

Biraj Singh Thapa



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PROFILE

Academic leader, institution builder, and researcher with more than 18 years of experience in higher education, research, innovation, and university development at Kathmandu University. Career dedicated to strengthening institutional capacity through strategic planning, research infrastructure development, international collaboration, resource mobilization, and evidence-based policy engagement. Committed to positioning Kathmandu University as a globally connected, research-intensive institution delivering excellence in education, innovation, entrepreneurship, and societal impact.

EDUCATIONAL QUALIFICATIONS

Degree	Specialization / Field	University	Timeline
PhD	Fluids Engineering	Norwegian University of Science and Technology (NTNU), Norway	2013 – 2016
MS by Research	Hydraulic Machinery	Kathmandu University	2010 – 2012
MSc	Renewable Energy Engineering (Coursework)	Institute of Engineering, Tribhuvan University	2003 – 2005
BE	Mechanical Engineering	Kathmandu University	1998 – 2002

ACADEMIC APPOINTMENTS

Role	Department / College / Lab	University	Timeline
Associate Professor	Department of Mechanical Engineering	Kathmandu University	2022 – Present
Assistant Professor	Department of Mechanical Engineering	Kathmandu University	2012 – 2022
Research Fellow	Turbine Testing Lab	Kathmandu University	2010 – 2012
Lecturer	Eastern Engineering College	Purbanchal University	2008 – 2010

Role	Department / College / Lab	University	Timeline
Teaching Assistant	Department of Mechanical Engineering	Kathmandu University	2006 – 2008
Exchange Researcher	The Waterpower Laboratory	Norwegian University of Science and Technology (NTNU), Norway	2005
Lecturer	Kantipur City College	Purbanchal University, Nepal	2004 – 2005
Teaching Assistant	Department of Mechanical Engineering	Kathmandu University	2002 – 2004

UNIVERSITY LEADERSHIP & ADMINISTRATIVE EXPERIENCE

Role	Department	Core Responsibilities & Achievements	Timeline
Former Director (Acting/Associate)	Planning and Development Directorate, Kathmandu University	Provided leadership in university planning and development functions, including strategic coordination, institutional planning, infrastructure development initiatives, and support for university-wide decision-making processes.	2022 – 2024 & 2024 – 2025
Founder and Team Leader	Green Hydrogen Lab, Kathmandu University	Established KU's Green Hydrogen Lab as a multidisciplinary research platform integrating academia, government, industry, and international partners to advance applied research and innovation in hydrogen technologies.	2020 – Present
Program Lead	Nepal Hydrogen Initiatives	Led collaborative initiatives promoting hydrogen technologies, industrial transformation, and sustainable energy transition through partnerships among academia, government, industry, and international organizations.	2022 – 2024
Faculty-in-Charge and Member Secretary	Turbine Testing Lab, Kathmandu University	Contributed to the conception, establishment, and operationalization of the Turbine Testing Lab; supported its growth into a nationally recognized research, testing, and capacity development facility.	2012 – 2013 & 2018 – 2021

INSTITUTIONAL RESOURCE MOBILISATION – SELECTED PROJECTS

Project	Funder	Role	Timeline
Research-Based Education for Development of Hydropower Professionals	NORHED / Norwegian Government	PI & Institutional Lead	2021 – 2026
Incubation of Nepal Hydrogen Initiative Program	NORAD / Royal Norwegian Embassy	Project Leader	2022 – 2024
Pilot Scale Green Ammonia Production in Nepal for Contribution to Domestic Economy and Better Utilization of Hydropower Electricity	Nepal Electricity Authority	Project Leader	2022 – 2024
Design of Green Urea Production plant in Nepal for contribution to the domestic economy and better utilization of hydropower electricity	Bagmati Province Government	Project Leader	2022 – 2023
Incubation of Synthetic Natural Gas Production Enterprises for Utilization in Cooking Sector	KOICA	Project Leader	2022 – 2023
Technology Transfer and Local Adaptation for Developing NOC as a Hydrogen Fuel Producing and Distributing Company	Nepal Oil Corporation	Project Leader	2021 – 2023
Capacity and competence development for introducing Francis Turbine in Nepalese Micro Hydropower Projects	NORAD	Project Leader	2018 – 2020
Cooperation for Capacity Development Program on Education of Future Generation of Water Resources Development Professionals	World Bank	Project Leader	2017 – 2018

