkha Journey - Founded and curate an online platform around language, culture and identity language. - Secured funding from the Department of Media, Creative Industry and Intellectual Property (DoMCIIP) to develop content in collaboration with language experts and enthusiasts.	
Language	Dzongkha (Native), English (Proficient), Hindi (Intermediate), Nepali (Intermediate).	
Skills	Environmental & Social Impact Assessment (ESIA); Stakeholder Engagement; Cultural Heritage Impact Assessment, Safeguards Compliance (ADB, World Bank); Survey Design & Data Collection (KoboToolbox, Qualtrics); Policy Research & Analysis; Project Coordination; Google Earth (spatial analysis); Microsoft Office Suite.	

Nabin Gopal Baidya

Summary:

I am an environmental safeguards and biodiversity specialist with more than 20 years of experience in environmental assessment, safeguard monitoring and evaluation, biodiversity conservation, environmental management planning, and implementation support for major infrastructure and development projects. My sectoral experience covers hydropower, transmission and distribution systems, renewable energy, roads, railways, protected areas, environmental education, community-based conservation, endangered species protection, and human-wildlife conflict management.

I have served as Vice-President of New-Initiative since 2012 and have undertaken environmental safeguard assignments with Total Management Services Pvt. Ltd. (TMS), Water and Power Consultancy Services (India) Limited (WAPCOS), Jade Consult Pvt. Ltd., and Waiba-Salasara JV. I am currently engaged in projects supported by ADB, AIB, and MCC, including the Power Transmission and Distribution System Strengthening Project (PTDSSP), Power Transmission and Distribution Efficiency Enhancement Project-Phase 2 (PTDEEP-2), Bunakha Hydropower Project in Bhutan, and 400 kV Transmission Line Project from New Damauli-New Butwal 400 kV Transmission Line under the MCA-Nepal Energy Transmission Project.

My key expertise includes the preparation and review of ESIs, ESMPs, CESHSMs, and associated sub-plans; terrestrial and aquatic biodiversity assessments; critical habitat and cumulative impact assessments; environmental compliance monitoring; contractor and subcontractor management; stakeholder consultation; and preparation of safeguard monitoring reports. I am committed to delivering practical, compliant, and measurable environmental outcomes.

Education:

- **Executive Master of Business Administration (EMBA)**, Ace Institute of Management (affiliated to Pokhara University) 2012-2014
- **Bachelor in Law (LLB)**, Nepal Law Campus (affiliated with T.U.), 2004-2007
- **Master of Science in Environmental Science (M.Sc.)**, Tribhuvan University, Kirtipur, Kathmandu, 2004
- **Bachelor of Science in Environmental Science (B.Sc. 3 yrs. Course)**, Viswa Niketan Science Campus (affiliated to T.U.) 1999- 2002

Fellowship and Executive Development

- **Asia Pacific Leadership Program (APLP)**, East-West Center, University of Hawaii at Manoa, 2009-2010

Training:

- **Advanced Training on Environmental Monitoring and Reporting**, Nepal Administrative Staff College, Nepal
- **Training of Trainers for Environmental Education**, Asian Institute of Technology (AIT), Thailand
- **Training on Remote Sensing (RS) and Geographic Information Systems (GIS)**, Wildlife Conservation Nepal (WCN) and Danish Forestry Extension (DFE)
- **15-day Training on Environmental Impact Assessment (EIA)**, Central Department of Environmental Science, Tribhuvan University

Employment Record Relevant to the Assignment:

Period	Employing Organization & title/position. Contact information for references	Country	Summary of Activities Performed relevant to the Assignment:
February 2026 onwards	Employer: Jade Consult Pvt. Ltd (JV with Fichtner) Position Held: Environment Safeguard Specialist For Reference: Name/Position: Dr. Khadak Mahata Head Environmental Division Tel: +9779851106966	Nepal	• Monitoring and Evaluation of environmental safeguard activities in the Power Transmission and Distribution Efficiency Enhancement Project (PTDEEP-Phase 2) implemented in Nepal and funded by the Asian Development Bank (ADB)

Period	Employing Organization & title/ position. Contact information for references	Country	Summary of Activities Performed relevant to the Assignment:
January 2026 onwards	Employer: Jade Consult Pvt. Ltd (JV with Fichtner) Position Held: Biodiversity Expert For Reference: Name/Position: Dr. Khadak Mahata Head Environmental Division Tel: +9779851106966	Nepal	• Review and Update of the Detailed Project Report (DPR) and Environmental and Social Impact Assessment (ESIA) of the Bunakha Hydropower Project • Leading the revision of aquatic and terrestrial biodiversity assessments aligned with international safeguard frameworks (ADB SPS and IFC-aligned principles). • Conducting biological impact assessments across project phases using a Sensitivity x Magnitude approach • Developing key instruments, including the Biodiversity Action Plan (BAP), Biodiversity Conservation and Wildlife Management Plan, Fisheries Management Plan, Compensatory Afforestation Plan, Species Rescue Plan, and Cumulative Impact Assessment. • Strengthening the ESMP (Biological) and preparing safeguard-compliant biodiversity documentation to support sustainable hydropower development.
October 2025 onwards	Employer: Waiba Salasar JV Position Held: Environment Manager For Reference: Name / Position: Sameer Lama-Director, Waiba Infratech Pvt. Ltd Tel: +977- 985-1198075 Email: waibainfratech@gmail.com	Nepal	• Lead the preparation, approval, and implementation of the CESHSM and 22 associated environmental and social management sub-plans for 400 kV Transmission Line Project from New Damauli–New Butwal 400 kV Transmission Line under the MCA-Nepal Energy Transmission Project. Coordinate environmental compliance across work sites and subcontractors; conduct inspections, inductions, and monitoring; manage biodiversity, vegetation-clearance, waste, pollution-prevention, and reinstatement requirements; and prepare compliance documentation and periodic reports.
March 2024 to December 2025	Employer: Total Management Services (TMS) Pvt. Ltd Position Held: Biodiversity Expert For Reference: Name / Position: Mr. Prajol Lal Shrestha- MD Tel: +977(1)- 4440262 Email: info@tms.com.np	Nepal	• Prepare extended ESMP for Solar Mini-Grid Project within the Buffer Zone of the Shey-Phoksundo National Park (SPNP), Dolpa District implemented by AEPC and Tractebel Engineering GmbH (TE), Germany.
September 2023 to December 2025	Employer: Total Management Services (TMS) Pvt. Ltd Position Held: Environmental Safeguard Expert	Nepal	• Assisting the Project Implementation Unit (PIU) of Nepal Electricity Authority (NEA) in the Monitoring and Evaluation of the Distribution System Upgrade & Expansion

Period	Employing Organization & title/ position. Contact information for references	Country	Summary of Activities Performed relevant to the Assignment:
	For Reference: Name / Position: Mr. Prajol Lal Shrestha- MD Tel: +977(1)- 4440262 Email: info@tms.com.np		Project (DSUEP) implemented in 12 districts of Nepal and funded by the Asian Infrastructure Investment Bank (AIIB)
July 2022 onwards	Employer: Total Management Services (TMS) Pvt. Ltd Position Held: Environmental Safeguard Expert For Reference: Name / Position: Mr. Prajol Lal Shrestha- MD Tel: +977(1)- 4440262 Email: info@tms.com.np	Nepal	• Monitoring and Evaluation of environmental safeguard activities in the Power Transmission and Distribution System Strengthening Project (PTDSSP) implemented in Nepal and funded by the Asian Development Bank (ADB)
July 2017 to January 2020	Employer: Alpine Consultancy Pvt. Ltd. Position Held: Environmentalist /Wildlife Expert/ Environment Expert For Reference: Name / Position: Mr. Shyam Prasad Adhikari- ED Tel: +977(1)- 9851108421 Email: consultancyalpine@gmail.com	Nepal	• 132 kV Transmission Line Project of Nyadi Hydropower Project (30 MW), Year: July 2019 to January 2020 • Environment Impact Analysis/ESIA of 30 MW Solar PV Plant, Bagmati, Sarlahi, Year: 2018 to 2020; • Mid-term Environmental and Social Monitoring Report of Upper Solu Hydroelectric Project (23.5 MW), Year: September 2018 to November 2018 • Initial Environmental Examination (IEE) of Thulo Khola Hydropower Project, Year: July 2017 to September 2018
2015 to 2017	Employer: ERM Pvt. Ltd. Position Held: Environment/Wildlife Expert For Reference: Name / Position: Mr. Uddab Raj Chaulagain Tel: +977-01-4483064 Email: ermc@ermcnepal.com	Nepal	• EIA of upgrading the existing Kakarbhitta-Pathalaya (K-P) (part of EWH/Mahendra Rajmarg) corridor, approximately 366 km, to a four-lane standard with possible co-funding support from the World Bank, Year: 2016-2017 • EIA of proposed Inaruwa- Kakarbhitta Section of Mechi-Mahakali Railway alignment, Year: 2016-2017 • EIA of upgrading existing Nagdhunga-Naubise-Muglin Road Alignment to four-lane standard, Year: 2015-2016
2012-Present	Employer: New-Initiative Position Held: (Currently) Vice-President For Reference: Tel: +977(1)- 9851014981 Email: angelchitrakar@gmail.com		• Project Oversight: Supervise the effective execution of environmental and conservation projects, monitoring progress and outcomes to ensure alignment with objectives and timelines. • Fundraising: Identify and secure funding from international partners and donors by developing and submitting proposals for environmental and developmental projects. • Stakeholder Engagement: Build and maintain strong relationships with donors, partners,

Period	Employing Organization & title/ position. Contact information for references	Country	Summary of Activities Performed relevant to the Assignment:
			and stakeholders to foster collaboration and advance organizational goals. • Leadership: Provide strategic guidance to project teams, ensuring adherence to best practices and addressing challenges for sustainable outcomes. • Advocacy and Reporting: Advocate for environmental conservation and community development while preparing detailed reports to communicate progress and achievements to stakeholders and donors.
2011 to 2012	Employer: Department of Urban Development and Building Construction. Position Held: Team Leader/ Environmentalist For Reference: Tel: +977(1)- 9841251341 Email: ktmdivision@gmail.com	Nepal	Literature review of relevant legal instruments and best practices, undertook public consultations through consultation meetings, KII, FGDs, Workshops, Coordination, Prepared report, and submitted Healthier City Guideline
2006 to 2022	Employer: Wildlife Conservation Nepal (WCN) Position Held: Program Manager/ Senior Nature Interpreter For Reference: Name / Position: Mr. Prasanna Yonzon – CEO Tel: +977 9851059244 Email: wcn@ntc.net.np	Nepal	• Prepared and submitted proposals • Implemented programmes • Built relationships with stakeholders • Studied and analysed human–wildlife conflict • Developed lesson plans and training materials • Promoted environmentally sustainable practices • Communicated scientific information • Sensitised stakeholders • Supported law-enforcement agencies • Managed records and statistics • Conducted field-level monitoring and evaluation • Finalised reports and ensured timely delivery

Selected Publications and Research:

- **Co-Authored:** “वन तथा वन्यजन्तु अपराध नियन्त्रण र अनुसन्धान सम्बन्धी सहयोगी स्रोत पुस्तिका २०७८” (Published by WCN for enforcement agencies)
- **Co-Authored:** “Biodiversity Conservation and Wildlife Crime Control Resource Book, 2020” Published by Department of National Parks and Wildlife Conservation (Publication support by WCN)
- **Co-Authored:** Textbooks “Hamro Budhanilkantha” from Grades 1-8 based on the local curriculum of Budhanilkantha Municipality
- **Co-Authored:** Textbooks “Hamro Sankharapur” from Grades 1-8 based on the local curriculum of Sankharapur Municipality
- “Trans-boundary movement of elephants in eastern Nepal” Tiger paper FAO Regional Office for Asia and the Pacific 2010. Vol. 37, No. 4: 5-9. <http://www.fao.org/docrep/014/am631e/am631e00.pdf>

