International Centre for Hydropower

30 years

# ANNUAL REPORT 2024

# Contents

# Note from the Chairman

**Kjell Repp**
Chairman of the ICH Board of Directors

In 2024, the International Centre for Hydropower (ICH) celebrates its 30th anniversary. Over the past three decades, the industry, the world, and ICH itself have undergone significant changes.

Founded in 1994, ICH emerged during a period of growing global resistance to hydropower development. The original idea and vision was to promote clean renewable energy by showcasing Norway's latest technologies, enabling sound technical decisions, particularly in developing countries. The mission focused on developing the technical skills necessary to build and operate sustainable hydropower stations.

The completion of the World Commission on Dams (WCD) report in 2000 represented a pivotal moment in the longstanding debate regarding the social and environmental consequences of dam construction that led us into the 2000s. This sparked a much deeper understanding of nature, how our actions affect our biosphere, climate and water resources. It was clear that the impacts went beyond the environment. ICH saw the need for a more diversified course portfolio, where gender equality, sustainable development, pollution, climate change, and sound financing were all included.

The  frequency of courses has increased, with 25 delivered in the past year, covering all continents, and an ever-increasing range of relevant topics. As the industry diversified so has ICH. Within the pages of this report, our progression to a more holistic focus, from Norway to all parts of the world with regions now leading by example. This reflects the increasing global demand for expertise in hydropower and clean energy, as well as ICH's commitment to promoting sustainable energy practices worldwide.

Energy transition has become a more relevant topic, which hopefully when fully implemented will contribute to improved access to clean energy, generate local employment and preserve natural resources vital to people and our combined cultural heritage.

It is hoped that the just energy transition will contribute to mitigating the rate of climate change. All these topics were integral to our course portfolio in 2024, and as the industry continues to evolve, so too will our legacy.

> The sharing of knowledge through collaboration is a core value of ICH.

# Note from the Chief Executive

**Line Amlund Hagen**
Managing Director, ICH

Heading into our anniversary celebrations, it's an opportunity to reflect on our achievements of the past thirty years. This year's annual report is a special edition. It includes the history of ICH, from its creation, through three decades up until today. This report also includes a roundup of last year's activities culminating in a long-awaited return of the Norway Technical Tour, welcoming participants from around the world. Seeing the enthusiasm and eagerness to learn made us realise how much we had missed the Norway courses and the benefit of sharing of experiences across the different regions we work in.

During these difficult times, when the validity of inclusion and gender initiatives are questioned, its ever more important to recognize their importance and the impact that placing them as central to the ICH mission has had.

The hydropower and renewable energy sectors have traditionally been male dominated professions. When ICH started, our courses were predominantly focused on subjects like planning, engineering and the operation of hydropower plants. When reviewing the photos of the early days of ICH, two things are immediately striking – the participants and the lecturers are almost all men, and young people were under-represented.

Fast forward to todays group photos where we are proud to say we see women and we see young people from all over the world. This did not happen by chance. It is proven that a diverse workforce is more robust, resilient and productive. There is no reason that half of the potential workforce should be left out. A workforce that reflects the community they serve also reduces supply chain risks, improves energy security and ensures local value creation for producers.

Over time, ICH's view has become ever more global, our mission aligns with the Sustainable Development Goal (SDG7) which is to ensure access to affordable, reliable, sustainable and modern energy for all. Energy can bring substantial livelihood opportunities for low-income households, reducing inequality and vulnerability. This is particularly the case for women where access to a reliable energy supply can reduce drudgery and time spent on domestic tasks.

As part of our contract with Norad, ICH was subject to a mid-term evaluation in 2024. We were not but a little proud of the conclusions the external evaluators came to:

*"ICH remains very successful in the implementation of relevant training programmes and is found to operate with a high degree of motivation and passion towards the subject of sustainable use of hydropower for enhanced economic and social well-being in the countries of operation."*

ICH is proud of the results we have seen from our thirty years of operation and look forward to the next chapter!

> Energy connects us, ICH keeps us together.

# The **Board**

## DIRECTORS

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Chairman

**Hege Hisdal**
Deputy Chairman – Norwegian Energy and Water Resources Administration (NVE)

**Stephen Sparkes**
Statkraft

**Bjarne Børresen**
Multiconsult AS

**Leif Lia**
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**Eivind Heløe**
Fornybar Norge

**Gunn Vik**
NORWEP

**Halvor Haugsvold**
Norconsult

Four board meetings were held in 2024.

The Board was engaged in the mid-term evaluation of ICH during the spring of 2024. The Board members had separate meetings with the evaluators. A strategy meeting based on the conclusions from the evaluation was held in August.

ICH has been liaising with Norad and the Norwegian Water Resources and Energy Authority in the development of the "Energy for Development" program.

Furthermore, the increase in applications for membership continued in 2024.

The Annual Meeting was held on the 30th of April 2024. The hybrid solution for the annual meeting continues to work well.

## The ICH election committee:

Jan Øivind Johansen, OED - Chair
Vegard Willumsen, Multiconsult
Odd Ystgaard, Norconsult

# The **Secretariat**

**Tom Solberg**
Project Director

**Carole Rosenlund**
Head of Africa

**Line Amlund Hagen**
Managing Director

**Laura Bull**
Head of Studies and Latin America

**Monde Lisulo Hamududu**
Project Manager

> Diversity is the energy that moves us.

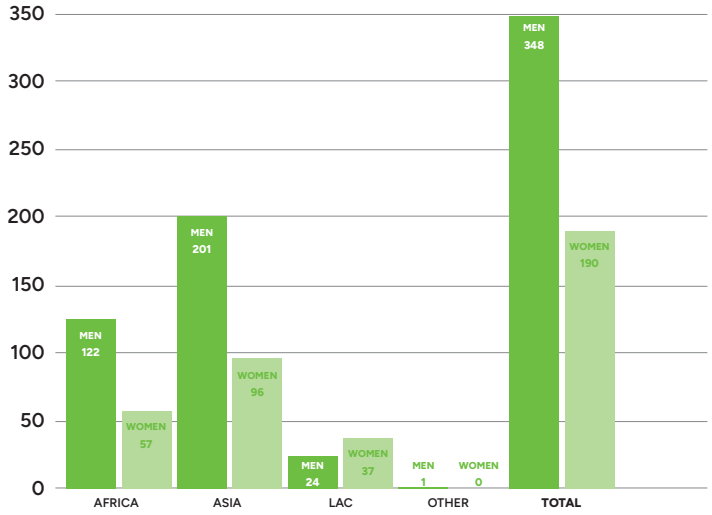
# ICH **Mission**

- To develop and implement training and capacity-building activities in renewable energy with an emphasis on hydropower.
- To collaborate with key Norwegian partners for effective implementation of the government's commitment to clean energy development; and to strengthen networks between the public and private sectors to mutually benefit members and the implementation of ICH activities.
- To contribute to institution building and improved management through the dissemination of knowledge on hydropower and other renewable energy sources.
- To provide services to Norwegian and foreign partners of high international quality in courses and conferences that are in line with current guidelines for Norwegian development assistance activities.

