

ASIA CLEAN ENERGY FORUM 2019

PARTNERING FOR IMPACT

17-21 June 2019 | Manila



Deep Dive Workshop

Monday, 17 June 2019, 02:00 – 5:30 p.m.

Multifunction Hall 1

Hydro Mini-Grids in the Asia-Pacific: Scaling Inclusive Enterprise-Based Approaches



HPNET
HYDRO EMPOWERMENT NETWORK



VISIONS
of sustainability

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Background

Renewable energy mini-grids are a cost effective and time efficient solution for energy access. Within the technologies available for mini-grids, micro and mini hydropower (MHP) has added advantages. Where resources exist, small-scale hydropower produces the lowest cost energy. Its [techno-economic characteristics](#) (e.g. lower levelized cost of energy, per kilowatt investment cost, and no need for energy storage) allow for economic viability with high social impact, including affordable tariffs, extensive [productive end use](#), and viable [grid interconnection](#). Because its hardware can be manufactured locally and maintained by local actors, MHP development imparts local skills, jobs and enterprise development. It also strengthens catchment areas and watershed protection, which in turn increases climate resilience and integrated development of rural communities.

In recent years, there has been a transition to innovative ownership, management and financing models for mini-grid development – where the income generated has been sufficient to ensure the financial viability and sustainable operations of small-scale hydro projects. The success has been achieved by a variety of enterprise-based models most appropriate for the local context, including among others, cooperatives and community-private partnerships. These approaches show evidence of improved bankability of MHP systems, with greater social and gender inclusion at the same time. The session discusses prospects for scaling, replicating and financing such proven enterprise-based approaches to small-scale hydropower in the Asia-Pacific region.

¹ In this context, micro hydropower refers to <100kW, and mini hydropower refers to 100 – 1000 kW (or 1MW).

Objective

This DDW will provide development partners and professionals (both experts and generalists) the opportunity to understand recent innovative approaches to sustainable small-scale hydropower, in terms of economic viability and social impact. The session will feature key experts who have enabled enterprise-based hydro mini-grids in the Asia-Pacific region, drawn from a cross-section of government, private sector, NGOs, civil society and financiers.

The objectives of this DDW are to:

- Provide an overview of the types of ownership, management, financing, and integrated development models for enterprise-based hydro mini-grids, with examples from several countries in the region.
- Identify opportunities for scaling enterprise-based hydro mini-grids, both in terms of transitioning grant-dependent models to credit-financed enterprise models and also establishing new projects with enterprise-based approaches.
- Discuss solutions to overcome barriers to scalability of high social impact, enterprise-based small-scale hydropower, including building local institutional capacity and access to local and development financing.
- Explore the role of development partners and other stakeholders in strengthening knowledge services that enable partnerships to scale enterprise-based hydro mini-grids.

About the Organizers

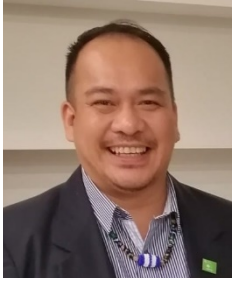
- The [Hydro Empowerment Network \(HPNET\)](#) is a South-South knowledge exchange and advocacy platform to advance small-scale (<1MW) hydropower. Its approach is to strengthen the work of local practitioners who partner with rural communities to establish sustainable hydro mini-grids. With 150+ members with diverse backgrounds across the globe, HPNET's primary objective is to facilitate collaboration and partnerships that advance technology and capacity development, access to financing, socio-environmental approaches, and evidence-based advocacy.
- The [VISIONS of Sustainability](#) initiative promotes the transition to sustainable energy systems in the global South. Its mission is to empower individuals and communities to transform the production and use of energy so that it effectively enables sustainable development. The initiative is run by the [Wuppertal Institute of Climate, Energy and Environment](#), a German think tank, and has been supported by the Swiss-based foundation ProEvolution since its inception in 2004. In addition to supporting HPNET and other renewable energy practitioner networks, the VISIONS initiative has supported a multitude of decentralized renewable energy projects and knowledge exchange events and activities.

