



International Centre
for Hydropower

ICH 2023 Annual Report



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Chairman's Note

Kjell Repp

Chairman of the ICH Board of Directors

Since early 2020, the work of ICH may have been dominated by the pandemic, but it has not dampened our determination to adapt, learn and continue to deliver the high-quality capacity building we are known for. We have gained a significant amount of experience and knowledge, continuing to develop our courses, adapting to the hybrid online / onsite models and it seems that from the feedback we have received that we continue to provide valuable courses for a wide range of industry professionals from 34 different countries.



A continued global challenge has been the increased costs of living. This has led us to make the difficult decision to not only pause the hosting of courses here in Norway, but also to reduce local travel and the the number of site-visits and study-visits in the regional courses. To ensure that there is opportunity for personal interactions, however, we have during the last year increased our focus on the regional courses including more group tasks, technical tours and visits to power plants. These tours offer a vital view of the more practical and operational hydropower courses to complement the more theoretical courses such as legal and financial aspects.

A handwritten signature in blue ink, appearing to read 'Kjell Repp'.

Like many of our partners, ICH has learned a lot from continuing to operate through the pandemic. We intend to make the most efficient use of opportunities for the future, with a combination of on-line and on-site courses. Regional visits and the chance to transfer practical knowledge of operations during site visits will continue create valuable learning opportunities for our participants. We hope that we will soon be able to re-start the courses in Norway, where there will remain the opportunity to visit world class facilities with the opportunity to interact with highly qualified and experienced hydropower personnel.

ICH aims to continue to deliver a range of relevant courses to meet the needs of the industry which has a responsibility to deliver efficient power, maintain a high level of environmental and social standards, and together with our partners ICH will be valuable contributors to reach the Sustainable Development Goals.

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



Unveiling the Power Within: A Journey to Hydropower Excellence

Line Amlund Hagen

Managing Director, ICH

Hydropower, a true marvel of engineering and environmental consciousness, stands as a testament to our ability to harness the forces of nature for the greater good. To truly grasp the significance of this renewable energy source, there is no substitute for firsthand experience – a journey that takes you to hydropower plants, introduces you to the dedicated professionals behind the scenes, and immerses you in the practical workings of Environmental, Social, and Governance (ESG) principles.

Meeting the professionals who dedicate their lives to the hydropower industry adds a human dimension to the journey. Hydropower professionals like engineers, environmentalists, and project managers work tirelessly to ensure the operation of these plants while upholding the highest standards of safety and sustainability. Conversations with these experts shed light on the intricate balance between technological innovation and environmental stewardship that defines the industry. Their passion for clean energy is contagious, sparking inspiration and a renewed sense of purpose in anyone fortunate enough to engage with them. In 2023, across the regions, we made efforts to bring our students in close contact with both the physical capital (the installations) and the human capital (the people working in the power plants).

Visiting hydropower plants and their surroundings, meeting the professionals shaping the industry, and witnessing the practical implementation of ESG principles cannot be overstated. It is a transformative journey that transcends theoretical knowledge, allowing individuals to connect with the very essence of clean, renewable energy. I am happy that ICH through our courses can provide a firsthand experience that fosters a deep appreciation for the ingenuity and dedication driving the hydropower sector, inspiring a collective responsibility to champion sustainable practices for a brighter, greener future.

The protection of social and natural capital, with hydropower projects often becoming catalysts for positive change in nearby regions. Job creation, community development, and improved infrastructure are common outcomes, reflecting the commitment of the industry to leave a positive legacy. Through our courses in 2023 we demonstrated the importance of Hydropower professionals engaging with local communities to ensure their concerns are heard and addressed, fostering a collaborative spirit.

The ICH-team is eager to continue this path in 2024 – we are even bringing our advanced courses back to Norway! We will keep you posted, but please remember to check our website and social media for news too.

”Energy connects us, ICH keeps us together

The Board

DIRECTORS



Kjell Repp
Chairman



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



Stephen Sparkes
Statkraft



Bjarne Børresen
Multiconsult AS



Leif Lia
NTNU

DEPUTY DIRECTORS



Ole Gunnar Dahlhaug
NTNU/HydroCen



Hans Arild Bredeesen
Bredeesen Consulting



Eivind Heløe
Renewables Norway



Gunn Vik
NORWEP



Halvor Haugsvold
Norconsult

Four board meetings were held in 2023. Main tasks for the Board in 2023 have been to prepare for the mid-term evaluation of ICH that will take place in 2024 and liaising with Norad in preparation for the launching of their “Energy for Development” program.

Furthermore, the increase in applications for membership continues in 2023. The Board and the administration have analysed the current membership arrangements and looked at possible new working models. This work will be concluded in 2024.