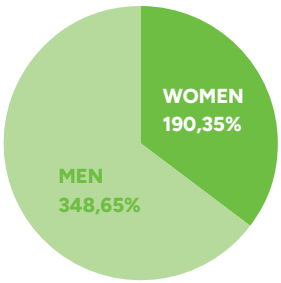
# This Years **in Numbers**

| 2024 | MEN | WOMEN | TOTAL |
|---|---|---|---|
| Geological Challenges in Hydropower Design | 15 | 11 | 26 |
| Pumped Storage Hydropower | 9 | 4 | 13 |
| Advanced Revenue Protection II | 20 | 4 | 24 |
| Advancing Environmental and Social Governance, Module II - Nepal | 11 | 11 | 22 |
| Contracts and Dispute Management | 15 | 12 | 27 |
| Dam Safety Management for Africa "Ensuring Resilience and Sustainability" | 29 | 4 | 33 |
| Energy Security and Energy Transition Asia edition | 17 | 10 | 27 |
| Financial Modelling, PPA Structuring, Negotiations, and Project Management for the African RE Sector | 7 | 7 | 14 |
| Gender and Inclusion Foundation Course - Asia | 8 | 23 | 31 |
| Risk Assessment for Renewable Energy Projects - LAC | 10 | 11 | 21 |
| Hydropower Challenges and Financial Risk - IPPAN | 20 | 3 | 23 |
| Hydropower Development | 18 | 14 | 32 |
| Gender and Inclusion Foundation Course - LAC | 2 | 17 | 19 |
| Modeling the Integration of Hydropower into Modern Energy Systems for Africa | 10 | 13 | 23 |
| Regional Power Trade Program - Africa | 31 | 5 | 36 |
| Reliability Centered Maintenance and Root Cause Analysis - UEGCL | 20 | 3 | 23 |
| Reservoir Sediment Management for Sustainable Hydropower in Africa | 13 | 7 | 20 |
| Sediment Management in Reservoir and Peaking Reservoir Hydropower Projects | 21 | 0 | 21 |
| Social Impact Assessment and Resettlement Management in Renewable Energy Projects | 8 | 18 | 26 |
| Technical Tour - Norway | 17 | 4 | 21 |
| Energy Security and Transition - LAC | 5 | 7 | 12 |
| Turbine Testing Lab - Operation and Maintenance of Hydropower Plants | 43 | 1 | 44 |
| **Grand Total** | **349** | **189** | **538** |

| | | | |
|---|---|---|---|
| Energy Policy | 57 | 19 | |
| Energy Policy / Project Management | 5 | 7 | |
| Environment and Social | 18 | 58 | |
| Environment and Social / Operations and Maintenance | 17 | 4 | |
| Operations and Maintenance | 146 | 19 | |
| Project Management | 106 | 82 | |
| **Grand Total** | **349** | **189** | |




ICH delivered **22 courses** in 2024,
reaching **538 participants**.
35 % were women and participants were
from 33 different countries.



# Note from Head of Studies

**Laura C. Bull**
Head of Studies, ICH

## Beyond Knowledge

Acquiring technical knowledge is only part of the journey toward developing sustainable hydropower. At ICH, we aim to leverage our extensive networks to foster a profound understanding within each country's unique context and ignite the momentum for transformative change. Developing the will to drive change necessitates collaboration, long-term strategic planning, and persistent efforts to align interests, influence key stakeholders, and cultivate a shared commitment to action.

One of the first steps is to foster awareness and comprehension. Throughout 2024, we provided convincing evidence using clear and credible data, narratives, and case studies as part of our executive report methodology. This effectively showcases and identifies the urgency and advantages of taking action together and articulating the strategies needed to move forward with ESG.

In 2024, the progression of the ESG regional training series allowed us to bring together policymakers, community leaders, renewable energy practitioners, and sustainability leaders and pioneers to collaboratively enhance the competence of executive reports, empowering stakeholders to present data and communicate effectively.

Success stories, peer learning, and real-world examples serve as impactful tools for fostering change. Demonstrating successful implementations can enhance confidence in the practicality and benefits of proposed changes. Customizing these examples to fit local contexts ensures they resonate with decision-makers and stakeholders.

Engaging effectively with communities and local leaders was pivotal throughout our 2024 efforts. Recognizing and cultivating champions – leaders prepared to advocate for change – can significantly advance the agenda. Offering straightforward, actionable policy solutions instead of vague ideas makes it easier for leaders to commit to implementation. It's essential to address the challenges of climate change while also embracing the opportunities provided by sustainable practices. These interconnected elements should be approached holistically and seamlessly integrated into both project design and execution, informing every stage from problem identification to economic impact assessment. Advocacy initiatives must progress, adjusting strategies as needed and transforming setbacks into opportunities for growth. The in-person Advancing ESG Modules II in  Asia and Latin America have cultivated strong partnerships, networks, and diverse stakeholders to encourage collaboration, align interests, and sustain ongoing momentum. This approach generates the will necessary for meaningful and lasting change.

While consistency in key roles is crucial, it does not diminish the significance of governance elements that extend beyond the project's duration. This underscores the necessity of continuous education, which fosters personal and professional development and enables individuals to contribute to enduring growth and innovation.

ICH is dedicated to building the competence of professionals in regions worldwide that are ready to drive global progress. We are excited to connect with more professionals on our journey to 2030 through our programs in Norway and other regions around the globe.

> ICH empowers leaders and communities to champion change, fostering a future where every voice contributes to a resilient and inclusive energy landscape

# NORWAY

The long-awaited return to in-person in training in Norway finally materialised with the arrival of 24 participants from Africa, Asia and LAC for an ICH Technical Tour in Lillehammer from 30th of August to 11th of September.

This course examined sustainable practices in Norway's hydropower sector, focusing on efficient water management, market dynamics, and innovation.

Participants addressed challenges related to climate change resilience and sought clarity in policy to promote long-term hydroelectric project sustainability. The program included site visits to hydroelectric facilities, detailed technical discussion and knowledge sharing. The participants also met with senior plant operators, engineers, and water management associations and state utility representatives in Oslo.

## E-Learning

When ICH was formed, it was the birth of the internet, fast forward thirty years and now participants from all over the world have been taking the new ICH online learning program **"Sustainability, the business case for the hydropower sector"**.

The success of the online courses that were designed and delivered during the COVID-19 pandemic, solidified the belief that there was a place for online learning. The E learning course was specifically designed to update knowledge and highlight the potential of hydropower as an essential part of the renewable energy mix.