Agenda

Time	Topic and Speaker
14:00 – 14:10	Welcome and Overview Dipti Vaghela, Hydro Empowerment Network
14:10 – 15:40 (90 minutes)	Panel 1: Enterprise-based Hydro Mini-Grids in the Asia-Pacific -- Examples and Opportunities The presenters will provide examples of ownership, management, and financing models for enterprise-based hydro mini-grids. The panel will share opportunities to transition to enterprise-based models.
14:10 – 14:20 (10 minutes)	Intro: What are Enterprise-based Hydro Mini-Grids? And intro to panelists Divyam Nagpal (Panel Moderator)
14:20 – 14:45 (25 minutes)	<u>Presentations (12 minutes each):</u> Nepal's Enterprise-Based Hydro Mini-Grids Nepal: Scaling-up the Barpak Micro Hydro Model Bir Bahadur Ghale, Barpak Rural Electrification Pvt. Ltd. Nepal: Empowering Communities to Transition to Financially Viable Micro Hydro Satish Gautam, APEC-UNDP
14:45 – 15:35 (50 minutes)	<u>Moderated Panel Discussion:</u> Enterprise-based Approaches in S/SE Asia (Davos style moderated discussion – no slides) Above two speakers plus: Indonesia and Myanmar: Empowering Green Energy Entrepreneurs Sandra Winarsa, Hivos Pakistan: Mini-Hydro Public Utility Companies Meherban Khan, Aga Khan Rural Support Programme Philippines: Enterprise-based Micro Hydro for Social Impact – Hindsight Lessons Victoria Lopez, SIBAT
15:35 – 15:40 (5 minutes)	Key Takeaways and Preview of Next Panel Divyam Nagpal (Panel Moderator)
15:40 – 15:50 (10 minutes)	VISIONS Initiative for Decentralized Renewable Energy Carmen Dienst, VISIONS, Wuppertal Institute for Climate, Energy and Environment

Time	Topic and Speaker
15:50 – 16:10 (20 minutes)	20 minutes for coffee break, change speakers, and spotlight for innovations: <ul style="list-style-type: none"> - Ayu Abdullah Mini-Grid Game, EnAct Partners, Malaysia - Dan Frydman, Open Source ELC and Micro Hydro Toolkit, HPNET partners
16:10 – 17:25 (75 minutes)	<p>Panel 2: National Programs to Scale-up Enterprise-based Hydro Mini-Grids</p> <p>The panel will dive deeper into government and donor partnered programs and financing that can accelerate the replication of enterprise-based hydro mini-grids.</p>
16:10 – 16:20 (10 minutes)	<p>Intro: How Government and Donor can partner to scale Enterprise-based Mini-Grids? And intro to panelists Bikash Pandey, Winrock International (Panel Moderator)</p>
16:20 – 16:30 (10 minutes)	<p><u>Presentation (10 minutes):</u> Mindanao ADB-funded, Enterprise-based Micro Hydro</p> <p>Philippines: Grid-Interconnected, Enterprise-based Micro Hydro in Mindanao Ernesto "Butch" Silvano, National Electrification Association</p>
16:30 – 17:20 (50 minutes)	<p><u>Moderated Discussion:</u> Accelerating the Transition to Enterprise Hydro Mini-Grids</p> <p>(Davos style moderated discussion -- slides for reference only)</p> <p>Above speaker plus:</p> <p>Afghanistan and Pakistan: Pamir Energy, Pakistan Poverty Alleviation Fund Sherzad Ali Khan, Aga Khan Development Network (AKDN)</p> <p>Indonesia: Replicating Local Social Entrepreneurs and Enterprises Tri Mumpuni, People Centered Business and Economic Institute (IBEKA)</p> <p>Malaysia: Scaling Hydro Mini-Grids in Malaysia using the CREATE Center Senator Adrian Banie Lasimbang, Government of Malaysia</p> <p>Myanmar: Mainstreaming Self-financed Indigenous Hydro Mini-Grids U Aung Myint, Renewable Energy Association of Myanmar (REAM)</p>
17:20 – 17:25 (5 minutes)	<p>Key Takeaways Bikash Pandey, Winrock International (Panel Moderator)</p>
17:25 – 17:30	<p>Closing of Session Dipti Vaghela, Hydro Empowerment Network</p>