The Annual Meeting was held on 13. April 2023. The hybrid solution for the annual meeting seems to be working well. Prior to the meeting, the secretariat presented the course program for 2023. The Annual meeting also approved the re-election of the Election Committee for the period 2024-2027:

The 2024–2027 Election Committee comprises:

Øivind Johansen, ED (Norwegian Ministry of Energy), (Chair)
Odd K. Ystgaard, Norconsult AS
Vegard Willumsen, Multiconsult

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

ICH's hard-working administration remained unchanged in 2023. Consultations were held with the aim to strengthen the administration from 2024.

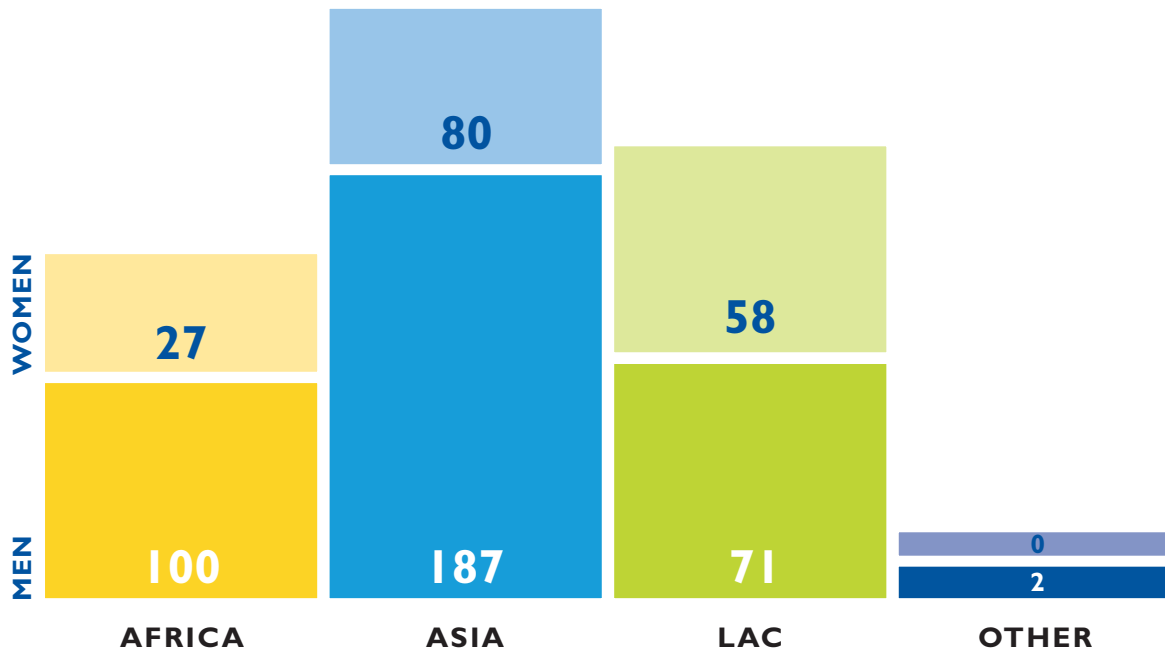
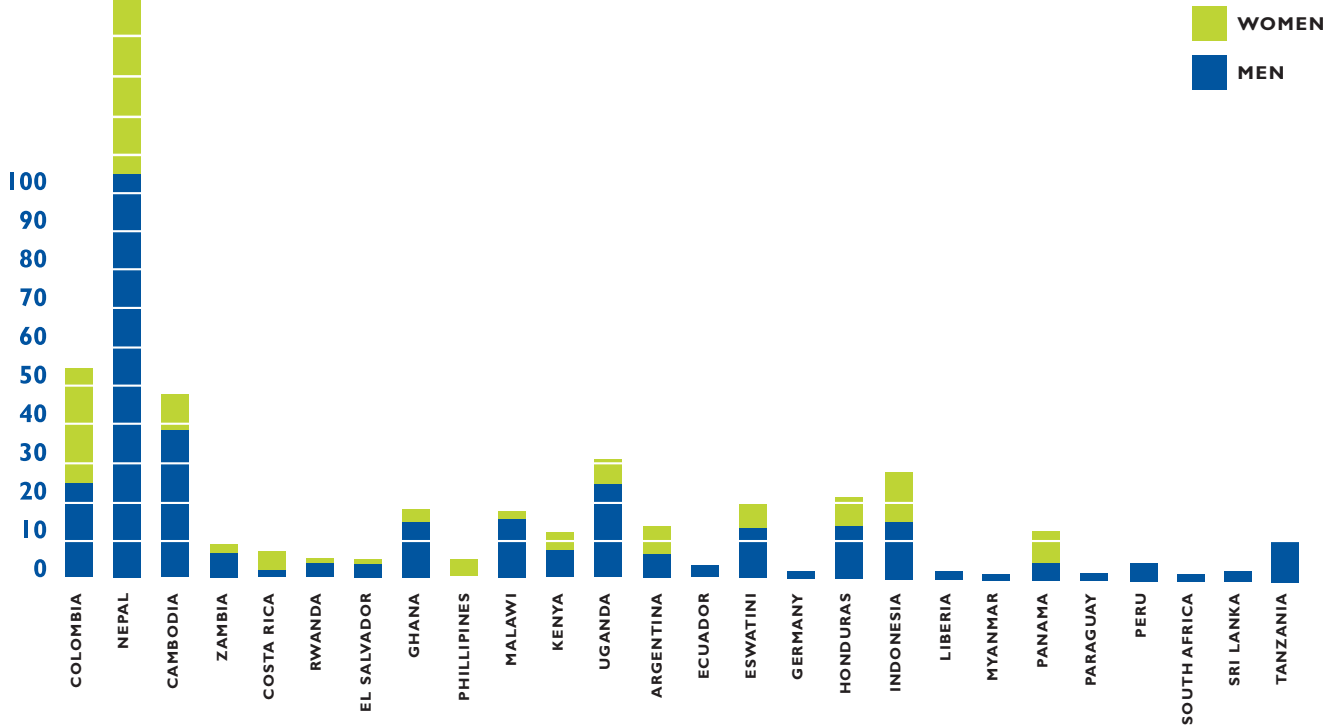
Throughout 2023 ICH engaged outsourced professionals for accounting, auditing, and ICT.