The course includes five modules looking at all five capitals of sustainablity. Financial, Social, Human, Environmental and Physical. These are now a pre-requisite for all participants joining ICH training events. So far 126 students have already completed the course as a preparation for the on-site courses they were enlisted in. These has extended the reach of ICH's training further than the original founders could ever have envisaged.

| Project name | Venue | Dates in 2024 |
|---|---|---|
| Technical Tour | Norway | 30/8 – 11/9 |

# AFRICA

In 2024, ICH delivered a transformative series of capacity-building initiatives, addressing critical gaps in Africa's rapidly evolving energy landscape. Amidst an urgent need for electricity access and a continental shift toward cleaner energy sources, seven tailored programs targeted the fundamental challenges of financial viability, social sustainability, infrastructure resilience, system integration, and regional market development.

The year began with an integrated training in **Financial Modeling, PPA Structuring, Negotiations Project Management for the African RE Sector**. In a region where bankable project structures and effective risk allocation often stymie renewable energy development, this program equipped participants with essential skills to enhance project economics and strengthen contractual frameworks, vital for overcoming these challenges across the continent's energy landscape.

Ghana served as the host for two complementary programs, each addressing distinct yet interconnected aspects of sustainable energy development. The **Dam Safety Management for Africa *'Ensuring Resilience and Sustainability'*** addressed one of Africa's most pressing infrastructure challenges at a pivotal moment. With many large dams across the continent constructed in the 1960s - 1980s and now reaching critical ages, this comprehensive program addressed pressures from climate change, population growth, and aging facilities. This equipped participants with practical skills in emergency preparedness, stakeholder communication, and data-driven decision-making through site visits to the Akosombo and Kpong dams.

Concurrently, a parallel program in Akuse examined **Social Impact Assessment and Resettlement Management in Renewable Energy Projects**, providing participants with a unique living laboratory exposure to one of Africa's significant hydropower developments and its long-established resettlement communities. This combination of technical and social dimensions fostered a balanced understanding of project sustainability, while also building a cross-continental network of practitioners prepared to navigate the complex human and environmental dimensions shaping Africa's renewable energy sector.

Focus turned to Malawi, where the **Reservoir Sediment Management for Sustainable Hydropower in Africa** program addressed the critical challenges of sedimentation, threatening the long-term energy stability of Africa's hydropower. Participants engaged in hands-on learning at EGENCO facilities, acquiring skills in sediment monitoring, modelling, and management, which are vital for maintaining the efficiency and operability of hydropower systems.

A new pilot course on **Modeling the Integration of Hydropower into Modern Energy Systems for Africa** was launched, in collaboration with Open Energy Transition and Innovate for Impact. This training addressed the technical challenges of incorporating Africa's hydropower into modern energy systems through practical exercises in uncertainty modelling and Monte Carlo simulations. Participants developed valuable skills using PyPSA, an open-source platform, to model energy systems that balance hydropower with other renewables, effectively tackling regional challenges such as resource variability and infrastructure limitations.

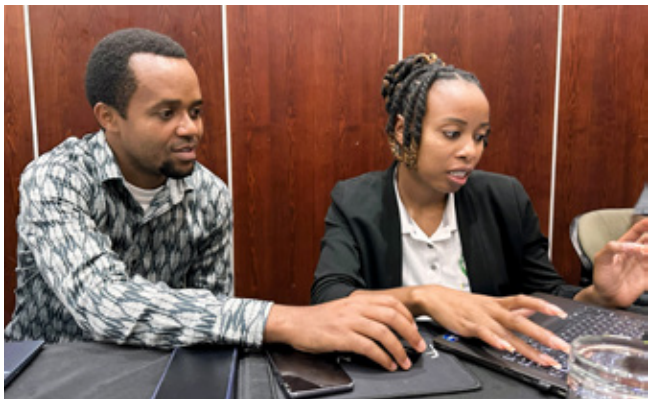
Uganda's Karuma hydropower training centre served as the venue for a flagship specialized training on **Reliability Centered Maintenance and Root Cause Analysis for Hydropower Facilities**. This program was timely, following the commissioning of the 600 MW facility, and targeted at enhancing the capabilities of UEGCL's technical personnel in systematic methodologies to optimize maintenance resources, maximize plant availability, and investigate failures effectively.

The academic year concluded with a collaborative program developed together with the Southern African Power Pool and Bredesen Consulting on **Regional Power Trade Program *Navigating Power Market Evolution in Southern Africa***. This timely initiative addressed the complex challenge of harmonizing divergent national electricity market reforms with the imperative for greater regional integration.

Participants from SAPP and EAPP member countries, engaged in substantive discussions on market evolution trends and implementation challenges, reflecting a growing recognition that Africa's regional power pools must increase coordination to optimize continental resources.

Across all seven training programs, ICH successfully addressed critical capacity gaps, with significant knowledge improvements and high participant satisfaction rates. The strategic synergies with key partners and the inclusion of practical case studies enhanced the relevance of each program, creating dynamic learning environments that extended the regional knowledge networks far beyond the formal training periods. Gender inclusion remained a priority throughout, with female participation averaging 32%, which has significantly contributed to the inclusive nature of Africa's energy advancement.

As ICH looks to the future, it is well-positioned to continue integrating emerging technologies, deepening regional partnerships, and expanding its reach to new countries and stakeholder groups. Through these strategic interventions, ICH has made a meaningful contribution to the continent's sustainable energy future, fostering resilient infrastructure, inclusive development, and regional integration that will power Africa's growth for generations to come.



| Project name | Venue | Dates in 2024 |
|---|---|---|
| Financial Modeling, PPA Structuring, Negotiations Project Management for the African RE Sector | South Africa | 5-9 Feb |
| Dam Safety Management for Africa - Ensuring Resilience and Sustainability | Ghana | 6-10 May |
| Social Impact Assessment and Resettlement Management in Renewable Energy Projects | Ghana | 6-10 May |
| Reservoir Sediment Management for Sustainable Hydropower in Africa | Malawi | 22-27 July |
| Modeling the Integration of Hydropower into Modern Energy Systems for Africa | Kenya | 19-23 August |
| Reliability Centered Maintenance and Root Cause Analysis for Hydropower Facilities | Uganda | 14-18 October |
| Regional Power Trade Program – Navigating Power Market Evolution in Southern Africa | South Africa | 2-6 December |

# ASIA

ICH stands out as a pioneer in sustainable energy practices in Nepal, merging the technical and financial with Environmental, Social, and Governance (ESG) principles. It acknowledges the complex socio-environmental impacts of renewable energy projects throughout their lifecycle.

As part of the Energy for Development Programme, Nepal greatly benefits from ICH's vibrant network. This network enriches students' learning experiences and offers diverse perspectives, leading to a deeper understanding of global issues. Maintaining and nurturing these networks is crucial for the ongoing success of our collaborative initiatives. We appreciate the support of all stakeholders involved in this effort.

By equipping professionals and community leaders with innovative techniques and methodologies, ICH promotes participatory and inclusive management of impacts, conflicts, and risks, ensuring projects are feasible and sustainable. This dedication to understanding and respecting local dynamics and a commitment to comprehensive governance is fundamental to ICH's role in facilitating Nepal's transition to renewable energy. This transition is supported by sound ESG practices and access to sustainable financing, which reassures stakeholders of our commitment and instils confidence in the approach.