Speakers (alphabetically by first name)



SEN. ADRIAN BANIE LASIMBANG

In 2018, Adrian Banie Lasimbang became a senator for the national government of Malaysia, representing the state of Sabah. With extensive experience in participatory mapping, conducting community awareness workshops, enrichment planting, gravity water supply systems, and designing community-based micro-hydro systems, his work centers on improving the socio-economic conditions of rural indigenous communities in Sabah and Sarawak. He has been the Executive Director of TONIBUNG, a local NGO promoting localized renewable energy solutions, including CREATE Borneo, a village-based workshop and training facility, educating the next generation of indigenous engineers in renewable energy technologies. In 2004, Banie was awarded the Seacology Prize for Indigenous Conservationist of the year for protecting watershed areas and improving livelihoods in rural indigenous communities in Borneo. In both 2007 and 2008 he received the Outstanding Young Person Sabah (TOYPS) award for his work integrating natural resource management and rural indigenous communities. Adrian also runs Penampang Renewable Energy, a renewable energy consultancy company. He is a technical advisor for Indigenous Peoples Network of Malaysia (JOAS).



AUNG MYINT

U Aung Myint is the General Secretary of the the Renewable Energy Association of Myanmar (REAM), an NGO based in Yangon focused on technology, policy, and capacity building dissemination and strategy for decentralized renewable energy knowledge in Myanmar. REAM is a member of the National Energy Management Committee and Energy Development Committee. U Aung Myint was a teaching staff and research scholar/leader at Departments of Botany, Marine Biology and Marine Science at Mawlamyine University between 1972 and 1989. In 1995, he founded the Renewable Energy Association of Myanmar (REAM), a local environmental NGO which works to educate the public and increase awareness of environmental and renewable energy resources. REAM implements grassroots projects to fulfill basic community energy needs by networking with international, government, and local organizations for the development of Myanmar villages, while advocating for conservation and management of the surrounding natural resources. U Aung Myint was a member of Myanmar's National Energy Management Committee (2013-15) and is a member of the National Renewable Energy Committee on behalf of REAM established in February 2019, and a member of the National Science, Research and Innovation Council founded in March 2019. He also serves on the Ph.D. Supervision Board of the Marine Science Department of Mawlamyine University, the Central Committee of the Forest Resource Environment Development Association, and he is a lifetime member of the International Society of Mangrove Ecosystems (ISME).



AYU ABDULLAH

Ayu Abdullah is co-founder and Regional Director for Southeast Asia at Energy Action Partners, an international nonprofit organization that focuses on capacity building and community development through collaborative and sustainable energy access programs. Ayu has almost a decade of experience working as a researcher and practitioner in sustainable energy and community development. She was previously at the Masdar Institute of Science and Technology in Abu Dhabi working on energy access, energy transition, sustainable energy policy and sustainable development. She has Bachelor's and Master's degrees in Aerospace Engineering from Purdue University, and a Master's in Engineering Systems and Management from the Masdar Institute of Science and Technology.



BIKASH PANDEY

Bikash Pandey is Director of Clean Energy at Winrock International. Winrock's energy programs bring access to energy for the poor and increase clean electricity on the grid. Modern energy services are used to expand economic opportunity in rural areas and improve health care, education and living standards. Pandey's work experience encompasses 30 years in policy review, design and implementation of a range of clean/renewable energy projects in Africa, Latin America and Asia. A technical specialist in micro- and mini-hydropower systems, he has designed and implemented numerous community-based electrification, clean transportation projects, small-scale mini-grids, and home energy systems. He has extensive experience in developing small-scale renewable energy projects as activities under the Clean Development Mechanism. He also brings experience encouraging policy change within governments, bilateral and multilateral donors to support clean energy. He holds a master's in energy and resources from the University of California at Berkeley, and a bachelor's in electrical engineering from MIT.