- “Land-use Change in Buffer-zone of Chitwan National Park, Nepal Between 1978 and 1999” Eco-print (An international journal of Ecology), Ecological Society (ECOS) 16, 2009:79-86.
<http://www.nepjol.info/index.php/ECO/article/view/3478>
- An internship report on “Review of Environmental Law in Nepalese Context” 2006 (unpublished)
- A thesis on “Change Detection in Buffer Zone of Royal Chitwan National Park by the Integrated Use of Remote Sensing and Geographic Information System” 2006 (unpublished)
- A case study entitled “Study of the Effectiveness of Grey-water Treatment Plant Situated at Kapan Monastery” 2004 (unpublished)
- A case study entitled “Study of seasonal variation of Primary Productivity and Physio-Chemical parameters of Taudaha Lake” 2003 (unpublished)

Language skills:	Speaking	Reading	Writing
Nepali	Excellent	Excellent	Excellent
English	Excellent	Excellent	Excellent
Hindi	Good	Good	Good

Adequacy for the Assignment:

Detailed Tasks Assigned on Consultant's Team of Experts:	Reference to Prior Work/ Assignments that Best Illustrates Capability to Handle the Assigned Tasks:
As Per TOR	Name of Project or Assignment: Monitor and evaluate the implementation of environmental safeguard requirements under the Power Transmission and Distribution Efficiency Enhancement Project–Phase 2 (PTDEEP-2), funded by the Asian Development Bank (ADB). Review environmental safeguard documents and periodic monitoring reports; conduct field inspections; assess contractor compliance with approved environmental management measures; identify corrective actions; and support safeguard reporting and coordination with the Client, contractors, and relevant stakeholders. Year: February 2026 onwards; Location: Different Districts, Nepal; Client: Asian Development Bank (ADB); Main Project Feature: Environmental Safeguard Monitoring and Evaluation of Power Transmission and Distribution Efficiency Enhancement Project–Phase 2 (PTDEEP-2); Position Held: Environmental Safeguard Specialist;
	Name of Project or Assignment: Review and update the biodiversity components of the Environmental and Social Impact Assessment (ESIA) for the Bunakha Hydropower Project in Bhutan. Year: January 2026 onwards; Location: Bhutan; Client: Druk Green Power Corporation Limited (DGPC) Main Project Feature: Review and Update of the Detailed Project Report (DPR) and Environmental and Social Impact Assessment (ESIA) of the Bunakha Hydropower Project. Leading the revision of aquatic and terrestrial biodiversity assessments aligned with international safeguard frameworks (ADB SPS and IFC-aligned principles). Developing key instruments, including the Biodiversity Action Plan (BAP), Biodiversity Conservation and Wildlife Management Plan, Fisheries Management Plan, Compensatory Afforestation Plan, Species Rescue Plan, and Cumulative Impact Assessment. Position Held: Biodiversity Expert
	Name of Project or Assignment: Prepare an extended CESHSM and its associated subplans for 400 kV Transmission Line Project from New Damauli–New Butwal 400 kV Transmission Line, implemented by Waiba/Salasar JV. Year: October 2025 onwards; Location: Tanahun, Nawalparashi, Palpa and Rupandehi districts, Nepal; Client: MCA-Nepal Main Project Feature: Preparation of CESHSM and ensure its implementation, Position Held: Environment Manager;
	Name of Project or Assignment: Prepared an extended Environmental and Social Management Plan for the Solar Mini-Grid Project within the buffer zone of Shey-Phoksundo National Park, Dolpa District, implemented by AEPC with support from Tractebel Engineering GmbH, Germany. Year: March 2024 to December 2025; Location: Dolpa district, Nepal; Client: AEPC Main Project Feature: Preparation of Extended ESMP, Position Held: Biodiversity Expert;
	Name of Project or Assignment: Assisted the Project Implementation Unit of the Nepal Electricity Authority in monitoring and evaluating environmental safeguard compliance under the Distribution System Upgrade and Expansion Project, implemented across 12 districts and funded by AIIB. Year: September 2023 to December 2025; Location: 12 Districts, (4 in Lumbini Province and 8 in Karnali Province), Nepal; Client: Asian Infrastructure Investment Bank (AIIB); Main Project Feature: Environmental Safeguard Monitoring and Evaluation of DSUEP; Position Held: Environmental Safeguard Expert;

Detailed Tasks Assigned on Consultant's Team of Experts:	Reference to Prior Work/ Assignments that Best Illustrates Capability to Handle the Assigned Tasks:
Name of Project or Assignment: Monitoring and Evaluation of Power Transmission and Distribution System Strengthening Project (PTDSSP) implemented at various locations of Nepal funded by Asian Development Bank (ADB)	
Year: July 2022 onwards; Location: Different Districts, Nepal; Client: Asian Development Bank (ADB); Main Project Feature: Environmental Safeguard Monitoring and Evaluation of PTDSSP; Position Held: Environmental Safeguard Expert;	
Name of Project or Assignment: 132 kV Transmission Line Project of Nyadi Hydropower Project (30 MW); Year: July 2019 to January 2020; Location: Lamjung District, Nepal; Client: Nyadi Hydropower Limited; Main Project Feature: Construction and operation of 132 kV Transmission Line Project; Position Held: Environment/Wildlife Expert; Activities Performed: Collect baseline environmental data including wildlife; identify major wildlife-related issues and perform necessary analysis; undertook public consultations on environmental aspects and issues. Report preparation of wildlife section of EIA	
Name of Project or Assignment: Upgrading the existing Kakarbhitta-Pathalaya section of East-West Highway; Year: 2016-2017; Location: Kakarbhitta-Pathalaya; Client: EMRC; Main Project Feature: EIA; Position Held: Environment/Wildlife Expert; Activities Performed: Field data collection regarding wildlife in the project site; reviewed necessary literature and legal instruments attracted by the project; identified wildlife issues; undertook public consultations on environmental aspects and issues. Report preparation of wildlife section of EIA	
Name of Project or Assignment: Inaruwa- Kakarbhitta Section of Mechi–Mahakali Railway; Year: 2016-2017; Location: Kakarbhitta-Pathalaya; Client: EMRC; Main Project Feature: EIA; Position Held: Wildlife Expert; Activities Performed: Field data collection regarding wildlife in the project site; reviewed necessary literature and legal instruments attracted by the project; identified wildlife issues; undertook public consultations on environmental aspects and issues. Report preparation of wildlife section of the EIA.	
Name of Project or Assignment: Upgrading Nagdhunga-Naubise-Muglin Road Alignment; Year: 2015-2016; Location: Naubise to Muglin; Client: Several; Main Project Feature: EIA; Position Held: Wildlife Expert; Activities Performed: Field data collection regarding wildlife in the project site; reviewed necessary literature and legal instruments attracted by the project; identified wildlife issues; undertook public consultations on environmental aspects and issues. Report preparation of wildlife section of the EIA.	
Name of Project or Assignment: Healthy City Guideline; Year: 2011-2012; Location: Kathmandu; Client: Department of Urban Development and Building Construction (DUDBC); Main Project Feature: Preparing a healthier city guideline; Position Held: Team Leader/ Environmentalist; Activities Performed: Literature review of relevant legal instruments and best practices, undertook public consultations through consultation meetings, KII, FGDs, Workshops, Coordination, Prepared report, and submitted Healthier City Guideline	
Name of Assignment or Project: Reducing vulnerability to Climate Change in Rural Nepal by Supporting Local Business Development Based on Forest-Land Management -Renewable Energy Initiatives, Nepal Month and Year: January 2016-April 2019 Location: Rasuwa, Makawanpur, Chitwan, and Nawalparasi Districts of Nepal Client: WCN (Supported by the Nordic Climate Facility- NCF) Main Project Features: Building the Capacity of the local communities with sustainable use of local natural resources and clean energy promotion Position Held: Natural Resource Expert/ Biodiversity Expert Activities Performed: Worked as part of a team to prepare and submit proposals to donors and implement conservation and community development programs. Built strong liaisons with stakeholders and conducted studies on local natural resources in project sites. Developed plans and training materials to help communities sustainably utilize natural resources, adopt Non-Timber Forest Product (NTFP) farming, and implement clean energy initiatives to improve health. Promoted environmentally sustainable practices in schools and communities and effectively communicated scientific knowledge in simple, accessible language to raise awareness. Sensitized stakeholders—including students and community members—on climate change and natural resource management (NRM). Maintained records and statistics for periodic reporting, carried out regular field-level monitoring and evaluation, and finalized reports to ensure project deliverables were achieved on time, within budget, and at the required quality standards.	
Name of Assignment or Project: Nepal Prakriti Pathshala- I, II & III Month and Year: February 2011- March 2020 Location: Nepal Client: WCN (Supported by Danish Forestry Extension- DFE)	

Detailed Tasks Assigned on Consultant's Team of Experts:	Reference to Prior Work/ Assignments that Best Illustrates Capability to Handle the Assigned Tasks:
Main Project Features: Building the Capacity of school teachers and other stakeholders in Environmental Education and promoting the Green School Concept. Position Held: Senior Nature Interpreter/ Program Manager Activities Performed: Worked as part of a team to prepare and submit donor proposals and implement conservation initiatives. Established strong partnerships with stakeholders and conducted studies to identify gaps in environmental education in Nepal, developing practical solutions for improvement. Designed lesson plans and training materials for teachers and students on environmental protection and conservation. Promoted sustainable practices in schools and communities through Green School campaigns, while simplifying and communicating scientific knowledge in an accessible way. Maintained project records and statistics for periodic reporting, carried out regular field-level monitoring and evaluation, and finalized reports to ensure timely, cost-effective, and high-quality delivery of project outcomes.	
Name of Assignment or Project: Elephant Conservation in Eastern Nepal Month and Year: December 2008- December 2009 Location: Jhapa, Morang, and Sunsari districts of Nepal Client: WCN (Supported by US Fish and Wildlife Services) Main Project Features: Conservation through Awareness in the traditional migrating route of wild elephants in eastern Nepal, and Habitat improvement. Position Held: Wildlife Expert/Project Officer Activities Performed: Prepared and submitted proposals to donors and successfully implemented conservation programs. Conducted studies on human–elephant conflict, including traditional migratory routes, and developed effective management approaches. Designed lesson plans and training materials for the general public and enforcement agencies on environmental protection and conservation issues. Promoted environmentally sustainable practices in schools and communities through targeted awareness initiatives. Built strong liaisons with local stakeholders as well as cross-border counterparts to strengthen collaboration. Supported habitat management efforts by constructing five ponds within forest areas to safeguard water resources for elephants and encourage their containment within natural habitats. Finalized reports and ensured that all project deliverables were completed on time, within budget, and to the required quality standards.	
Name of Assignment or Project: Rhinoceros Conservation in Nepal Month and Year: March 2006- Feb 2007 Location: Chitwan Client: WCN (Supported by Rufford Foundation) Main Project Features: Conserving Rhinos through Awareness amongst Local Communities Position Held: Project Officer Activities Performed: Prepared and submitted proposals to donors, implemented conservation programs, and built strong liaisons with stakeholders. Conducted studies on human–wildlife conflict and developed practical management approaches. Designed lesson plans and training materials for awareness programs and organized awareness campaigns in local schools and communities. Finalized project reports and ensured deliverables were completed on time, within budget, and to the required quality standards.	

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience, and I am available, as and when necessary, to undertake the assignment in case of an award. I understand that any misstatement or misrepresentation described herein may lead to my disqualification or dismissal by the Client and/or sanctions by the Bank.