The Turbine Testing Lab (TTL) of Kathmandu University was inaugurated in 2011 after support through Norad and NTNU, amongst others. ICH have supported TTL yearly with short training programs since 2018, based on already having resource persons in the country for other training programs and thus saving on travel costs, or based on online lectures which was necessary during the pandemic. On the 19th of March, the one-day program with **Turbine Testing Lab - Nepal** was arranged with the help of NTNU and covered the Condition Monitoring of Turbines, with a special focus on managing sand erosion.

ICH was approached by the Indonesian embassy in Oslo with a request for training programs in West Sumatra in 2020, in cooperation with the Ministry of Energy and Mineral Resources, Bung Hatta University and Tamaris Hydro. The first training in West Sumatra was held in 2021 on Waterways Management, and as the pandemic still made travelling a challenge this was conducted online. The onsite programs were held in 2023 on O&M, and in May 2024 an on-site course was held on **Hydropower Development**. This series was designed to be a basic stepping stone giving an overview of the sector. West Sumatra has many potential project sites, so was a rich environment for learning.

With women historically underrepresented in the energy sector, their unique perspectives are essential for a successful transition. Embracing diversity and inclusive practices strengthens the workforce and fosters a more resilient and sustainable energy future. The Foundational course **Gender and Inclusion** was held in Kathmandu, Nepal between the 28th and 31st of

May. This was held in collaboration with IFC and drew on their initiative Powered by Women' which worked with 19 hydropower companies to reduce gender gaps by adopting inclusive policies and anti-harassment measures and promoting female recruitment in non-traditional roles. This training features experienced practitioners who are now leading by example and were an asset to the training.

The **Hydropower Challenges and Financial Risk** program was held in Dhulikhel, Nepal in cooperation with IPPAN and USAID between the 26th to 30th of May. This programme developed the ability to identify, qualify, evaluate and design measures to monitor and manage the different risks on a strategic level, thereby enabling the capacity to implement methodologies in their own context. The planning process of a project, with emphasis on the economic and financial considerations and risk analyses was elaborated, as well as the various insurance options that may be implemented to manage these risks. A one-day mini-version of this program was delivered to the management and senior level of Nepal Electricity Authority.

In 2022 an introductory program on Revenue Protection was delivered in cooperation with Electricité du Cambodge (EDC) and the Ministry of Mines and Energy. The follow-up **Advanced Revenue Protection II** was delivered between the 3rd and 7th of June. This was at the request of EDC as this key topic is essential in taking advantage of the latest technology and techniques in protecting revenue streams.

Cambodia was also the setting for a workshop between the 16th to 20th of September. **Pumped Storage Hydropower projects** are becoming very important in the region, and Cambodia is keen not to fall behind its neighbouring countries in developing its PSH potential. This training program is a first step in building competence in a field that is set to expand around the globe in the near future. It is especially important in combination with Wind and/or Solar/floating Solar.

The Philippines is well placed to make a significant contribution to the sustainable energy transition in the Asia-Pacific region and was the host **for Energy Security and Energy Transition**,

held in Baguio between the 22nd to 25th of October. Collaboration with key partners, such as the IFC Asia Pacific, ICH members, SN Aboitiz (Philippines), and other significant renewable energy companies across Asia, enhances the sharing of knowledge and expertise. This joint effort makes high-quality expertise from ICH member companies more accessible and affordable, thus increasing program effectiveness.

The Philippines has abundant renewable energy resources, including solar, wind, geothermal, and hydropower, can be harnessed for clean energy generation. There is strong government support and policies to promote renewable energy investments and technology development. By leveraging these strengths and actively participating in regional initiatives, the Philippines serves as a beacon in advancing the transition towards modern, sustainable, low-carbon, and environmentally friendly renewable energy systems in the Asia-Pacific region. Participants from Indonesia, Nepal and Bhutan joined their Philippine counterparts to examine the role of global and regional context in the just energy transition and examined challenges and opportunities.

A three-day course on the **Advancing implementation in renewable energy projects with a focus on Social Risk Assessment** in Kathmandu Nepal- Sustainable Finance Mechanisms and Compliance ESG Module II ICH. This was run in partnership with IFC and USAID (URJA Nepal). This was specifically designed to follow on from a foundation course and Focusing on Social Impact Assessment, day one focus on legislative frameworks that exists in Nepal, gaps between international best practice, some of the challenges and achievements. There followed a session on the water / energy nexus, linking climate change, risk and using the five capitals approach, a practical exercise where participants explored the risks and opportunities of renewable energy projects. This linked to the e-learning that all participants had engaged in prior to the course.

In Nepal in 1998, Hydro Lab Private Limited (Hydro Lab) was established. Financial support for basic infrastructure development was provided by NORAD and technical and scientific support was provided by the Norwegian University of Science and Technology (NTNU). ICH coordinated this programme on behalf of NORAD and has since been delivering technical training programs in cooperation with Hydro Lab. In 2024, a program on **Sediment management in reservoir and peaking reservoir hydropower projects** was delivered to participants from the Himalayan region. The training was concerned with the sediment transport and sediment hazards in Himalayan Rivers and focused on sediment measurement and analyses and the sharing of experience gained from the existing hydropower

projects located in sediment laden rivers. The program included a field visit to the Kulekhani Reservoir operated by Nepal Electricity Authority (NEA)

In Bhutan two programs were also delivered in 2024, including one that had been postponed from 2023 due to operational reasons. Both topics for training were strongly requested by Druk Green Power Corporation and the Department of Energy within the Ministry of Energy and Natural Hydropower Resources, based on recent challenges in the development of Hydropower projects in the country. The first of these, **Geological Challenges in Hydropower Design**, addressed the important issues needed to be considered in projects in the unstable geology of the Himalayas. The second course, **Contract Dispute Resolution**, which was postponed from 2023, was based on Bhutan having experienced several problems related to cooperation on joint ventures with external Private/ Public companies and wanted a legal and practical discussion on how best to manage contracts and contract related disputes.

| Project name | Venue | Dates in 2024 |
|---|---|---|
| Turbine Testing Lab | Nepal | 19 March |
| Hydropower Development | Indonesia | 6-10 May |
| Gender and Inclusion | Nepal | 28 – 31 May |
| Hydropower Challenges and Financial Risk - IPPAN | Nepal | 26-30 May |
| Advanced Revenue Protection II | Cambodia | 3-7 June |
| Pumped Storage Hydropower | Cambodia | 16-20 September |
| Geological Challenges in Hydropower Design | Bhutan | 9-12 September |
| Energy Security and Energy Transition Asia edition | Philippines | 22-25 October |
| Environmental and Social Governance III | Nepal | 28 October – 1 November |
| Sediment management in reservoir and peaking reservoir hydropower projects | Nepal | 21-25 October |
| Contract Dispute Resolution | Bhutan | 28 Oct – 1 Nov |

# LATIN AMERICA AND THE CARIBBEAN

Twenty-eight participants took part in a foundational **Gender and Inclusion** course between the 19th to 22nd of March. Unique to LAC, eight of the participants were community leaders from different regions of Colombia representing those that have been impacted by electricity development in their territories. The remainder were from electricity companies of Colombia, Honduras, El Salvador, Costa Rica, Colombia, and Ecuador, regulatory entities and consultants who exercise leadership functions in constructing cultural transformation processes and creating new leadership.