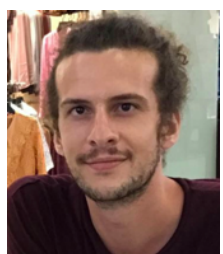
BIR BAHADUR GHALE

Bir Bahadur Ghale, the founder of Hydro Energy Concern Pvt. Ltd., has more than 25 years of experience in the micro/mini hydropower sector. He has also been awarded the Ashoka Fellowship (given to those who have excelled in Social Entrepreneurship). As a micro-hydro entrepreneur, he started his first Micro Hydropower (MHP) plant in Barpak (Gorkha) which generated 130kW of electricity. After his first project in Barpak, he started promoting awareness and social benefits of hydropower systems and so far, his contribution has electrified more than 4000 household. He also established the Hydro Energy Concern Pvt. Ltd. (HEC) in 1995 with an aim to contribute towards the private sector capacity in micro, mini and small hydropower projects. HEC believes that the economic and social development as well as the low environmental impact related to MHP represent the three inseparable pillars of sustainable development of Nepal, confirming that MHP can serve as an energy source for sustainable development.



CARMEN DIENST

Carmen Dienst is the head of research unit "International Energy Transitions" in the division "Future Energy and Industry Systems" at Wuppertal Institute for Climate, Environment and Energy. Carmen graduated from the University of Trier and holds a diploma in physical geography. She is also a Frankfurt School Certified Expert in Climate & Renewable Energy Finance and was McCloy Fellow in Environmental Policy of the American Council on Germany. Since its inception in 2004, Carmen coordinates the project "VISIONS initiative" (www.wisions.net), which is promoting sustainable energy solutions in developing regions and conducting research on sound implementation models. The initiative's approach is need-oriented and aims to empower local practitioners by supporting demonstration of sound solutions (to date >120 projects in 40 countries), ensuring S-S knowledge exchange and promoting regional practitioner networks, like HPNET or RedBioLAC. Next to the active supervision of energy projects, Carmen is especially interested in the meta-analysis and evaluation of most influencing factors as well as the analysis of impacts. She also focuses in her research work on the city level and develops, in close cooperation with regional stakeholders, sustainable pathways towards low carbon development.



DAN FRYDMAN

After working in the industrial embedded software and electronics sector for several years, Dan entered micro-hydropower technology development on an Engineers Without Borders-UK placement in late 2016 working with SIBAT in the Philippines and in Tonibung in Malaysia. He currently supports Green Empowerment, Tonibung, and the Hydro Empowerment Network, developing open-source digital technology and training resources to advance local practitioners in south and southeast Asia.



DIPTI VAGHELA

Dipti Vaghela is the co-founder and manager of the Hydro Empowerment Network (HPNET), a south-south knowledge exchange platform that advances policy, technology, and socio-environmental aspects of small-scale hydropower across ten countries since established in 2013. Dipti brings sixteen years of experience in developing decentralized renewable energy solutions for rural electrification in S/SE Asia, bridging communities, local entrepreneurs, field-based NGOs, policy makers, and funding agencies. After a product design career in Silicon Valley, she spent ten years with indigenous communities in rural India, mostly in Kalahandi, Odisha, establishing localized energy solutions. In 2013, supported by the Switzer Foundation Environmental Leadership Grant, Dipti served as International Rivers' energy solutions coordinator to promote policy solutions that support equitable energy development. In 2016 she was awarded a Fulbright Public Policy Fellowship, placed at the Renewable Energy Association of Myanmar (REAM). Based in Myanmar, she supports and learns from Myanmar's indigenous micro/mini hydropower, biomass energy, PV-irrigation practitioners. Dipti holds a Bachelor of Science in Mechanical Engineering from the University of California, Berkeley and a Master of Science in Environmental Studies from San Jose State University.