Mr. Nabin Gopal Baidya

Name

Signature

20-07-2026

Day/Month/Year

1. **Proposed position** Legal Expert
2. **Name of firm** **Phuensum Consultancy Services**
3. **Name of staff member** **Thinley Penjor**
4. **Current Residential Address:** Above District Court, Lungtenzampa, Thimphu
- Telephone No.** +975 1799 2140
- Fax No.**
- E-Mail Address** ttlegalconsultancy@gmail.com

5. **Date of Birth** 27.02.88
- Citizenship** Bhutanese
- Type of government ID and ID Number** CID
11906000842

6. Education

Period: college/university, degree(s)/diploma(s)

2012-2012	Royal Institute of Management, Bhutan Post Graduate Diploma in National Law (PGDNL)
2006-2010	University of Pune, Maharashtra, India Bachelor of Socio-Legal Sciences plus Bachelor of Law
2008-2009	University of Pune, Maharashtra, India Diploma in Cyber Law & Post Graduate in Cyber Law

7. Membership in professional associations

Bar Council of Bhutan

8. Further training courses

Intern at Advani & Co, Pune

9. Countries of work experience

Bhutan, India

10. Languages

	speaking	reading	writing
Dzongkha	excellent	excellent	excellent
English	excellent	excellent	excellent
Hindi/Nepali	fair	good	good
Sharchop	excellent	excellent	excellent

11. Employment record

Period: 2023 - present

Employer: TT Legal Consultancy, Bhutan

Position held and description of duties: CEO, Managing Partner & Senior Lawyer
Mr. Thinley started his career as a public prosecutor at the Office of the Attorney General in 2013 handling over 15 cases a month. He was promoted to Senior Attorney in 2018 and started his own law firm in 2023.

Period: 2018 - 2022

Employer: Office of the Attorney General (OAG), Bhutan

Position held and description of duties: Senior Attorney, Deputy Chief of Prosecution, Litigation and Drafting

Period: 2013 - 2017

Employer: Office of the Attorney General (OAG), Bhutan

Position held and description of duties: Public Prosecutor

12. Detailed Tasks Assigned

As per FORM TECH-6A: Team Composition, Assignment and Key Expert's Inputs

13. Work undertaken that best illustrates capability to handle these tasks

Prosecution

Period: 2013 - 2022

Location: Bhutan

Client: Public

Main project features: Represented the government in criminal cases whereby thorough case evaluation, court representation, plea bargaining, and other trial preparation was done

Positions held: Public Prosecutor

Activities performed: Prosecuted a total of over 400 criminal cases in a period of 10 years with a success rate of 95% prosecuted from the year 2013 to 2022 in 5 different dzongkhags; With the experience of prosecution, can provide pre-emptive legal challenges

Drafting and Review

Period: 2013 - 2022

Location: Bhutan

Client: Royal Government of Bhutan

Main project features: Drafting and review of legislation to improve the legal framework of the government

Positions held: Attorney

Activities performed: Reviewed and drafted various bills and regulations for the State as a drafter and a senior drafter; can draft rules and regulations in harmony with the laws of Bhutan; can review legal framework, regulatory framework and institutional framework of companies; can assist in strategizing recommended reforms and implementation of the reforms in the legal framework; can identify enabling regulations, law, and policy issues and concerns keeping in mind the environmental and social requirements; can justify and discuss legal proposals and recommendations to meet the power of attorney and other requirements with national officials; can advise on legal issues during technical implementations keeping in mind contractual agreements

Litigation

Month and Year: 2018 - 2022

Location: Bhutan

Client: Public

Main project features: Case preparation, filing charges, court appearances, trial work, plea bargaining, and handle appeals for cases

Positions held: Attorney

Activities performed: Handled over 100 commercial, matrimonial, and other civil cases; can advise on any claims and civil suits made; Can support the institutional setup for ensuing physical projects; can review lawful clearance processes and requirements to process further with the execution of projects, including environmental and social requirements; Support contractual process in proposing, securing, negotiations, and financial agreements as necessary keeping in mind the environmental and social safe guarding accordingly with contractual agreements

14. Other assignments in the company

- None

15. Certification

I, the undersigned, certify to the best of my knowledge and belief that

- (i) This CV correctly describes my qualifications and experience;
- (ii) I am not a current employee of the Executing or the Implementing Agency;
- (iii) In the absence of medical incapacity, I will undertake this assignment for the duration and in terms of the inputs specified for me in Form TECH-6 provided team mobilization takes place within the validity of this proposal;
- (iv) I was not part of the team who wrote the terms of reference for this consulting services assignment;
- (v) I do not have conflict of interest in accordance with ITC 3.0;
- (vi) I am not subject to any national or international sanctions, temporary suspension or debarment by ADB or other multilateral development banks (MDB);

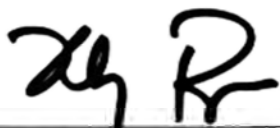
- (vii) I certify that I have been informed by the firm that it is including my CV in the Proposal for the *Consultancy Services for Review and Update Detailed Project Report and Environmental and Social Impact Assessment of Bunakha Hydropower Project in Bhutan*. I confirm that I will be available to carry out the assignment for which my CV has been submitted in accordance with the implementation arrangements and schedule set out in the Proposal.
- (viii) I have not been found guilty or convicted of any violation of law that is not a minor traffic violation.
- (ix) I can accept payments through the international banking system or otherwise discharge ADB's obligation upon initiation of wire transfer.
- (x) I understand that it is my obligation to notify the Client and ADB should I become subject to any national or international sanction, including becoming ineligible to work with ADB or other MDBs, cannot accept payments through the international banking system, should integrity issues including conflict of interest arise and/or should we or the proposed consultant be convicted of an offence excluding minor traffic violations

If the answer to any of the declarations above is NO, please provide details:

If CV is signed by the firm's authorized representative

- (xi) I, as the authorized representative of the firm submitting this Proposal for the Consultancy Services for Review and Update Detailed Project Report and Environmental and Social Impact Assessment of Bunakha Hydropower Project in Bhutan, certify that I have obtained the consent of the named expert to submit his/her CV, and that s/he will be available to carry out the assignment in accordance with the implementation arrangements and schedule set out in the Proposal, and confirm his/her compliance with paras (i) to (v) above.

I understand that any willful misstatement described herein may lead to my disqualification or dismissal, if engaged.



Signature of expert or authorized representative of the firm

Date: 27.11.2024

Full name of authorized representative _____

16. Personal data

CVs contain personal data which must be kept confidential and must not be passed on to uninvolved third parties. Any such documents within the jurisdiction of the EU's General Data Protection Regulation (GDPR) concerning the protection of personal data must be deleted when the procedure has been completed or the purpose of processing such data has ceased to apply.

- **Name of Staff:** Ugyen Lhendrup
- **Date of Birth:** 04/11/1977
- **Nationality:** Bhutanese
- **Formal Education:**
 - M.Sc. Photogrammetry and Geoinformatics, Stuttgart University of Applied Sciences, Stuttgart, Germany, 2007-2009
 - Degree in Survey Engineering, Survey Training Institute, Hyderabad, India, 2001-2003.
 - B.Sc. Sherubtse College, Kanglung, Bhutan
- **Professional Experience:**
 - As GIS and Geodatabase specialist
 - Photogrammetrist for satellite imagery processing, DEM generation and editing, orthorectification and ortho mosaicking.
 - GPS/GNSS survey and processing, geodetic network control establishment.
 - Survey Engineer for terrestrial survey (large scale) using total stations.
- **Other Training and certifications:**
 - Training at Inpho GmbH, Stuttgart, Germany on Match AT module and processing of aerial imagery projects, Orientation, DTM generation and Ortho-rectification, SCOP++, 2009.
 - Satellite Image Processing and Remote Sensing Course, Kiruna and Stockholm, Sweden, 2006.
 - Remote Sensing Techniques and its Application Course conducted by ITC, Netherlands at Thimphu, Bhutan, 2005.
 - Training on Setup and Maintenance of GPS Permanent Reference Station, Gavle Sweden, 2004.

- **Languages:**

	Speaking	Reading	Writing
Dzongkha	Mother tongue	Mother tongue	Mother tongue
English	Excellent	Excellent	Excellent
Nepali	Good	Poor	Poor
Hindi	Good	Poor	Poor
Sharchop	Good	No Written Language	

- **Membership in Professional Associations:**

- NIL

- **Countries of Work Experience:**

- **Countries lived and worked in:**

- Bhutan

- **Key qualifications:**

Hardware Competency:

- Trimble GPS – GeoXT, GeoXH, GNSS R6, R4, 5700, 5800 and R3
- Leica GPS – System 1200
- Total Station: Leica, Trimble M3, Sokkia, FOIF RTS350-R1000

Software Competency:

- GPS Processing software: Trimble Business Centre, GPS Pathfinder Office, Leica Geo Office.
- ERDAS and INPHO photogrammetric system
- ESRI ArcGIS
- LisCAD, AutoCAD

- **Employment Record**

2011- current	Geospatial Engineer / Director, Kheychock Geo Infosys, Thimphu, Bhutan
2009 – 2011	Senior Survey Engineer / In-Charge Photogrammetry Section, National Land Commission Secretariat, Thimphu, Bhutan
2003 – 2008	Survey Engineer, Department of Survey and Land Records, Thimphu, Bhutan

- **Professional experience record (WRITE YOUR CONSULTANTIES- SEE BELOW).**

2024-2025	As GIS specialist for TA-6858 BHU: Green and Resilient Affordable Housing Sector Project, ADB.
2023	As GIS specialist for project: Updating and Completing the Environmental and Social Assessment and Planning – Dorjilung HPP, DGPC, World Bank
2021	As GIS specialist for project “Ecosystem and Socioeconomic Resilience Analysis and Mapping (ESRAM), RSPN, Bhutan”.
2019 – 2020	As GIS specialist for project “Utility survey, mapping and geodatabase development for Phuentsholing Thromde, Bhutan”.
2019	As Adjunct Lecturer for Diploma in Surveying at Jigme Namgyal Engineering College, Dewathang, Samdrup Jongkhar.
2017	As GIS specialist for project “Cumulative Impact of Hydropower in Kuri-Gongri River Basin”. DHPS, MoEA, World Bank.
2017	As GIS specialist for ADB-TA9095 “Strengthening Integrated Water Resource Management in Mountainous River Basins”.
2016-2017	As team leader and GIS specialist for Topographical survey and Mapping of Trashigang and Rangjung Thromdes, Bhutan. The Client is Department of Human Settlement, Ministry of Works and Human Settlement. The project comprised of topographic survey and mapping at 1:1000 scale, topographical geodatabase development, cartographic compilation and geodetic control network establishment.
2015-2016	As team leader and GIS/Photogrammetry specialist for Topographical survey and Mapping of Nyera Amari I&II Integrated Hydropower Project (DPR). The Client is Druk Green Power Corporation (DGPC). The project comprised of topographic survey and mapping at 1:1000 scale and 1 m contour interval, survey and development of river cross-section and longitudinal profiles, topographical geodatabase development, cartographic compilation and geodetic control network establishment. GeoEye stereo satellite imagery was used for general layout map development at 1:5000, DEM generation, ortho imagery and stream network extraction. Total area surveyed and mapped was 120 sq.km.
2014-2015	As team leader and GIS/Photogrammetry specialist for Topographical survey and Mapping of Rotpazhong (Dorjilung) Hydro Power Project (DPR). The Client is Druk Green Power Corporation (DGPC). The project comprised of topographic survey and mapping at 1:1000 scale and 1 m contour interval, survey and development of river cross-section and longitudinal profiles, topographical geodatabase development, cartographic compilation and geodetic control network establishment. GeoEye stereo satellite imagery was used for general layout map development at 1:5000, DEM generation, ortho imagery and stream network extraction. Total area surveyed and mapped was 70 sq.km.
2014	As team leader and GIS/Photogrammetry specialist for Preparation of Geodataset for Kabisa LAP under Kawang gewog using either image processing or terrestrial survey. The Client was Thimphu Dzongkhag Administration. The project comprised of topographical

geodatabase development with 2m contour interval, cartographic compilation and geodetic control network establishment. GeoEye stereo satellite imagery was used for generation of DEM, ortho imagery and stream network extraction.