All participants engaged in a range of activities, mixing theory with practice and working through high-impact tools for gender inclusion and management at different corporate and business planning levels. Providing space to develop an executive report as part of the course is an excellent instrument for materializing and incorporating a diversity, equity, and inclusion approach in local economic and business development initiatives.

The second course in the energy transition series was held in Manus, Brazil on the 9th and 10th of June. Energy Security and **Energy Transition in LAC II** was held in tandem with **IDB invest's Sustainability week 2024**. Eleven participants from ten different countries gathered establishing alliances with the Inter-American Development Bank (IDB Invest and IDB), electricity generation companies, non-governmental organizations, and state institutions involved in electricity development.

The keynote presentations highlighted the interconnection between the need for energy transition and several key Sustainable Development Goals (SDGs). Specifically, the link to SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), SDG 13 (Climate Action), and SDG 17 (Partnerships for the Goals) was emphasized. These goals are crucial in enhancing electricity generation, creating employment opportunities, promoting sustainable production, managing water resources effectively, reducing


**IDB Invest Sustainability Week 2024 Brazil.**

poverty, and lowering greenhouse gas emissions. The course showcased how integrated efforts towards these SDGs can lead to comprehensive and sustainable development across various sectors.

**Sustainable and Finance Mechanisms Advancing ESG - Social and Environmental risks** was a very well attended course in **Colombia**. There were 28 participants who gained high-impact tools to pinpoint, evaluate, and capitalize on ESG risks and opportunities. The course, uniquely enriched by Colombian case studies, provides a balanced blend of theory and practice. These case studies, provided by community leaders and speakers, offer a unique learning experience that enhances the practical application of the course content.

The provision of tools for creating the executive report continues to be a much-valued instrument for summarising key concepts and incorporating a focus on risks and impacts in business management or within the work of rural organizations. The course reached a high point with the participation of the representative of **the Royal Norwegian Embassy** in Colombia and the presence of **leaders of rural communities** from different sectors of Colombia. Their involvement added significant achivement to the event.




| Project name | Venue | Dates in 2024 |
|---|---|---|
| Gender and Inclusion | Colombia | 19-22 Mar |
| Energy Security and Energy Transition LAC | Brazil | 9-10 June |
| Sustainable and Finance Mechanisms Advancing ESG - Social and Environmental Risks | Colombia | 27-29 November |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Training course on:
Operation and Maintenance of Small-Scale Hydro Power Plants
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The centre of excellence
in learning


Hydropower Development












# INTERNATIONAL CENTRE FOR HYDROPOWER – PURPOSE AND DEVELOPMENT

The International Centre for Hydropower (ICH) was established in Trondheim in 1994 with the following mission objective (copied from the Statutes):

**"The International Centre for Hydropower (ICH) is a non-profit association whose objective is to act as a joint international forum for industry and institutions in the field of hydropower and related areas. The centre supports the hydropower industry by gathering, developing and marketing knowhow on environmental, technological, economic and administrative aspects of hydropower".**

The impetus for the establishment of ICH came from increasing difficulty in recruiting competent civil engineers to work in the growing hydropower industry in the early 1990s. The lack of recruitment came because of a sharp decline in new Norwegian hydropower development which was mirrored by a reduction in places on study programmes in Norway for hydropower engineers.

The concern was that this reduction could make it difficult for the future safe operation and maintenance of existing hydropower plants. It was also recognised that it could potentially inhibit expansion of the industry and make international investment difficult. This became a widespread concern, and the cause was taken up by Professor Dagfinn Lysne at the Department of Water Engineering at NTNU. He received considerable support from colleagues in academia, as well as from professional hydropower developers and government officials.

During an ad hoc meeting at the International Hydropower Conference at Lillehammer in June 1992 a working group consisting of representatives from the Norwegian Export Council, the Norwegian Industri og Næringsdepartement, the Norwegian Water Resources and Energy Administration, NTNU, Norske Vassdragsregulanters Forening, and Nordconsult International was established.

The following year the working group continued to develop and formalise the scope of works for the formation of an 'International Centre for Hydropower'. The group also considered the organizational set up and began to explore possible financing. In early 1994 the working group invited a diverse group of Norwegian institutions to a proposal presentation. Norad and the Norwegian Ministry of Foreign Affairs were amongst the attendees. This was enthusiastically received, and the working group was asked to continue their work towards the Foundation meeting in the autumn of 1994.

At the inaugural meeting it was agreed that the centre was to function as a common channel out of Norway for all Norwegian players in the hydropower sector. Through his professional network abroad, Dagfinn Lysne had long been keen to be able to export Norwegian hydropower expertise internationally. There were many advantages; among other things, ICH would be able to contribute to maintaining Norwegian hydropower expertise, it would contribute to capacity building in the developing world, and there would be increased opportunities for networking. Norad saw the advantages of a strong ICH, which could contribute to a competence boost with better conditions for the individual country to use its own resources to a greater extent in the planning, development and operation of national hydropower resources. Over time, the reliance on external expertise is reduced; Expertise is established in public agencies and its own hydropower sector that can relate to foreign experts in project contexts at an equal level, and it provides a better basis for planning and implementing national water resource management based on what best serves the individual country.

From the start, ICH consisted of 12 Norwegian members who paid a membership fee to ensure a "basic grant" for the start-up of the centre, while being dependent on strong government support from Norad for continued operation. After the appointment of a general manager and a director of studies, in the first years only a few annual courses were arranged in Norway, mainly in connection with NTNU in Trondheim, where it was easy to bring in professionals as lecturers, who were also largely recruited from the other members, and where it was possible to visit a number of projects and hydropower installations within reasonable geographical proximity. This also had a positive effect on the sale of Norwegian hydropower expertise internationally by bringing future decision-makers to Norway and demonstrating our advantages and what we could do.

However, in the early 2000s, it became desirable to increase

South-South cooperation in the international development industry; something ICH continues to use as a basis for its current activities.

ICH began to increase its activities with workshops in Nepal and Zambia, and in Tanzania with the Hydro Africa conference was held in 2003, followed by a small-scale power seminar in Sri Lanka in 2007. Since then, the course activities in Asia, Africa, and Latin America and the Caribbean have increased sharply, and regular links have been established with e.g. Kafue Gorge Regional Training Centre in Zambia and Hydrolab in Nepal, where courses are regularly held.