DIVYAM NAGPAL

Divyam is a renewable energy specialist with over 7 years of professional experience at the intergovernmental and national-level. He is currently working as an independent consultant with the MIT Energy Initiative, IRENA and Factor. He is also pursuing his Doctorate in Public Administration from the University College London researching policies to support local innovation systems for off-grid renewable energy solutions. Until recently, Divyam was an Associate Programme Officer with the International Renewable Energy Agency's (IRENA) Knowledge, Policy and Finance Centre in Abu Dhabi (UAE). Within the Policy Unit, he worked on a wide range of programmatic activities, including renewable energy policy assessment, off-grid renewables for energy access, socio-economic impacts of the energy transition, the water, energy and food nexus, and regional market analyses. He has co-authored over 15 major publications for IRENA. Prior to joining IRENA, Divyam worked in the United Kingdom and India focusing on techno-economic and financial assessments of large-scale and off-grid renewable energy projects, as well as on sector-level energy efficiency benchmarking. He is a mechanical engineer by training and has an MSc in Sustainable Energy Futures from Imperial College London.



ERNESTO O. SILVANO, JR.

Engr. Ernesto O. Silvano, Jr. is the Head of the Total Electrification and Renewable Energy Development Department (TEREDD) at the National Electrification Administration (NEA) of the Philippines which was recently created last 2013, following the new NEA Charter Reform Act of RA 10531, in line with the country's Renewable Energy Act of RA 9513. Butch, as fondly called, works in facilitating and overseeing the On and Off-grid electrification and the development of renewable energy-based power generation and energy efficiency programs of the 121 Electric Cooperatives in the Philippines by extending consultancy services on technical, financial as well as social and environmental concerns and strategizing to accelerate deployment and access of affordable, modern, and clean energy especially in the countryside. He has also been working closely with local and foreign energy companies, developers, institutions, agencies, academes, investors and NGOS in the country. On top of TEREDD, Butch still continues to assist the ECs in improving their Distribution Networks such as on Smart Grid, System Loss Reduction, Underground Cabling as part of a Resiliency Program, and Submarine Cabling for Island Interconnection. Butch is a Mechanical Engineer by profession, and holds as well a Masters in Management in Business Management (MMBM) degree both taken from Philippine universities.



MEHERBAN KHAN

Meherban Khan is working as Coordinator of Utility Companies (Hydro Power) Aga Khan Rural Support Program Pakistan. He is responsible to ensure coordination amongst government agencies in hydro power sector and community development program in Pakistan for integrated community driven development programmes with multiple themes including renewable energy, women enterprise, and community owned enterprises, local support program and communication. In addition to ensuring coordination within Community based Utility Companies, government counterparts and other partner organizations, he is managing six public limited Utility Companies with large component of energy development by encouraging community based micro and mini hydro projects into sustainable model of business operation. Meherban Khan is a development professional with an extensive involvement in community driven work in a number of participatory development organizations, civil society organizations, national and international development NGOs. He also worked with Shubinak community based enterprises as a business development advisor. With more than seventeen years of work experience, Meherban Khan has acquired advanced knowledge and skills of project and program planning, implementation, management and financial budgeting. He has a Masters in economic from University of Peshawar, and Masters in Finance from University of Peshawar Pakistan and Post graduate diploma in Project Management from Maastricht School of Management, Netherlands. As senior team member of AKRSP, he has developed new modality of community managed micro and mini hydro program in Pakistan. The new model of community managed renewable energy projects has introduced community owned local utility companies with special focus on productive end use of clean energy to improve the livelihoods of rural population in Northern Pakistan.



SANDRA WINARSA

Sandra Winarsa is Green Energy Program Development Manager for Hivos Southeast Asia. In the last 13 years, she has worked in several development sectors such as renewable energy, environmental education, youth social-green entrepreneurship and climate change. Since 2012, she has been responsible in leading Hivos' portfolio in sustainable energy and one of them is the multi-actors Iconic Island initiative. The initiative aims to provide the population of the medium-sized Indonesia island of Sumba with 100% renewable energy as a driving force of development focusing on decentralized solutions at remote villages. She is very passionate about inclusive community transformation and coalition building with like-minded actors in unlocking public-private investment to off-grid systems with business model in rural communities