- 2013 As team leader and GIS specialist for National Irrigation Database and Canal Alignment Mapping. The Client was Department of Agriculture, Ministry of Agriculture, DRDP project. The project comprised of verification, update inventory, mapping of irrigation canals and command area in the country. Designed and developed irrigation geodatabase, gewog wise distribution of irrigation canal maps was prepared.
- 2011-2012 As team leader and GIS/Photogrammetry specialist for Base Mapping for Thimphu Thromde through High Resolution Imagery. The Client was Thimphu Thromde. The project comprised of topographical geodatabase development with 2m contour interval, feature coding, cartographic compilation and geodetic control network establishment. GeoEye stereo satellite imagery was used for generation of DEM, ortho imagery and stream network extraction.
- 2012 As team leader and GIS specialist for Validation and Digital Mapping of Farm Road. The Client was Department of Agriculture, Ministry of Agriculture. The project consisted of mapping of entire farm roads in the country and validating the condition of the farm roads such as degree of slope, condition of cross and side drains, coordinating the positions of the affected segments of the road and the fixing the position of the bridges, cross drains etc, assessing pliability, enumerating the length of the roads, the number of beneficiaries, etc. A geodatabase was the final output with gewog wise farm road distribution maps.
- 2011-2012 As team leader and GIS/Photogrammetry specialist for Base Mapping for Phuentsholing Thromde through High Resolution Imagery. The Client was Phuentsholing Thromde. of irrigation canal maps were prepared. The project comprised of topographical geodatabase development with 2m contour interval, feature coding, cartographic compilation and geodetic control network establishment. GeoEye stereo satellite imagery was used for generation of DEM, ortho imagery and stream network extraction.
- 2009-2010 As team leader and GIS/Photogrammetry specialist for Topographical survey and Mapping of Kuri-Gongri Hydropower project The Client was National hydropower Corporation Ltd. India (NHPCL). The project comprised of topographic survey and mapping at 1:10000 scale and 10 m contour interval, topographical geodatabase development, cartographic compilation and geodetic control network establishment. World View 1 stereo satellite imagery was used for general layout map development, DEM generation, ortho imagery and stream network extraction. Total area surveyed and mapped was 400 sq.km
- 2003 -2006 The project was transformation of topographic base map from Everest to Drukref03 datum. The activities comprised of topographical database transformation from the old Everest datum to the new Drukref03 datum and create topographical geodatabase for the country. Develop and implement new feature code for the country and feature code mapping using FME. Developed a new topographical data model for the country with the help of the Swedish consultant. Supervise the digitization and transformation of the data from the old to the new system. Resolve data anomalies

- **Certification**

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes me, my qualifications, and my experience. I understand that any wilful misstatements described herein may lead to my disqualification or dismissal, if engaged.



UGYEN LHENDRUP

Date: 20/07/2026

1. **Position:** Legal Expert
 2. **Name of Firm:** Jade Consult Pvt. Ltd.
 3. **Name of Expert:** Madhab Raj Ghimire
 4. **Current Residential Address:** Kathmandu, Nepal
Telephone No: +977 (01) 5347237
Fax No: + 977 (01) 5332171
Email Address: info@jadeconsult.com.np
 5. **Date of Birth:** 31.08.1974
Citizenship: Nepalese
Type of Government ID and ID Number: Passport No. BA0383335 (Nepal)

6. Education:

Period: college/university, degree(s)/diploma(s)

2009	University of Bonn, Bonn, Germany; LL.M (Master of Laws), Master of European Regulation Network Industries (MERNI)
2014	Tribhuvan University, Kathmandu, Nepal; MA, Master of Arts in Political Science, International Law, International Relations
1998	Tribhuvan University, Kathmandu, Nepal; Bachelor's Degree in Law

7. Membership in Professional Associations:

- Asian Competition Forum (ACF)
- Nepal Bar Council
- Nepal Evaluation Society (NES)
- Nepal German Academic Association (NEGAAS)
- Nepal International ADR Center
- Goethe-Zentrum Kathmandu

8. Further training courses:

- Training on 'Modern Postal System of DHL' DHL Innovation Centre, Germany, Dec. 2008
- Field trip and observation the case of EC vs. German Telecom including a workshop to the European Court of Justice, Luxembourg, 5th Feb 2009
- Training Course EUROPEAN ENERGY EXCHANGE (EEX), Leipzig, Germany, 8th May 2009.
- Paper Submitted to International Hydropower Association (IHA) World Congress: Advancing Sustainable Hydropower, Brazil, July 2011.
- Participated as a discussant to "Nepal's Hydropower Sector: New Developments, Investment Opportunities and Challenges" Nepal Energy Investors Forum organized by the Government of Nepal and the Asian Development Bank, Kathmandu, 13-14 October 2011.
- Contributed 'Rule of Law Index 2015 Report', The World Justice Project, Washington D.C., 2015
- Participated from Nepal online/live Discussion to 'Global Infrastructure Forum 2016' under WB, ADB, AfDB, AfDB, IADB, EIB and UN to 'Bridging the Infrastructure Gap, IFC B2 Auditorium April 2016.
- Participated webinar on 'Cross Border Energy Trade and Energy Security for South Asia' USAid/SARI-EI/IRADE/POWERLINE, 1 September 2021.
- Participated webinar on 'Nuclear Energy, Climate Change & Sustainable Development: Developments in Europe' 22nd October 2021

9. Countries of Work Experience:

10. Languages:	Speaking	Reading	Writing
English	Excellent	Excellent	Excellent
Nepali	Excellent	Excellent	Excellent
Hindi	Good	Good	Good

11. Employment Record:

Period:	May 2024 - Present
Employer:	Nepal Electricity Authority/ Tanahu Hydropower Limited and ELC Electroconsult in association with GEOCE Consultants (P.) Ltd
Positions held:	Task Leader- Legal & Policy Specialist
Period:	Aug 2018 - Feb 2024
Employer:	Lahmeyer International/ Tractebel Engineering// Total Management Services Pvt. Ltd. Nepal
Positions held:	Environmental Lawyer
Period:	Jan 2020 - Jan 2024
Employer:	Various Employers
Positions held:	Legal Expert/ Consultant
Period:	Nov 2019 - Dec 2019
Employer:	NEA Engineering Company Ltd
Positions held:	Environmental Legal Expert
Period:	Oct 2018 - Dec 2019

Employer:	Total Management Services Pvt. Ltd. Nepal
Positions held:	Legal Expert
Period:	May 2016 - Sep 2018
Employer:	Various
Positions held:	Legal Specialist/ Legal Expert/ PPP & Institutional Expert
Period:	Jun 2015 - Apr 2016
Employer:	Dhaulagiri Kalika Hydro Pvt. Ltd
Positions held:	Legal (FDI Transaction) Consultant
Period:	Oct 2014 - Feb 2016
Employer:	Siddhakali Hydropower Limited
Positions held:	Legal Advisor/Consultant
Period:	Jun 2014 - Jun 2015
Employer:	Fichtner GmbH & Co. KG/ ERMIC Pvt. Ltd
Positions held:	Legal Advisor
Period:	Mar 2014 - May 2014
Employer:	Kalika Energy P. Ltd./GEOCE Consultants P.Ltd
Positions held:	Legal Specialist
Period:	Jun 1998 - 2014
Employer:	Various Employers
Positions held:	Legal Expert/ Legal Consultant/ Regulation Expert

12. Detailed Tasks Assigned:

As per FORM TECH 6-A: Team Composition, Assignment and Key Expert's Inputs

13. Work Undertaken that Best Illustrates Capability to Handle the Tasks Assigned

Tanahu Hydro Power Project (140 MW)

Period: May 2024 to till date

Location: Nepal

Client: Nepal Electricity Authority

Main Project Features: The Project is storage type hydropower project with installed capacity of 140 MW and an estimated average annual energy generation of 587.7 GWh.

Position held: Task Leader- Legal & Policy Specialist

Activities Performed: To systematically investigate the availability of public or private land to fulfill the requirement of Land for Land compensation as assessment and due diligence, Review of Legal Provisions, Exploration of Land Availability, Engagement with Government Agencies, Utilization of Online Resources, Consultation with Local Stakeholders, Exploration of Auctioned Land and Procurement Proceedings and Assessment of Price Reasonability. Review of clearance process and requirements.

IEE of Balambu Flyover Component, Nagdhunga Tunnel Construction Project (NTCP)

Period: Mar 2024 to Apr 2024

Location: Nepa

Client: JICA/DoR

Main Project feature: The flyover will span 128 meters in length and 7 meters in width.

Position held: Policy Specialist

Activities Performed: Policy and legal aspects of IEE of the Balambu Flyover Construction Project, sub-component of Nagdhunga Tunnel Construction Project (NTCP) to assess safeguard the different aspects of the environment namely physical, chemical, biological, social, economic, and cultural along with the construction and operation of the project.

Preparation of River Basin and Hydropower Development Master Plans and Strategic Environmental and Social Assessment

Period: Aug 2018 to Feb 2024

Location: Nepal

Client: Water and Energy Commission Secretariat

Position held: Environmental Lawyer

Activities Performed: Review Nepalese government's water resource and related policies and regulations, review legal aspects and preparation of River Basin Plan, Hydropower Master Plan and SESA Plan, provide legal expertise in assessing the strategic environmental and social impact of the river basin and hydropower development plans and policies and assist in attaining study outputs. Review and develop political economy of water and energy sector of Nepal including private investment, FDI and financial model including PPP, PSP, etc.

Preliminary Assessment of Potential Ground-Mounted or Floating Solar PV (FPV) Power Plants Connected to Existing Hydropower Plants

Period: Oct 2021 to Jun 2022

Location: Srilanka

Client: World Bank

Position held: Legal Expert

Activities Performed: *Option Studies/ Contractual and Institutional Assessment:* Conduct stakeholder consultations to analyze local institutional, contractual and commercial arrangements. Recommend a structuring option, either Public Private Partnerships ("PPP") or Independent Power Producer ("IPP"), based on technical and economic specifics of the plants and national legal and regulatory framework.

Risk Analysis:

Provide an initial assessment of the contractual and regulatory risks of the project, the potential consequences and probability and corresponding mitigation strategies. Contribute legal and regulatory inputs to draft and final Option Study Reports for each selected site. *Stakeholder Consultation and Feedback:* After submission of the Option Study Reports conduct a stakeholder consultation process

Preparation and Develop PPP Financing Policy/, Manual/Guidelines of TDF

Period: Dec 2020 to Dec 2021

Location: Nepal

Client: Town Development Fund

Main Project feature: Review the existing PPP Policy, 2016, Public Private Partnership and Investment Act, 2018, Local Government Operation Act, 2017

Position held: PPP Expert

Activities Performed: Review the existing PPP Policy, 2016, Public Private Partnership and Investment Act, 2018, Local Government Operation Act, 2017 and other PPP relevant documents promulgated by GoN, review and appraise the existing selection/approval criteria's and financial modality of TDF in PPP projects and identify the best practices issues and gaps, To Prepare and Develop PPP Financing Policy/, Manual/Guidelines of TDF as PPP Project Demand and Facilitation Guidelines, including structuring (Pre-feasibility study (PFS), EoI, RFP, PPP Concession Agreement) at least Three Pilot Projects in Municipalities

Nalgad Hydroelectric Project (417 MW)

Period: Nov 2019 to Dec 2019

Location: Nepal

Client: NEA

Main Project feature: Nalsing Gad is a storage type project with gross head of 708 m, design discharge 78.4 cumecs and installed capacity 417 MW. The project has RCC Concrete Dam of 248 m high, HRT of 8165.5 m length and finished dia of 5.85 m. Underground project Size: 110.9 m (L) x 16 m (B) x 37.5 m (H). Annual Energy Generation: 3655 GWh, Dry Months Energy: 604.9 GWh, Wet Months Energy: 529.557 GWh. Transmission Line Length: 112 km, Voltage: 400 kV (Double Circuit).