The impact of training was beginning to be evident in these countries. Alumni of ICH were being promoted into senior positions in academic institutions and within national utility companies. The participants began to act as resource persons for upcoming courses and the networks continued to be strengthened so the courses were able to be run in the regions and be more responsive to the context and the political economy

# THIRTY YEARS OF BUILDING CAPACITY FOR **AFRICA'S RENEWABLE ENERGY FUTURE**

For thirty years, ICH has stood at the forefront of capacity building in Africa's renewable energy sector. Since its inception in 1995, ICH has responded to the continent's evolving energy needs through targeted training interventions that have equipped African energy practitioners with the skills needed to harness the continent's vast renewable resources, particularly its hydropower potential.

Africa possesses significant hydropower potential yet historically has developed only a fraction of this capacity compared to other regions. The continent's hydropower journey has unfolded across distinct phases that mirror broader economic and political developments throughout the region.

In the mid-1990s when ICH was established, many African countries were focused on consolidating their infrastructure development. ICH's earliest courses began soon after inception, with generic programs hosted in Norway. Practitioners from Africa attended these foundational courses, gaining valuable knowledge to bring back to the continent's hydropower projects.

The early 2000s saw significant reforms in Africa's power sectors, with many countries unbundling their utilities and establishing regulatory frameworks. ICH adapted by developing programs on power sector governance, regulatory frameworks, and market structures – creating a foundation for the sustainable development of renewable energy projects.

Africa has since pivoted towards a more diverse energy mix, with hydropower complemented by other renewable sources. ICH expanded its curriculum to address integration challenges, climate resilience, environmental and social sustainability as new projects emerged across the continent. This expansion included specialized technical courses on Francis Turbines and Governor systems, comprehensive Operation and Maintenance programs, Financial Modelling and Risk Management training, and instruction on Legal and Regulatory Frameworks for energy projects. These technical and management-focused programs equipped sector professionals with the skills needed to optimize performance of existing facilities while developing new renewable energy projects across the region.

Over these three decades, ICH has delivered numerous specialized training programs across Africa, building capacity for thousands of professionals from utilities, regulators, ministries, financial institutions, and private developers. These interventions have consistently addressed critical skills gaps through targeted courses in


Project Development and Financial Management, Technical Operations and Maintenance, Energy Policy, Markets and Governance, Environmental, Social and Sustainability Management – all tailored to address Africa's specific challenges and opportunities.

This comprehensive approach has yielded measurable impacts across the continent.

- Technical trainings to improve infrastructure reliability and extended operational lifespans through hands-on experiences.
- Financial programs that have strengthened project economics and reduced revenue leakages, helping utilities attract critical investment.
- Environmental and social courses have equipped practitioners with tools to manage community impacts and ecological considerations with greater sensitivity.
- Regional power market programs have built practical skills for cross-border electricity exchange, facilitating the integration of renewable resources at scale.

Beyond technical and knowledge transfers, these capacity building efforts have cultivated enduring professional networks throughout Africa. Participants from different countries, utilities, and regulatory bodies maintain connections long after training concludes, creating informal channels for continued knowledge exchange. These relationships have proven invaluable during critical moments - whether navigating complex project development challenges, responding to operational crises, or collaborating

on policy formulation. This organic community of practice represents perhaps ICH's most sustainable contribution, as practitioners continue to support one another in applying learned principles to real-world energy challenges across diverse African contexts.

Committed to gender inclusion and diversity in the energy sector, ICH has consistently worked to increase female participation in its programs, achieving meaningful growth in women's representation over the years. In step with industry advancements, the training portfolio has continually evolved to address emerging challenges across the continent's renewable energy landscape. From climate change impacts on hydropower resources to the integration of variable renewable energy sources, programs have adapted to reflect the sector's evolving needs. Recent programs on modelling hydropower integration with modern energy systems demonstrates this commitment to relevant, forward-looking capacity building that anticipates future challenges.

As Africa works toward universal energy access and climate-resilient development, ICH's role remains critical. The continent's untapped hydropower potential presents opportunities for transformative development, while challenges related to climate variability, financing constraints, and cross-border cooperation require integrated strategic approaches.

ICH's continued focus on practical, hands-on training that addresses the full lifecycle of renewable energy projects positions it to support Africa's next generation of energy leaders. By building on 30 years of experience while embracing innovations in training methodologies and content, ICH will continue to strengthen the human capital that underpins Africa's sustainable energy future.

The story of ICH in Africa is ultimately about empowering people to solve their own energy challenges. Through thirty years of dedicated capacity building and a steadfast commitment to **'Gaining through Training'**, ICH has helped transform how Africa approaches its renewable energy resources – creating a legacy of knowledge that will power the continent for generations to come.


# ICH: THIRTY YEARS OF EMPOWERING
# LATIN AMERICA AND THE CARIBBEAN THROUGH EDUCATION AND VALUE CREATION

Hydropower has been a cornerstone of energy development in Latin America for decades, particularly following the wave of privatisations in the 1990s. Over the years, the region has developed a range of large, medium, and small hydropower projects, establishing itself as a leading source of renewable energy generation.

Since its inception, ICH has been a key player in this progress, with Latin American professionals participating in ICH training programs in Norway. 2008 marks the year when ICH expanded its training initiatives to Latin America, significantly contributing to the region's energy development. The organisation has supported capacity building for significant projects and enhanced the skills of local professionals, thereby fostering the growth of the hydropower sector.

Over the past decades, the region has been presented with a dual opportunity in the need to renovate and modernise hydropower assets. While this has posed challenges, it has also opened doors for sustainable practices.

Modernizing these facilities improves efficiency and capacity. It also gives the possibility to increase the integration of more variable renewable sources, ensuring a continuous and reliable supply of clean energy, thereby enhancing the region's energy security.

The region faces a myriad of challenges in its energy sector, including providing electricity access to more than 17 million people who still lack this service (SDG 7), addressing inefficient cooking systems that lead to $CO_2$ emissions and health issues (SDG 3: Health and Well-being), and mitigating the risk of energy poverty due to increasing tariffs (SDG 1: No Poverty). The global energy crisis and the pandemic have

further underscored the need to rethink the region's energy future to ensure sustainable access to this vital service, leaving no one behind (SDG 10: Reduced Inequalities).

Creating links and sharing good practices is not just a strategy but a necessity at the regional and national levels, and with all interested parties. An integrated and collaborative approach is essential, involving different actors and addressing technical, political, economic, regulatory, environmental, and social aspects to ensure sustainable and inclusive energy security, aligned with the SDGs.

The training programs developed by ICH have been essential in addressing the region's energy challenges. They have significantly improved competence in areas such as integrated water resources management, sedimentation, socio-environmental conflict resolution, gender issues, disaster risk management, power markets, project financing, energy security, and energy transition.

By strengthening these essential areas, the programs have contributed to the sustainable development of the hydropower sector across various regional countries and instilled confidence in the region's energy future.