Total Budget Mobilized from these externally funded Projects: NPR 210 million

NATIONAL POLICY & INTERNATIONAL CONTRIBUTIONS

Committee / Working Group	Organization / Ministry	Role	Timeline
Committee on Institutional Setup for Green Hydrogen Policy Implementation	Ministry of Energy, Government of Nepal	Expert Member	2025
Green Hydrogen Policy Drafting Committee	Ministry of Energy, Water Resources and Irrigation	Expert Member	2023
Green Hydrogen-based Chemical Fertiliser Committee	Government of Nepal	Expert Member	2022

Committee / Working Group	Organization / Ministry	Role	Timeline
Standing Committee on Studies	World Energy Council	Member	2022 – 2024
Energy Thematic Working Group	Himalayan University Consortium (HUC)	Co-Lead	2021 – 2025

AWARDS, RECOGNITION & INTERNATIONAL ENGAGEMENTS

Honours and Recognition

- ▶ **National Talent Award in Technological Innovation (2025)**. Conferred by the Government of Nepal following a decision of the Council of Ministers and presented by the Prime Minister of Nepal.
- ▶ **National Science, Technology and Innovation Award (2024)**. Conferred by the Ministry of Education, Science and Technology, Government of Nepal.
- ▶ **Top 100 People to Watch (2025)**. Recognized by *Business 360* among Nepal's emerging leaders for contributions to research, innovation, and sustainable industrial development.
- ▶ **Nagarik Samman Patra (Citizen's Honour) (2025)**. Conferred by Lions Clubs International District 325C, in recognition of contributions to science, technology, innovation, and national development.

Selected International Engagements

- ▶ **Invited Speaker**, COP28 Side Event, Dubai (2023)
- ▶ **Invited Participant**, National Renewable Energy Laboratory, USA (2023)
- ▶ **TEDx Speaker**, Kathmandu University (2023)
- ▶ **Invited Participant**, Asia Pacific Hydrogen Summit, Australia (2024)
- ▶ **Visiting Scholar**, Wuhan University, China (2019–2020)

RESEARCH OUTPUTS

120+ peer-reviewed publications with 2000+ citations.

Selected Lead-Author Q1 Journal Publications

1. Thapa, B.S., Pandey, B., Ghimire, R. "Economy of Scale for Green Hydrogen-Derived Fuel Production in Nepal". **Frontiers in Chemistry** (2024), 12: 1347255.
2. Thapa, B.S., Neupane, B., Yang, H., Lee, Y.H. "Green hydrogen potentials from surplus hydro energy in Nepal". **International Journal of Hydrogen Energy** (2021), 46(43).
3. Thapa, B.S., Dahlhaug, O.G., Thapa, B. "Flow measurements around guide vanes of Francis turbine: A PIV approach". **Renewable Energy** (2018), 126: 177–188.
4. Thapa, B.S., Dahlhaug, O.G., Thapa, B. "Effects of sediment erosion in guide vanes of Francis turbine". **Wear** (2017), 390–391: 104–112.
5. Thapa, B.S., Dahlhaug, O.G., Thapa, B. "Sediment erosion induced leakage flow from guide vane clearance gap in a low specific speed Francis turbine". **Renewable Energy** (2017), 107: 253–261.
6. Thapa, B.S., Trivedi, C., Dahlhaug, O.G. "Design and development of guide vane cascade for a low speed number Francis turbine". **Journal of Hydrodynamics** (2016), 28: 840–847.

7. Thapa, B.S., Dahlhaug, O.G., Thapa, B. "Sediment erosion in hydro turbines and its effect on the flow around guide vanes of Francis turbine". **Renewable and Sustainable Energy Reviews** (2015), 49: 1100–1113.
8. Thapa, B.S., Thapa, B., Dahlhaug, O.G. "Current research in hydraulic turbines for handling sediments". **Energy** (2012), 47(1): 62–69.
9. Thapa, B.S., Thapa, B., Dahlhaug, O.G. "Empirical modelling of sediment erosion in Francis turbines". **Energy** (2012), 41(1): 386–391.

KNOWLEDGE PRODUCTS & INNOVATION

Books & Monographs

- ▶ Green Hydrogen in Nepal: Strategic Pathways for Deep Decarbonization and Industrial Transformation. PrintShop (2026). ISBN: 9789905005679
- ▶ Developing Nepal as a Hydrogen Hub for Contributing to the Energy Transition and Green Growth in South Asia. Routledge (2026). ISBN: 9781041059691
- ▶ Compendium of Fundamentals of Hydrogen Technology. Kathmandu University (2023). ISBN: 9789937146043
- ▶ Project Ideation for Green Hydrogen Developments in Nepal (2023)
- ▶ Green Hydrogen Handbook for Nepal (2023)

Patent

- ▶ Retrofitting Process of Internal Combustion Vehicle to Electric Vehicle. Patent Division, Department of Industries, Government of Nepal (Filed: 16 March 2023)