Position held: Environmental Legal Expert

Activities Performed: Review and point out, if, any gaps and/or inconsistency between Contract Document, Inception Report, Scoping Document, Terms of Reference Document, EIA Report. Overview the adequacy of legal document reviewed on Draft Report and other technical reports. Review and Provide feedback/comments to ensure the quality of the report by providing recommendation; sufficiency of information provided (eg. Complete and meets objectives), reliability of analysis (e.g., consistent with scientific knowledge and methods) and relevance for decision-making (e.g., clear description of significant environmental impacts and mitigation actions). The sufficiency, reliability and relevance must be assessed in terms of; a) requirement of the Government of Nepal (related Acts, Regulations, Guidelines and Manuals) b) procedural and scientific adequacy/validity of the methods employed (to collect and establish baseline data, impact analysis and mitigation measures proposed) and c) requirement of key international organizations, namely World Bank, Asian Development Bank and IFC)

Updating of ESIA, RAP and VCDP for Kathmandu (Nagdhunga)- Mugling Road to meet the World Bank's Environment and Social Framework

Period: Nov 2019 to Dec 2019

Location: Nepal

Client: Department of Roads

Main Project feature: Update of ESIA and RAP

Position held: Labour Laws Expert

Activities Performed: Review and conducting a detailed assessment of the application of ESS2 to the project and developing the Labour Management Procedures as well as labour laws in Nepal and international labour laws and standards such as ILO's.

Cumulative Impact Assessment (CIA) for the Tamor River Basin (total capacity of 1654.51 MW), Environmental and Social Safeguards and Capacity Building

Period: Oct 2018 to Dec 2019

Location: Nepal

Client: Department of Electricity Development (DoED)

Main Project feature: There are currently 16 hydroelectric projects underway along the Tamor River, with an anticipated power generation capacity of 1,654.51 megawatts.

Position held: Legal Expert

Activities Performed: Identify the highest risks posed by the potential cumulative effects of the HEPs (total 1654.51 MW), including KAHEP and other activities and stressors within the Tamor River basin; Review KAHEP cumulative

effects related Constitution, Acts, Rules, Directives; Propose specific mitigation, monitoring, and other management measures to help DoED, future project developers, and civil society to address those risks; Review documents on EIA, Social Assessment (SA), Resettlement Compensation and Livelihood Assistance Plan (RCLAP) and Guidelines, Local Benefit Sharing plan and Guidelines, Indigenous and Vulnerable Community Development Plan (IVCDP), Resettlement Policy Framework (RPF), Gender Action Plan (GAP), Social Action Plan (SAP), Environmental Management Plan (EMP), and an assessment pursuant to the International Hydropower Association's Hydropower Sustainability Assessment Protocol (HSAP). Prepare develop recommendations for KAHEP to integrate CIA into Nepal Regulatory Framework.

Kaligandaki Storage Hydroelectric Project (844 MW)

Period: Oct 2018 to Dec 2019

Location: Nepal

Client: Department of Electricity Development (DoED)

Main Project feature: It is an 844 MW Storage type hydro project with powerhouse station at the toe of dam, 6,706 km² catchment area, having tentative 220 m high dam, 2043MCM gross reservoir storage capacity, gross head of 217m with design discharge of 480 m³/s, total annual energy 3,075GWh.

Position held: Legal Expert

Activities Performed: Conducting legal and regulatory assessments, identifies risks related to land tenure, environmental compliance, and regulatory changes, and advise on frameworks and stakeholder engagement. Ensure compliance with legal requirements, prepare necessary agreements, and mitigate legal risks to facilitate smooth project development.

Darbang Myagdi Hydro-Electric Project (25 MW)

Period: Jun 2015 to Apr 2016

Location: Nepal/USA

Client: Dhaulagiri Kalika Hydro Pvt. Ltd.

Main Project feature: This is a 25MW, Run-of-River type hydropower project located in Darbang, Malika Gaon Palika, Myagdi District, Gandagi Province of Nepal.

The project utilizes the water from Myagdi River which is a snow-fed perennial river having its sources at Dhaulagiri, Churen and Gurja Himal. The catchment area is 893km² and the design discharge of 31.4m³/s through the gross head of 104m. The installed capacity of the project is 25 MW, and the estimated annual energy generation is 150.08 GWh.

Position held: Legal Consultant

Activities Performed: To prepare contractual agreement for fee agreement, facilitating Foreign Direct Investment (FDI), Involve into PPA process with NEA, Project Negotiation, Commission Fee Agreement, Contractual Agreement, Concession Agreement, Memorandum of Understanding (MoU), Project Due Diligence Process and other support that may require for project funding and marketing, development and co-ordination assistance to hydro projects for arranging Financing for EPC consulting services.

Trishuli Galchi Hydropower Project (75 MW)

Period: Oct 2014 to Feb 2016

Location: Nepal

Client: Siddhakali Hydropower Limited

Main Project feature: Drafting Agreement Papers, contractual terms Project Due Diligence Process, Dispute Settlement, claims & analysis and other support required for Engineering, Procurement and Construction (EPC) consulting services

Position held: Legal Advisor/Consultant

Activities Performed: To prepare contractual agreement for fee agreement, facilitating Foreign Direct Investment (FDI), Involve into PPA process with NEA, Project Negotiation, Commission Fee Agreement, Contractual Agreement, Concession Agreement, Memorandum of Understanding (MoU), Project Due Diligence Process and other support that may require for project funding and marketing, development and co-ordination assistance to hydro projects for arranging Financing for EPC consulting services.

Promoting Clean Energy Development in Bhutan –F-002 Renewable

Period: Jun 2014 to Jun 2015

Location: Bhutan

Client: Energy Development Fund (REDF)

Position held: Legal Advisor

Activities Performed: Review the draft of Renewable Energy policy Implementation Rules Regulations as per the provision of the Alternate Renewable Energy policy 2013, Review the Renewable Energy Development Fund (REDF) Management and Operational Manual, Review RE grid transmission proceedings, Review and prepare feed-in tariff regulation, Support any commercial arrangements if applicable and Support the contractual process with stakeholders in tendering, procurement, negotiation, financial arrangements and agreements as necessary.

Bhote Koshi-5 Hydroelectric Project (62 MW)

Period: Mar 2014 to May 2014

Location: Nepal

Client: Ministry of Science, Technology and Environment / **Ministry of Energy/** Kalika Energy P. Ltd./GEOCE Consultants P. Ltd

Main Project feature: Environmental Impact Assessment Study

Position held: Legal Specialist

Activities Performed: Assist MoSTE/MoE in preparing of Environmental Impact Assessment Study of Bhote Koshi-5 Hydroelectric Project (BH-5); providing review of energy policies, plans, laws, rules and guidelines inputs on land acquisition, right of way, compensation settlement and implementation (measures) and interpretation and advise to comply relevant acts, and regulations in relation to EIA study; and contribute in preparing the report.

STAR Centre Nepal, Maitidevi, Kathmandu

Period: Jun 1998 to Sep 1998

Location: Nepal

Client: Social Welfare Council (SWC)

Position held: Coordinator/Lawyer

Activities Performed: Coordinating the whole program until implementation took over the place.

14. **Other assignments in the company:** N/A



Annex 2 Policy and Legal Framework

Annex 1.1: National Policy and Strategic Framework

National Energy Policy 2025

Bhutan's National Energy Policy 2025, released in June 2025 by the Ministry of Energy and Natural Resources, represents a shift in the country's energy strategy, titled "Empowering Energy Security & Sustainable Growth." It consolidates and supersedes several prior frameworks, including the Sustainable Hydropower Development Policy 2021, Alternative Renewable Energy Policy 2013, Domestic Electricity Tariff Policy 2016, and National Energy Efficiency & Conservation Policy 2019. It was approved by the Cabinet on June 5, 2025, the policy aims to enhance Bhutan's energy resilience by reducing overreliance on hydropower alone, targeting an installed capacity of 25,000 MW by 2040. This urgency stems from rapidly increasing energy demand and peak electricity load exceeded firm power capacity by 125 percent, forcing reliance on power imports, especially in the dry winter season in 2024.

Key elements relevant to hydropower projects:

- Hydropower projects are classified as Mega (>1000 MW), Large (501–1000 MW), Medium (101–500 MW), and Small ($\leq$ 100 MW).
- It marks a strategic shift by opening hydropower and solar development to private and foreign investment under defined conditions.
- Projects require Environmental and Social Impact Assessments (ESIAs), minimum water releases, and local engagement, including prioritizing Bhutanese labor and knowledge transfer. Land acquisition follows the Land Act 2007

National Energy Efficiency & Conservation Policy, 2019

Clause 4 of the Policy aims to enhance energy security by reducing energy intensity through energy efficiency and conservation (EE&C) measures, promote EE&C adoption across buildings, appliances, industry, and transport, and decrease fossil fuel consumption to support carbon neutrality. It provides a strategic framework for coordinated implementation and fosters private sector participation in EE&C initiatives.

The policy aligns with Bhutan's Low Emission Development Strategy (LEDS) and international commitments, including the UNFCCC and SDGs. At COP 15 (2009), Bhutan pledged to remain carbon neutral, ensuring GHG emissions do not exceed the country's forest sequestration capacity of 6.3 million tons of CO₂ (1.5). It also establishes institutional frameworks, financial mechanisms, and regulatory measures to enhance energy efficiency nationwide.

National Gender Equality Policy, 2020

The Policy is aligned with the Domestic Violence Prevention Act, 2013, the Labour and Employment Act, 2007, the Penal Code of Bhutan, 2004, the Child Care and Protection Act, 2011 and the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), 1979 (Section 2.2). It acknowledges the uneven mainstreaming of gender issues across existing laws, policies, programs, and projects (Section 3, Rationale). Furthermore, the

Policy commits to integrating gender considerations into all disaster and climate change-related initiatives by recognizing the differentiated impacts of such events on women and men, as well as the critical roles women can play in adaptation and mitigation efforts (Section 5.9).

Climate Change Policy, 2020

The vision of this policy is 'a prosperous, resilient and carbon neutral Bhutan where the pursuit of gross national happiness for the present and future generations is secure under a changing climate (Section 1.2 & 1.3. a). In planning climate change actions, efforts to be made to identify synergies and minimize conflicts with other policies and multilateral environmental commitments (Section 4.a).

The Policy identified the CEDAW (ratified in 1981) general recommendation no. 37 and it states the importance of taking concrete steps to address discrimination against women in the fields of disaster risk reduction and climate change through the adoption of targeted laws, policies, mitigation and adaptation strategies, budgets and other measures (Section 4. vi).

In ensuring synergies and addressing cross-cutting issues in mitigation actions, consideration to be given, among other factors, to opportunities for controlling ozone-depleting substances, preventing land degradation and desertification, conserving biodiversity, and reducing short-lived climate pollutants, air pollution, and associated health impacts (Section 4(1)(a)).