The technical support provided by ICH has been crucial for the region, as it has enabled:

- The development of dialogue and negotiation skills with communities and stakeholders.


- Improved water planning and management capacity, optimizing its use in hydropower projects.
- Enhanced integration of international standards in environmental management.
- A better understanding and application of strategies for effective sediment management in reservoir basins.
- Generating capacities in vulnerability analysis and planning for safe and resilient infrastructure.
- Promoting gender equity and inclusion approaches in the planning and execution of hydropower projects.

ICH has built capacity to enable the internal reviews of management capacity as it has enabled a review of the aspects of management capacity that institutions, companies, and communities need to strengthen in the pursuit of project viability and sustainability. ICH has advocated methodologies that understand the territories where the projects are located, their dynamics, culture, needs, and potential so that management adapts to the particularities of local contexts. We integrate fundamental axes such as inclusion and participation for a just and equitable energy transition.

To achieve energy transition and security, the region must explore new solutions such as diversification, complementarity, interconnection, renewable energy communities (RECs), and integrated water resources. Addressing energy access, sustainability, and community participation is essential to ensure inclusive and sustainable energy security.


ICH has been instrumental in improving the skills and competencies of local professionals through targeted training programs. These programs have emphasised various key areas, including integrated water resource management, socio-environmental conflict resolution, gender equity, impact management, disaster risk management, sediment management, modernisation of hydropower assets, power markets, project financing, energy security, and transition.

ICH's Story in Latin America is not just about its technical contributions to the energy sector. It also fosters a collaborative environment with all stakeholders, including community leaders. By creating links and sharing good practices, ICH has built a foundation of shared experiences and innovative solutions tailored to the region's unique challenges, demonstrating the importance of community and collaboration.

ICH's efforts have also focused on addressing energy poverty in Latin America. By improving access to modern, safe, and affordable energy services, we are not just providing a service but also addressing a pressing issue that affects millions. This underscores the urgency and importance of our work.

ICH aims to continue its regional efforts by providing strategic capacity building. This collaborative approach will equip stakeholders with the tools to analyse energy transition within a sustainability framework, incorporating various approaches in technology, public policies, and best practices for citizen participation and social justice (SDG 16: Peace, Justice, and Strong Institutions).

Ultimately, Latin America's story with ICH is one of empowerment and sustainable development. Through dedicated strategic capacity building and a collaborative approach, ICH is helping to transform the region's approach to renewable energy, creating a legacy of social, environmental, and economic value creation and knowledge development.

# THIRTY YEARS IN ASIA

The history of hydropower in Asia since 1994 reflects incredible growth, along with challenges. Asia has become a key player in global hydropower production due to its vast untapped water resources and rapid economic development.

From 1994 to 2005, China emerged as a hydropower giant, with the Three Gorges Dam, the world's largest hydropower project, starting construction in 1994, just as ICH was formed. India also began expanding its hydropower capacity during this period, however, these developments caused global concerns due to environmental and social issues. Southeast Asian nations, particularly Laos, Vietnam, and Cambodia, turned to focus on the potential of hydropower as a key energy source and a vehicle for economic development but faced similar scrutiny, including transboundary issues

Participants from Nepal have attended courses run by ICH since 1996 and also hosted the first regional training course in Asia, which was held in Nepal in 2005, on the topic of Headworks Design in Steep, Sediment-loaded Rivers. ICH has been instrumental in disseminating knowledge on sediment transport, reservoir sedimentation, and erosion control as a collaborative effort together with Hydro Lab in Kathmandu. A total of 20 participants from five countries completed the first workshop, and their feedback was very positive with respect to the valuable knowledge gained and to the need to continue with programs related to sediment management as it is a critical element of plants in this region. This partnership continues to this day.

From 2005 to 2015, hydropower development in Asia saw further expansion, marked by technological advancements and the growing opportunity of regional energy integration. Alongside domestic growth, China began to invest in hydropower projects abroad, especially Southeast and South Asia. During this period, countries like Bhutan, Nepal, and Laos were capitalising on hydropower for regional energy trade. Bhutan became heavily dependent on hydropower exports to India, while Laos focused on exporting power to neighbouring countries like Thailand and Vietnam.

IFC International Finance Corporation WORLD BANK GROUP

**The need to broaden beyond the technical and engineering resulted in a formal collaboration with IFC.**

The partnership with IFC launched in 2013, with a range of specific courses underlining the relevance of broader social and environmental topics. Specific courses focussed on gender followed in Vietnam, Myanmar and Nepal. The partnership with IFC drew on their initiative 'Powered by Women' which worked with 19 hydropower companies to reduce gender gaps by adopting inclusive policies and anti-harassment measures and promoting female recruitment in non-traditional roles. This has led to a core of experienced practitioners who are now leading by example and continue to be an asset to the training of others in Nepal.

Between 2015 and 2025, reflecting the global concerns of the environmental impacts of large projects and a recognition of the cross-boundary impacts, the focus shifted to sustainability and the integration of hydropower into broader renewable energy strategies.

Myanmar, Laos, and Cambodia pursued more hydropower projects, often as part of regional economic development plans, but the environmental consequences and displacement of local communities were a persistent concern.

Further partnerships and the sharing of resources from other ICH members such as SN Aboitiz (Philippines), and other renewable energy companies across Asia, enabled the sharing of knowledge and expertise. This was particularly evident in the interest in the Prevention and Administration of Conflict (PREMACA) series and courses aligning development with the global just energy transition agenda.

Technological improvements in hydropower design, such as more efficient turbines and better environmental management practices, also emerged, and pumped storage hydropower began gaining traction as a solution for balancing renewable energy. The future of hydropower in Asia, extending into the mid-2020s and beyond, appears to be one of continued growth but with more sophisticated mitigation and management

Hydropower remains an important energy source with greater national emphasis placed on sustainable development and these efforts have been strongly supported by ICH. Hydropower development is also increasingly tied to regional cooperation, with cross-border projects between countries like India and Nepal, and frameworks for shared water resource management are emerging in Southeast Asia, particularly in the Mekong River Basin.

Moving forward, the challenge will be to balance large-scale projects with more sustainable alternatives, ensuring that hydropower continues to contribute to regional energy needs while minimizing its environmental and social footprint. Embracing diversity and inclusive practices has been shown to strengthen the workforce and foster a more resilient and sustainable energy. ICH is proud to have been able to collaborate in these key milestones for inclusion and more efficient and responsible hydropower practice in the region.


ICH's impact extends beyond the development of individual capacity. The network that has been developed sustains long-term partnerships with universities, government agencies, and the private sector, creating sustainable platforms for knowledge transfer. By building local capacity, ICH has ensured that its expertise remains within the region, contributing to long-term sustainability. The partnerships in Indonesia with the Ministry of Energy and Mineral Resources, Bung Hatta University, and Tamaris Hydro, illustrates this commitment. Similar partnerships exist in Nepal, Cambodia and Bhutan.