SATISH GAUTAM

Satish Gautam is the National Programme Manager (NPM) of the UNDP Renewable Energy for Rural Livelihood (RERL) project under the umbrella of Alternative Energy Promotion Center (AEPC). He has more than 25 years of professional work experience in the off-grid and on-grid renewable energy sector of Nepal and the Asia-Pacific region. He has been a dedicated pioneer of micro and mini hydropower developer in Nepal, initiating bottom-up implementation approaches and scaling them with enabling policy. His focuses on a multi-actor approach, bringing together local, regional, and international actors to work toward common goals. His more recent contributions in Nepal's small-scale hydro sector attributed to the success of grid interconnection policy for mini-grids, transition to enterprise-based financing, and local level energy planning with municipalities. He holds a Masters in Renewable Energy from Oldenburg University Germany.



SHERZAD (ALI) KHAN

Sherzad Ali Khan is working as Coordinator of Aga Khan Development Network for Gilgit-Baltistan and Chitral (GBC). He is responsible to ensure coordination amongst AKDN agencies in Pakistan for integrated community driven development programmes with multiple themes including renewable energy, agriculture, employment generation, physical productive infrastructure and communication. In addition to ensuring coordination within AKDN agencies, government counterparts and other partner organizations, he is also managing GBC strategy with large component of energy development by encouraging community based micro and mini hydro projects with AKDN own resources and donor funds. Sherzad Ali Khan is a

development professional with an extensive involvement in community driven work in a number of participatory development organizations, civil society organizations, national and international development NGOs and United Nations agencies. He also worked with Aga Khan Rural Support Programme, an agency of AKDN and pioneer of community based micro hydro development in Pakistan, as head of renewable energy, community physical Infrastructure and monitoring and evaluation. With more than twelve years of work experience, Sherzad Ali Khan has acquired advanced knowledge and skills of project and program planning, implementation, management, monitoring, evaluation and research. He has done masters in development planning from University of Guelph, Canada and masters in economics from University of Peshawar Pakistan. As senior team member of AKRSP and Aga Khan Foundation, he has developed the new modality of community managed micro and mini hydro program in Pakistan. The new model of community managed renewable energy projects has introduced community owned local utility companies with special focus on productive end use of clean energy to improve the livelihoods of rural population in Northern Pakistan. Sherzad Ali Khan is member of board of advisors of the Hydro Empowerment Network (HPNET).



TRI MUMPUNI

Tri Mumpuni is an agricultural engineer who has been campaigning for community development and renewable energy for decades. Her early experiences working with USAID and UNDP helped her develop a clear understanding of how to create community-based models. “Ibu Puni” (as she is often called in Indonesia) then contributed her expertise and experiences to transform IBEKA/People Centered Business and Economic Institute (an organization founded then by her husband-to-be, Iskandar B. Kuntoadji, a leading activist in the micro hydro power movement) into what it is today. Since then, IBEKA has developed more than 70 small-scale hydropower plants throughout Indonesia which are mostly owned and managed by the community. These power plants are used as a means to generate local economic growth, improve livelihoods and enhance sense of community in rural areas, as well as provide a more immediate context for forest preservation in catchment areas. Ibu Puni is a regular speaker at national and international forums on renewable energy and community-based development, as well as guest lecturer to different universities in the US (Auburn, Ohio University, Cornell, MIT, Princeton, Colorado School of Mine, UPen) and Japan (Kwensi Gakuin University, Nagoya University, Tokyo University). In 2011 she was one of six recipients of the 2011 Ramon Magsaysay Award, which honors Asians committed to public service and is often referred to as the Asian Nobel. She is also recognized by Ashoka (an International association of leading social entrepreneurs), as an ‘Ashoka Fellow’.



VICTORIA LOPEZ

Victoria Lopez is the Executive Director of Sibol ng Agham at Teknolohiya (SIBAT), Inc., a Philippines non-profit organization which founded and developed the Community-based Renewable Energy System (CBRES) approach about 25 years ago, focusing on small-scale hydropower, solar PV, and wind. Ms. Lopez had led in building CBRES as a strategy to deliver sustainable energy access to rural communities -- through grassroots work, technology and policy development. She graduated MS Physics and was a faculty member at the University of the Philippines.