The Policy has committed to fulfill mitigation measures under the UNFCCC and Paris Agreement in line with national priorities and processes, including preparing periodic Nationally Determined Contributions to prioritize mitigation actions across relevant sectors (Section 1.4).

The policy includes a commitment to carbon neutrality through the utilization of relevant mechanisms under the Paris Agreement, such as cooperative approaches, the mechanism for mitigation and sustainable development, and the framework for non-market approaches to sustainable development (Section 1.5).

National Environment Strategy, 2020-2030 - The Middle Path

The strategy enshrines the concept of sustainable development (Strategic Objective 21). It is structured around five thematic chapters, namely water, air, life, land, and way forward. It provides a framework to monitor every sector and enhances the implementation and operationalization of the existing legislation from government to local level.

The Strategy has set objectives to develop a comprehensive monitoring and evaluation framework for new settlement plans to ensure alignment with legal requirements and the adoption of best practices, such as energy-efficient design and resilience to earthquakes, windstorms, and other hazards. Further sustainable development of hydropower, expand current hydropower capacity protect and manage upstream watersheds, promote alternative renewable energy, carry out cumulative impact assessments and ensure environmental flows in rivers have been set as objectives (Strategic Objective 21).

Annex 1.2: National Legal Framework

The Constitution of Kingdom of Bhutan, 2008

The Constitution of the Kingdom of Bhutan mandates the State to preserve, protect, and promote the nation's cultural heritage. This includes monuments, sites, and objects of artistic or historical significance, as well as Dzongs, Lhakhangs, Goendeys, Ten-sum, Nyes, language, literature, music, visual arts, and religion, with the aim of enriching society and enhancing the cultural life of its citizens (Article 4).

Every Bhutanese is a trustee of the Kingdom's natural resources and must protect the environment, conserve biodiversity, and prevent ecological degradation through sustainable practices. The RGoB to protect the environment, conserve biodiversity, prevent pollution, and promote sustainable development while maintaining at least 60% forest cover. Parliament may enact laws to ensure sustainable resource use, uphold intergenerational equity such as National Park, Wildlife Reserve, Nature Reserve, Protected Forest, Biosphere Reserve, Critical Watershed and designate protected areas as needed (Article 5). The Constitution of the Kingdom of Bhutan (2008) provides the overarching framework for environmental protection and sustainable development in Bhutan. Of particular relevance to the Bunakha Hydropower Project are Article 5.1, which establishes the State as trustee of the Kingdom's natural resources and environment for the benefit of present and future generations; Article 5.2, which requires the prevention of pollution and ecological degradation while securing ecologically balanced sustainable development; and Article 5.3, which mandates that a minimum of 60% of Bhutan's total land area remain under forest cover for all time. These constitutional provisions underpin the Project's approach to biodiversity conservation, environmental flow management, pollution prevention, compensatory afforestation, sustainable resource use, and implementation of mitigation measures designed to minimize long-term environmental and social impacts.

According to the Constitution, all rivers, lakes, forests, and mineral resources are the property of the state, and their utilization is governed by law (Article 1(12)). This principle is reaffirmed in Section 5(a) of the Water Act of Bhutan (2011), which specifies that the state's ownership of water resources extends to the beds and banks of those resources. Furthermore, it acknowledges that every individual has the right to access safe, affordable, and adequate water to meet basic human needs (Section 5(c)).

Forest and Nature Conservation Act, 2023, and amendments, 2025

The Forest and Nature Conservation Act of 2023 mandates that the Government ensure a minimum of sixty percent of Bhutan's total land remains under forest cover at all times. It recognizes the importance of protecting, conserving, and preserving natural landscapes and cultural heritage of national significance while promoting the sustainable management of forests, biodiversity, and natural resources. This integrated conservation framework aims to support sustainable development while serving as a key strategy for mitigating and adapting to the impacts of climate change. The Act stated that State Reserved Forest Land (SRFL) includes all land in Bhutan that is not classified as State Land or registered as private land (Section 33). Any activity conducted on State Reserved Forest Land requires prior forestry clearance issued by the Department of Forests and Park Services, DoFPS (Section 44).

Forestry clearance not be granted for activities on SRFL within critical watersheds, core zones of protected areas, high forests, declared wetlands, or ecologically sensitive sites. It is also prohibited within 100 feet of water bodies, except for designated River Bed Material collection, in water recharge areas, and within 500 meters of monasteries or Dzongs without nearby

settlements. Additionally, clearance is restricted outside protected area core zones, except for native inhabitants' domestic use and national development projects (Section 46).

Mining, quarrying, and developmental activities are prohibited in the core zone of protected areas (Sections 38 and 39). Protected areas are regulated under this Act, ensuring the protection of mammals, birds, plants, flora and fauna, insects, reptiles, and amphibians (Sections 223 and 224). The government reserves the right to implement and execute developmental activities of national importance in Community Forests. If a Community Forest is taken over by the government, fair compensation, as determined by the Department, may be provided to the Community Forest Management Group (Section 55).

The agency responsible for deforestation or damage to forest resources due to developmental activities to undertake compensatory plantation within SRFL (Section 70). The DoFPS shall implement preventive measures and oversee waste management within the State Reserved Forest Land (Section 129).

The Act has been amended in 2025 and a revised list for Schedule II and Schedule III have been provided¹. The listed species are as follows:

- Schedule I: Lists species that are fully protected under Bhutanese law. These species cannot be hunted, captured, traded, or disturbed in any way. Examples include the Tiger (*Panthera tigris*), Red Panda (*Ailurus fulgens*), and Asian Elephant (*Elephas maximus*). Violations involving Schedule I species typically carry the highest penalties.
- Schedule II: Includes species that are partially protected. These may be subject to regulated use under specific conditions, such as permits for scientific research or traditional use.
- Schedule III: Covers species that are protected in specific contexts, such as during certain seasons or in designated areas. These species may also be listed due to their ecological importance or vulnerability to trade-

Environmental Assessment Act, 2000

This Act mandates that obtaining an environmental clearance is a prerequisite for the issuance of development consent (Section 8). However, it exempts projects initiated by the Royal Government that do not require development consent, allowing them to proceed only after receiving environmental clearance from the Secretariat (Section 9).

In the environmental assessment process any developer seeking to undertake a project requiring development consent must include a description of its potential environmental impacts in the application submitted to the competent authority (Section 11). The competent authority will review the application and accept it if the provided information is sufficient for screening and environmental assessment under the Act (Section 12).

For projects not listed under Article 33.1, the competent authority to submit the application and relevant project information to the Secretariat for screening (Section 13). The Secretariat will assess the application to determine whether the provided information is sufficient to identify potential environmental impacts (Section 14). If the Secretariat finds the information inadequate or insufficient to demonstrate compliance with Article 18, the competent authority

¹ Revised List for Schedule II and Schedule III, Forest and Nature Conservation Act, 2023. Retrieved from: <https://www.moenr.gov.bt/?p=15246>

to require the applicant to prepare environmental assessment documents based on terms of reference approved by the Secretariat (Section 15). The applicant to ensure that relevant stakeholders and organizations are informed and consulted before submitting the environmental assessment documents (Section 16). Once the competent authority confirms the completeness of these documents, it needs to be forwarded to the Secretariat for further review (Section 17).

The Secretariat may grant environmental clearance if it is satisfied that the project's environmental impacts are acceptable, the applicant can comply with the clearance terms, and the project contributes to sustainable development while preserving the Kingdom's natural and cultural heritage. Additionally, the clearance to be issued if the interests of affected stakeholders have been adequately considered and the project aligns with the Kingdom's environmental commitments (Section 18).

When development consent is not required, the agency to apply to the Secretariat for environmental clearance, including a description of potential environmental impacts (Section 19). The Secretariat will screen the project and may issue clearance if the information is sufficient and the project meets Article 18 conditions (Section 20). If the information is inadequate, the applicant to prepare environmental assessment documents based on Secretariat-approved terms of reference (Section 21). Prior to submission, the agency to inform relevant stakeholders (Section 22).

National Environment Protection Act 2007

The Act establishes overarching policies, standards, and fundamental principles, providing a comprehensive legal framework with significant implications for forest governance and management. The Act mandates the Commission to implement measures to prevent environmental harm and pollution (Section 8). Additionally, it incorporates provisions for handling hazardous substances, regulating the discharge of environmental pollutants, setting environmental standards for products, addressing waste management issues, environmental emergencies. Chapter V of the Act includes provisions for the protection of forests, biodiversity, and ecosystem integrity, as well as the conservation of genetic resources. It also establishes mechanisms for environmental financing and incentives to support environmental protection efforts.

The Electricity Act of Bhutan, 2001

The objectives of this Act include incorporating environmental considerations and ensuring the protection of natural resources, the environment, and other public interests impacted by the development of the electricity supply industry.

Biodiversity Act, 2022

This Act aims to secure the economic value of Bhutan's biological and genetic resources for national development and biodiversity conservation by promoting their sustainable use in research and the development of products, compounds, and substances with medicinal, industrial, agricultural, and other applications. It also emphasizes the importance of regulating access to and the utilization of genetic resources, along with the traditional knowledge associated with biological resources, to ensure their responsible management and equitable benefit-sharing.

The Movable Cultural Property Act of Bhutan, 2005

This Act aims to conserve and protect the movable cultural property of Bhutan. The Act stipulates that if any items considered to be valuable cultural property such as those with artistic, historical, cultural, religious, social, archaeological, or technical value are discovered during the construction of roads, buildings, or related works, the discovery to be reported to the Department of Culture through the relevant Dzongkhag (Section 54).

The Land Act of Bhutan, 2007

The Land Commission of Bhutan is responsible for managing the acquisition of registered land and its allocation to government institutions and the Gerab Dratshang. The Commission grants approval for the acquisition of privately registered land, as outlined in Sections 6(b) and 6(g).

The Act classifies land into seven categories: (a) Chhuzhing (wetland), (b) Kamzhing (dry land), (c) Cash crop land (used for apples, oranges, cardamom, or other cash crops—orchards), (d) Khimsa (residential land), (e) Industrial land, (f) Commercial land, (g) Recreational land, and (h) Institutional land. (i) Additionally, the Commission may designate other land categories as needed (Section 19).

The RGoB may acquire registered land in the public interest (Section 142), ensuring that the process follows established acquisition procedures. The acquisition of land to be conducted in accordance with established procedures (Section 145) and to include fair compensation (Section 144). The acquisition of land occupied by religious monuments to be avoided (Section 146).

Mode of compensation for acquired land to be provided through substitute land or cash payment in case of rural areas. (Section 147). For land acquired within a Thromde/local government, the landowner to receive cash compensation. If the acquired land is the owner's only plot in the Thromde, the Government may provide a substitute land in the same area. If the value of the substitute land is insufficient, additional cash compensation to be provided based on the land's value (148). Compensation also covers immovable property on the acquired land (Section 149), and if any remaining parcel smaller than 10 decimals plot that also be acquired (Section 150).

Landowners to receive cash compensation for any acquired land and property, as determined by the Property Assessment and Valuation Agency (Section 153), which operates under the Ministry of Finance (Section 151). The Property Assessment and Valuation Agency reviews and revises the compensation rates every three years (Section 154).

A substitute land not to be enclosed any Government land or GRFL within its boundaries (Section 157). Acquired land only be taken over after registering the substitute land in the affected landowner's name or providing the cash compensation (Section 158).

Mines and Minerals Management Act (MMA), 1995

The MMA applies to all minerals which must be developed in line with the policies of the RGoB, ensuring efficient resource use, environmental protection, and the health and safety of workers and the public (Section 8). The Act includes provisions for preserving, protecting, and setting standards for the environment and conserving natural resources, in line with this Act and other environmental laws (Section 13 ii).