Capacity building, beyond technical and engineering, including financial management, planning and environmental and social governance supports a steadfast focus on sustainability. ICH continues to conduct training programs that underscore the importance of responsible hydropower development. This holistic approach, from the corporate to the communities, visiting project sites and utilising peer learning, ensures that hydropower projects can contribute positively to the global sustainable development goals that will power Asia into the future.

# ICH THROUGH THE YEARS: **1996–1999**

# ICH THROUGH THE YEARS: **2000–2014**

NORWAY

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NORWAY

TIMOR

NORWAY

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NORWAY

NORWAY

NORWAY

NORWAY

NORWAY

NORWAY

COLOMBIA

## ICH THROUGH THE YEARS: **2015–2025**

NORWAY


MEXICO

NORWAY

NORWAY

HONDURAS

NORWAY

NORWAY

ARGENTINA

ARGENTINA

NORWAY

NORWAY

NORWAY

NORWAY

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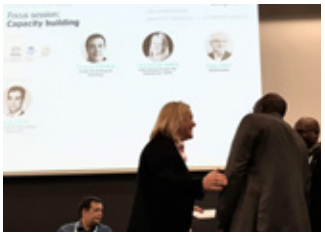
NORWAY



PARIS, FRANCE

PARIS, FRANCE

PHILIPPINES

PHILIPPINES

NORWAY

CHILE

NORWAY

NORWAY

NORWAY

NEPAL

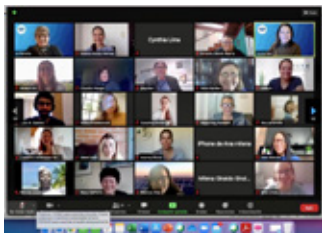
NORWAY

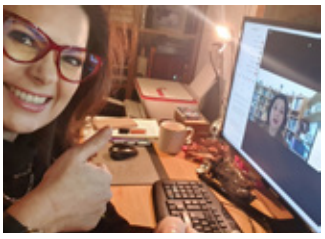
COLOMBIA

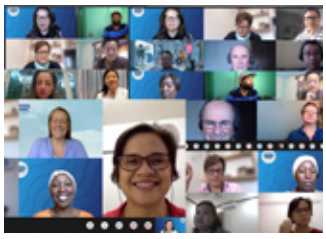
MYANMAR

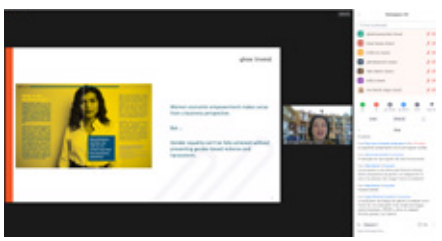
COSTA RICA

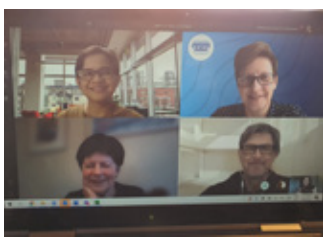
## PANDEMIC









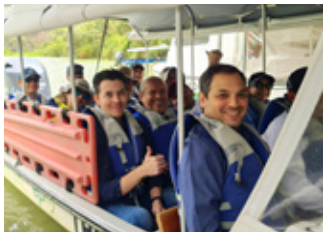



# POSTPANDEMIC

COLOMBIA


COLOMBIA


COLOMBIA


COLOMBIA


NORWAY


PANAMA


NORWAY


URUGUAY


COLOMBIA


NEPAL


COLOMBIA


COLOMBIA


COLOMBIA


PHILIPPINES

# ICH Members

## Norwegian members

Bærekraftig Investering AS

Norconsult

AkerSolutions

DYNAVEC AS

Norwegian Water Resources and Energy Directorate
NVE

Bredesen Consulting

Fornybar Norge

NTNU
Fakultet for ingeniørvitenskap og teknologi
Institutt for bygg, anlegg og transport

Statkraft

Multiconsult

ROYAL NORWEGIAN MINISTRY OF ENERGY

## Mutual members

CELAPEH

iha
international hydropower association

Norwegian Energy Partners

RenewHydro

naba | Norwegian-African Business Association

# International members

Acolgen

Bhutan Power Corporation

CIMEQH - Colegio de Ingenieros

ENEE- Empresa Nacional de Energia Eléctrica

Electricity Regulatory Authority Uganda

Empresa Energía Honduras

Di Avante

Energy Development Council (EDC)

ACOPE

Himal Power Ltd.

Energy and Petroleum Regulatory Authority Kenya

Energy Regulatory Commission - ERC

Hydropower Development Corporation of Arunchal Pradesh Ltd

Butwal Power Company LTD - BP

Druk Green Power Corporation

Environmental Resources Group Pvt. Ltd, NEPAL

AHPPER - Asociación Hondureña

CDL (Consejo Departamental de Lima del Colegio de Ingenioeros del Peru)

EAST AFRICAN POWER LTD

Escom, Malawi

Arusha Technical College ATC

Jade Consult Pvt. Ltd Nepal

Electricidad de Cortés - ELCOSA

Liberia Electricity Corporation

Aryabhatta Group of Institutes

Celsia S.A.E.S.P

Electricite du Cambodge EDC

Frontier Energy

Asociación Hondureña de Energía Renovable (AHER)

Cemedar

Electricity Control Board - ECB

Hydro Lab Pvt. Ltd

Empesas Públicas de Medellín EPM

Lilongwe Water Board

National Disaster Reduction and Management Authority Nepal

Ministry of Water and Environment Uganda

Kafue Gorge Regional Training Centre - KGRTC

M & Company Engineers and Contractors Pvt. Ltd India

Hobuka

Institute of Water Resources Planning

Kaizen Africa Ltd

National Hydropower Company Ltd Nepal

National Water and Electricity Company Gambia

Instituto Costarricense de Electricidad -ICE

Rusumo Power Company

Sanima Hydropower Ltd

Independent Power Producers Associations Nepal IPPAN

INTEGRAL S.A.

Kenya Electricity Generation Company Ltd - KENGEN

S. Subedi and Associates Nepal

Hydroelectricity Investment and Development Company Limited (HIDCL)

Iran Water and Power Resources Development Company - IWPCO

Ludhiana Holdings

TAC Hydro Consultancy Pvt Ltd Nepal

Universidad Del Valle Colombia

ISAGEN S.A. ESP

Lunsemfwa Hydro Power Company Limited (Lhpc)

SAPP (Southern African Power Pool)

SN Aboitiz

Proteger

Mercados Electricos de Meso-america S.A. - MELESCA

SARDC

TANESCO Limited, Head Office

University of Medellin

Vidhyut Utpadan Company Limited Nepal

UETCL

Tanahun Hydropower Limited

UEGCL

Sustainable Strategies

Volta River Authority

Sustainablility Framework

Zambezi River Authority

ZESCO

HanaLoop

Egenco

Norad

UNESCO

Gaining Through Training


International Centre
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