The Division of Geology and Mines is responsible for ensuring the sustainable development and use of the Kingdom's mineral resources (Section 14.iv). The RGoB may not provide compensation for any immovable property or development works, such as roads and bridges, built in the mining area, unless the lease agreement specifically states otherwise. (Section 29.ii).

The MMMA 1995 is highly relevant to the Bunakha Hydropower Project (HPP) primarily because of the project's massive demand for construction materials and the necessary excavation work. Specifically:

- Hydropower projects require vast amounts of construction aggregates, such as sand, gravel, and stone (quarry materials), which are classified as minerals under the Act. Any quarrying or excavation for these materials, whether conducted by the Project developer or a contractor, must obtain a Quarrying Lease from the Department of Geology and Mines (DGM) as mandated by the Act and its regulations.
- Infrastructure excavation: The construction of the dam, power tunnel, and powerhouse involves extensive excavation into the earth and rock. This process often yields commercial-grade rock material. The management and disposal or use of this excavated material (which is a mineral resource) must comply with the environmental and geological standards set by the DGM.
- The Act's focus on environmental protection (Section 13.ii) and worker/public health and safety (Section 8) is critical. Quarrying and excavation sites for the HPP must have approved Environmental Management Plans (EMPs) and comply with Occupational Health and Safety (OHS) standards for the safe use of explosives and operation of mines, as detailed in the MMR 2022

Labour and Employment Act of Bhutan, 2007

The Act prohibits forced or compulsory labor or extracted through threats or penalties, unless voluntarily offered (Section 6). It also forbids the worst forms of child labor, including practices such as trafficking, debt bondage, forced labor, and work that may harm a child's health, safety, or morals. This includes work that exposes children to physical, psychological, or sexual abuse, dangerous conditions or harmful environments involving hazardous substances, machinery or excessive noise (Section 9).

Employers have a legal obligation to ensure occupational health and safety by providing and maintaining a safe working environment free from health risks, as well as offering accident compensation to all employees (Section 140). Employers to identify and assess workplace hazards, eliminate or mitigate significant risks, and provide necessary training, information, and supervision to safeguard employees. Additionally, employers are required to monitor workplace health and safety conditions, maintain relevant records, and share health monitoring results with employees and health and safety representatives while ensuring confidentiality. In the event of a workplace accident, employers must compensate employees for injuries, except in cases where the injury results from willful disobedience or disregard for safety protocols. Furthermore, compensation must also be provided for occupational diseases directly related to an employee's specific job responsibilities.

Waste Prevention and Management Act of Bhutan, 2009

The Act aims to protect and sustain human health by safeguarding the environment through measures such as minimizing waste generation at the source, promoting waste segregation, reuse, and recycling, ensuring environmentally sound waste disposal, and enhancing the effective coordination among implementing agencies (Section 4).

The Act promotes sustainable development and intergenerational equity by conserving and enhancing environmental quality for the benefit of future generations. Environmental conservation is given equal priority alongside sustainable economic development, aligning with the principles of the Middle Path and Gross National Happiness (Section 7). All development activities generating waste to be planned and executed in harmony with the country's fragile ecological settings and geographical constraints (Section 9).

The RGoB has endorsed the Polluter Pays Principle through the Act, holding polluters accountable for the costs associated with preventing, containing, mitigating, and remedying environmental harm. This includes expenses related to avoidance, abatement, medical compensation, remediation, and restoration (Section 10).

The Water Act of Bhutan, 2011

The Act prohibits the abstraction or use of water without obtaining Environmental Clearance (Section 32). The application for Environmental Clearance to be submitted to the Commission and/or the competent authorities in accordance with the Environmental Assessment Act (Section 34).

The Act has given the highest priority to drinking water and sanitation, followed by agriculture, energy, industry, tourism and recreation, and other uses. However, in the event of water-related emergencies, the Commission has the authority to deviate from this prescribed priority order as necessary (Section 38). In addition to this, Additionally, the national IWRM Plan ensures the coordinated development, management, conservation, and efficient utilization of water resources (Section 6).

The issuance of water uses permits, as well as the approval for water abstraction and effluent discharge, to be duly registered. The competent authority made responsible for maintaining these records and reporting them to the Commission on an annual basis (Section 62).

Disaster Management Act, 2013

This Act mandates the establishment and strengthening of institutional capacity for disaster management, mainstreaming disaster risk reduction, and ensuring an integrated and coordinated disaster management through community participation. The National Disaster Management authority (NDMA) headed by the Prime Minister is the apex body for disaster management.

The Act mandated that every Dzongkhag constitute a Dzongkhag Disaster Management committee, headed by the Dzongda, which (Sections 30, 31) is responsible for coordinating and managing all disaster management operations under the direction and supervision of the NDMA.

The Department of Disaster Management (DODM) mandated to serve as the secretariat and executive arm of the National Disaster Management Authority and the National Coordinating Agency for disaster management (Section 58).

The DODM to ensure agencies mainstream disaster risk reduction into their development plans, policies, programmes, and projects and ensure that contingency plans and disaster management activities are implemented (Section 60).

The Local Government Act of Bhutan, 2009

The Local Government Act has provisions to undertake activities consistent with other relevant laws and policies of the country that are formulated towards conserving environment within its jurisdiction and reduce the impact on public health (Section 48.k) and accelerate socio-economic development (Section 49.a). The Act was further amended in 2014 to include provisions for the preservation and promotion of culture, as well as the protection of the environment, monuments, and sites of cultural and historical significance. These responsibilities were placed under the powers and functions of the Dzongkhag Tshogdu (Section 49(f)).

The Dzongkhag Tshogdu have regulatory powers to frame and enforce rules for safeguarding public health, safety, and well-being (a) and to regulate water, air, noise pollution, and other environmental degradation (b) in accordance with the law (Section 50). Similarly, the Thromde Tshogde have the authority to frame and adopt rules and guidelines to enable the Thromde to carry out its functions (a), enforce regulations for protecting public health, safety, and well-being while preserving and enhancing environmental quality(b) and prepare or amend urban development plans to regulate and enforce land use and building activities within the Dzongkhag Thromde (d) under the Act (Section 62).

The Act requires that all national agencies conduct periodic consultations with the Local Government before any project or program is implemented in their area, as well as involve Local Governments both in the planning and implementation of national projects (Section 213).

The Thromde Administration made responsible for formulating local area plans and priorities for approval (a), promoting planned development, appropriate land use (b) and protecting and improving the city's environment, including managing noise pollution, regulating parking and preserving parks, trees, and plantations (d) in line with the Act (Section 273).

This Act has relevance to the project in terms of protection of local population from health hazards (Section 49.k), protection, promotion, and maintenance of public health and safety (Section 295.e and in Section 50), if any, and bring socio-economic upliftment (Section 48.f) in the local area.

Road Act of the Kingdom of Bhutan 2013

The Act to plan and establish safe and efficient system of road network in the country. Because this project will also involve construction of access road, this Act will come into play when planning, designing, surveying, and obtaining approval from respective agencies. The national authority for all roads is the Department of Surface Transport - DoST) but Thromde, Dzongkhag and Gewog are responsible for roads within their jurisdiction. The DoST empower the local Government to approve take-off design for all access roads that branch out from roads under their administration (Section Sections 19 and 20). The proponent is required to submit plans and specifications for new roads ensuring compliance with the prescribed standards to the DoST or the respective Local Government for approval (Section 22).

The Companies Act of the Kingdom of Bhutan, 2016

In Bhutan, establishing a Special Purpose Vehicle (SPV) company requires incorporating a legal entity under the Companies Act of Bhutan, 2016, which, while not explicitly defining SPVs, typically categorizes them as Limited Companies designed to serve specific objectives, often related to financial risk management. The process involves selecting an appropriate company type, usually offers limited liability and restricted share transfers, making it suitable for project-specific risk containment. Additionally, depending on the company's intended operations, sector-specific licenses or permits may be required to ensure regulatory compliance.

Public Finance Act of Bhutan, 2007

The Secretaries of Ministries, heads of budgetary bodies, and heads of state enterprises are regarded as chief executives of their respective budgetary entities (Section 28). The chief executive is responsible for managing the financial and related matters of the budgetary body, including the procurement and disposal of assets, in compliance with applicable legal instruments issued by the Ministry of Finance, as well as within the limits of appropriations and other lawful authorities (Section 29).

A budgetary body is prohibited from engaging in any management or procurement processes (h) that do not comply with applicable legal instruments (Section 38). The chief executive of a state enterprise to ensure the enterprise establishes and maintains a procurement system (c) that is competitive, transparent, and cost-effective (Section 92).

Religious Organization Act of Bhutan, 2007

The Religious Organizations Act of Bhutan, 2007 does not directly regulate Environmental and Social Impact Assessments (ESIA) for hydropower projects in Bhutan. However, it can have indirect and context-specific impacts in cultural and religious site protection.

The Act governs the registration, functioning, and protection of religious organizations in Bhutan. The Chhoekey Lhentshog to regulate that religious organizations build religious structures according to Bhutan's traditional and cultural designs and heritage (Section 12).

Cultural Heritage Bill of Bhutan, 2016

The Dzongkhag Administration and Dzongkhag Thromde Administration incorporate the importance of preserving cultural heritage and cultural landscapes in their rules and regulatory plans, and ensure that development activities are carried out in accordance with rules and plan (Section 28. (3)).

To protect of cultural elements, an entity intending to undertake any development activity that may affect a cultural element to be identified and secure the consent of the local community connected to that cultural element before applying for a development permit from the Dzongkhag or Dzongkhag Thromde (Section 34).

The Act require that any entity planning a large-scale development activity must first obtain a development permit from the Dzongkhag Administration. The Administration will then forward the application to the Department of Culture and Dzongkhag Development (DCDD) for review and the issuance of cultural landscape clearance (Sections 37 to 39). The Cultural Heritage Committee may define a buffer zone around a Designated Heritage Building or Site based on the recommendation of the DCDD (Section 143).

Prior approval from the DCDD is required for any work on existing buildings located in Important Cultural Sites, Registered Archaeological Sites, or conservation zones of Registered or Designated Heritage Buildings (Section 153).

Mines and Minerals Bill of Bhutan 2020

The Bill includes specific provisions on managing environmental and social risks, as well as protecting the environment and affected communities (Sections 119–134). It requires the lessee to prepare a Mine Feasibility Study that includes an Environmental and Social Risk Management and Mitigation Plan (Section 94.2). The lessee must also carry out mining activities in line with the Mine Plan, the Risk Management and Mitigation Plan, and the lease agreement (Section 107.2).

The Bill has proposed to repeal Section 51(d) and 53(d) of the Local Government Act, 2009 wherein the Dzongkhag Tshogdu was empowered to issue clearances for the establishment of mines and quarries, Section 3g(iv) of the Forest and Nature Conservation Act, 1995 where forest produce included boulders, stone, sand, gravel and rocks and, Section 26(b) of the Water Act of Bhutan 2011 which allowed collection of sand and boulders along banks of watercourses by a state agency.

Land Exchange Rules and Regulations of Bhutan, 2022

The Rules establish eligibility criteria for land exchange, stating that private registered land may qualify if it falls within a critical watershed area or wetland (Rule 5), including land required for hydroelectric projects (Rule 47(b)).

Rules and Regulations for Lease of Government Reserved Forest Land & Government Land, 2009

HPREP may assess any area, including GRF land, for hydropower and renewable energy development (Rule 72). Lease periods to align with the project's concession period, as set by NLC in consultation with HPREP (Rule 74). HPREP must report any land or vegetation submergence to NLC, NEC, and relevant agencies, and such areas to be leased (Rule 75). Underground tunnels need not be leased but to be reported to NLC for approval (Rule 76).

Water Regulation of Bhutan, 2014

This Regulation covers requirements to ensure fish movement (Rule 69) and sustenance of water ecology (Rule 64). The Rule covers the Polluter Pay Principle (Rule 8) and the User Pays Principle (Rule 9) respectively. In addition to this it requires that a minimum environmental flow be determined during the EIA and maintained in watercourses to sustain water ecology and environment. Where scientific study reports are unable to determine this, at least 30% of lean season flow to be maintained (Rule 64). Restricts development activities within one hundred (100) feet from the determinable high flood level on either side of any water body, unless an Environmental Clearance has been obtained. (Rule 66).

The Rule requires dams without design for fish movement to explore possibilities of retrofitting the dam with passage or other measures to allow fish movement (Rule 69).

New users to consult existing water users(s) of the same facility to get their consensus. If the request is declined, the proposal must be routed through the Gup to Dzongkhag, within 30

days. The Dzongkhag to assess the water availability and provide a written technical recommendation to the water user(s) with copy to the Gup. If there is a need to determine water availability during different seasons of a year, the Chairperson of the Water user's association or the Gup will inform the Dzongkhag Administration to conduct a technical analysis for the following seasons within the next winter or summer season and decisions will be based on this assessment (Section 78). Further, details the information required to be submitted for the abstraction of water from a new water source (Rule 81), and new water users to first obtain consent from the relevant WUA or users, if none exist such as WUA or users' approval to be sought from the Gewog Administration (Rule 83).

Land Lease Rules and Regulations, 2018

The Regulation covers the lease of land for Hydropower, Renewable Energy Projects (HPREP) and other associated transmission systems (Chapter 7). The regulations enable the relevant Agencies to assess areas within the country including private land for development of hydropower and its allied associated facilities (Rule 112). The details of the identified land along with the project proposal is to be submitted to the NLCS for review and consent (Rule 113).

Once that is approved, the Agency must process the lease through the Dzongkhag Land Record Office (Rule 114). The lease period to be fixed by the NLCS in consultation with the Agency (Rule 115). The Secretariat may lease land submerged by reservoir backflow or within the reservoir's freeboard, as per hydropower project design (Rule 116).

The lease is executed for the construction period only and the Dzongkhag and Agency must execute a new lease deed upon commissioning of the project (Rule 117). The underground cavern or the underground tunnel system is not required to be leased apart from the permanent access areas for caverns and tunnels (Rule 119). The NLCS may consider leasing this based on requirements submitted by the Agency (Rule 120). The same process is to be followed for transmission towers and their buffer areas (Rule 121).

Forest and Nature Conservation Rules and Regulations (FNCRR), 2023

The Rules provide that an applicant seeking forestry clearance for any activity within the State Reserve Forest Land to submit a detailed project report or feasibility report for hydropower, transmission lines, and towers to the Range Office. (Rule 76). To cut down and remove any tree from the State Reserve Forest Land, need to have a valid permit and a hammer mark at the base of the tree (Rule 86).

The Rule has restricted to collect, keep, or trade any wild plant listed as in Schedule I (Request for Remand Order), unless it is for scientific research, managing the population, conservation breeding, or plantation, and only with a recommendation from the scientific authority (Rule 169).

The Department may allow collection and trade of wild plants in Schedule II (Request for Search Warrant) and III (Seizure and Confiscation) with a permit. Transport and export also need approval and a Phytosanitary Certificate. Conservation of Wild Fauna, wild animals in Schedule I, II, and III cannot be harmed or traded without legal permission (Rule 174).

The Rules make provisions for the Department to adopt appropriate measures to manage the spread of invasive, alien, or exotic species listed in accordance with the Biodiversity Act and Regulations for the conservation of forests and biodiversity (Rule 182).

Fishing in rivers, streams, lakes, or natural ponds (outside restricted areas) within State Reserved Forest Land to be regulated by the Department. The Department to classify these water bodies as Mahseer water, Trout water, Normal fishing sites, or High-end recreational fishing sites, which may be further divided into zones. (Rule 188).

The Rule stated that Afforestation, reforestation, and soil conservation in State Reserved Forest Land to follow the Technical Guidelines under the existing law (Rule 210).

The Department will work with relevant agencies to prevent and manage waste in State Reserved Forest Land (Rule 215). It will regularly monitor waste management (Rule 216), while the Division or Park Office to coordinate with other agencies to ensure proper disposal and transfer of collected waste to designated sites (Rule 217).

Biodiversity Rules and Regulations, 2023

The National Focal Point for the implementation of this law shall be the National Biodiversity Centre (Rule 17) under the Ministry of Agriculture and Livestock and it shall represent the country on all matters related to access and benefit sharing (Rule 74). NBC is the designated clearing house of all information related to the provisions of the Act and regulation and the national repository for all genetic resources and biological collections (Rule 21).

Although the Act and the Regulation address the conservation and sustainable use of genetic resources in detail but both Act and the Bill do not cover species or ecosystem diversity.

Regulation for Environmental Clearance of the Project, 2016

The Regulation provides for the Environmental Assessment Process (Rule 19), Renewal of Environmental Clearance (Rule 32), Public Consultation (Rule 41) all of which are subject to compliance requirements and Monitoring, Enforcement, and Reporting (Rule 56).

Regulation on Occupational Health, Safety and Welfare, 2022

These Rules and Regulations contains legal requirements that must be met by all work places within the coverage of Labour and Employment Act, 2007 that come under the inspectorial jurisdiction of the Department of Labour, Ministry of Industry, Commerce and Employment. The purpose of this Regulation is to establish standards on occupational health, safety and welfare on premises, instruments, vessels, appliances, apparatus, tools, devices, electrical safety and other hazardous conditions.

The employer to take all reasonably practicable measures to ensure that workers are not exposed to toxic substances in excess of the permissible exposure limits while at work (Rule 299). The Regulation aims to assure safe working environment for employees at the project site and relevant during the construction and operation phases. Protective equipment for the eyes, face, hands and feet, protective shields and barriers (Rule 72), as well as the implementation of traffic control measures such as signs, cones, and flaggers to ensure worker and public safety in construction zones (Rule 69). This rule requires adequate protective measures when working at heights, including in construction zones with overhead structures like overpasses (Rule 104, 114, 415). It aims to prevent injuries from falls or falling objects or head injury (Rule 77).

Employers must install barricades and warning signs in and around work areas, including roadworks, to prevent unauthorized access and enhance site safety (Rule 339). Employers to implement safety measures such as fences (Rule 241), warning signs (Rule 288), reflective materials, and lighting (Rule 241) to prevent accidents in road and operating control safety (Rule 205). Flag persons and safety supervisors must be deployed as needed. Efforts should be made to minimize traffic disruption (Rule 69) and ensure the safety of workers and the public. Drinking water (Rule 445), sanitary conveniences (Rule 448), canteen (Rule 451), lunch room (Rule 452), Creche (Rule 454) and Temporary Living Accommodation (Rule 457) considered as workplace effective arrangements.

Regulation on Working Conditions, 2022

The Regulation on Working Conditions, 2022 contains legal requirements that to be met by all workplaces within the coverage of the Labour and Employment Act of Bhutan 2007 that come under the inspectorial jurisdiction of the Department of Labour, Ministry of Industry, Commerce and Employment (Rule 1.2). This Regulation is applicable to provide good working conditions (Rule 4.2 and 17) to the workers recruited for the project.

Regulation on Foreign Workers Management, 2024

The Regulation on Recruitment of Foreign Workers, 2022 as obsolete in Bhutan and superseded by the updated Regulation on Foreign Workers Management, 2024. The employer hiring foreign workers to made be responsible for ensuring that their working conditions and work environment comply with the provisions of the Labour and Employment Act of Bhutan, 2007 (10) and its associated regulations (Section 32).

Road Safety and Transport Regulations, 2021

The Rules state that the permissible level of vehicle emissions in the country to meet the standards specified in the Pollution Under Control (PUC) Certificate (Rules 440) and a person driving a motor vehicle to obtain a PUC Certificate from an emission testing firm (s) or the Authority, as a documentary proof of a vehicle being tested for vehicular emission (Rule 448).

No one is allowed to drive or permit a motor vehicle to be driven on a road unless it is fitted with a silencing device that is securely attached to the engine, ensuring all exhaust gases pass through it to reduce excessive noise, and that does not have any device capable of creating an open exhaust (Rule 450) and produces undue noise or noise beyond the permissible level set by the NEC (Rule 451).

Waste Prevention and Management Regulation, 2012

The Rule allows hazardous waste to be exported only with written consent from the importing country and in compliance with its packaging, health, and safety requirements. (Section 10).

Sanitary landfill or open dump sites shall be identified in consultation with the NEC (Rule 13) and shall not be located near human settlements, water sources, catchment areas, landslide-prone zones, habitats of endangered species, or within three kilometers of Dzongs or other culturally significant monuments (Rule 12).

The Rule covers hazardous/infectious waste and requires implementing agencies to have a systematic handling and safe disposal of hazardous waste generated within its jurisdiction, pre-treatment, safe storage and transportation to designated approved site for such dumping

or release, signage to notify hazardousness of wastes at prominent work place, labelling on containers to indicate risk and danger of its contents, provision of appropriate PPE and equipment to personnel handling hazardous waste, record keeping of all incidents of injuries and accidents related to hazardous waste (Rule 16). The Implementing Agency is made responsible and need to ensure a sanitary landfill is in defined and prescribed standard and requirement (Rule 18).

The Regulations categorized waste including Industrial Waste or E-Waste (Rule 22). Construction waste is defined as 'any solid or liquid materials generated directly from excavation, demolition, alteration, remodelling, renovation or new structural construction or infrastructures such as roads and building works including all civil structures (Rule 85). In the meantime, business and industrial sectors must provide proper waste bins, keep their premises clean, and separate hazardous waste within their area (Rule 23).

The Rule assigns specific responsibilities to the construction and industrial sectors. Construction managers responsible to transport and dispose of waste properly, store it safely on-site, and avoid public inconvenience (Rule 85). Businesses and industries to provide waste bins, keep their premises clean, and separate hazardous waste (Rule 86).

Land Acquisition and Compensation Rules and Regulations, 2022

Land under acquisition will be taken only after compensation or land substitution (Rule 6). Parcels under 10 decimals may be acquired or merged with adjoining state land (Rule 7). Valuation will follow official rates set by the Property Assessment Valuation Agency and Bhutan Schedule Rate (Rule 16).

Land Compensation Rates, 2022

The compensation for buildings or structures on acquired land to be based on current construction costs without applying depreciation, ensuring full replacement value. Upon a project's decision to acquire land, a proposal to be submitted to the NLCS for approval, with a decision expected within two weeks. Once approved, the landowner must be notified at least 120 days in advance. If the landowner chooses replacement land, it follows the Land Act 2007, otherwise, monetary compensation to be provided based on government rates. Structure valuations to be prepared by qualified engineers and verified by the relevant committee.

Bhutan Drinking Water Quality Standard, 2016

To ensure the provision of safe drinking water and protect public health (Section 1.2), all relevant water quality parameters to be adhered to by all concerned parties. Authorities are required to comply with water quality standards in accordance with WHO Guidelines (Section 4). In the event of non-compliance, the Surveillance Body to notify the water service providers to undertake corrective actions, in line with the Water Act of Bhutan 2011 and the Water Regulation 2014 (Section 12).

Environmental Standards, 2020

The Standards established criteria and permissible limits for various environmental parameters, including ambient water quality, industrial effluent discharge, sewage treatment plant (STP) effluent discharge, ambient air quality, and maximum allowable pollutant levels for industrial emissions. It also covers specific emission standards for aluminum smelting,

workplace air quality, vehicular emissions and noise levels, general noise level limits, incineration emissions, and the disposal or utilization of waste incinerator ash.