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.

ICH Impact

KEY FIGURES 2023



525
participants

25
courses

31%
women

34
countries







Note from Head of Studies

ICH supporting the industry with just transition.

Laura C. Bull

Head of Studies, ICH
Head Latin America
and the Caribbean, ICH


In the context of renewable energy and hydropower, a 'just transition' refers to an equitable and inclusive process that considers the well-being and livelihoods of industry workers and communities impacted by the shift away from fossil fuels. ICH is committed to supporting technical excellence in sustainable hydropower and renewable energy technology. To be genuinely sustainable and efficient, all sectors of industry need to consider the environment and address the social and economic impacts of the transition, ensuring no one is left behind and opportunity to add value for communities is maximized. ICH continues to focus on actions needed to build the human capital, international cooperation, and strategic alliances needed for to achieve a just transition.

ICH is built on **collaboration and partnerships**. Our training programs are delivered collaboratively to create added value. ICH will continue to seek strategic alliances with other organisations, NGOs, and governments to address the challenges of sustainability. Partnerships with IFC and IDB Invest have consistently delivered a range of courses and activities focussed on the capacity needed and real-world experiences to be of value to participants.

Embedding sustainability into an organisation's overall strategy requires a comprehensive approach that aligns the sustainability objectives with financial and operational goals. This task involves **developing capacity** creating a culture of accountability, integrating it into decision-making processes, developing the vision from the corporate into the communities. Technical tours held in 2023, included not just infrastructure but included insights delivered from the heart of communities that have been impacted by energy projects.

The imminent launch of the new e-sustainability online learning program "Sustainability, the Business Case for the Hydropower Sector" was born from an initiative that seeks to update knowledge and highlight hydropower's potential as an element in promoting environmental, social, and economic value creation. This online resource is a joint effort by ICH members to standardise concepts and approaches on each sustainability topic before developing specific topics in the different clusters of continuing education training activities based on trends, the international sustainability framework, and international best practices. The selected topics are those identified as the common thread of the hydropower industry, capacity building and promoting change within the industry. From this foundation, ICH courses continue to build the human capital to be able to prepare for a just transition.

The importance of a companies' ethical and transparent conduct during the different stages of the project's life cycle is essential to achieving a just transition. It promotes the development of spaces for dialogue and effective **community participation** mechanisms. It's also a requirement for sustainable finance models to incorporate environmental, social and governance factors (ESG) into financial decision-making. The growing trend of thematic bonds as debt securities continue to be an emerging opportunity for the public and private sectors.



Planning and developing infrastructure for the generation and transmission of electricity requires balancing business objectives with the needs, interests, and respect for the rights of all stakeholders. Communities must be partners to inform the sustainable use of natural resources and develop trust to prevent conflicts linked to environmental and social issues.

ICH commits to the maintenance of social equity at its core. In 2023, the continued development of courses on gender and inclusion, conflict management, conflict resolution, and conflict transformation provided sessions on cultural sensitivity and the importance of bridging gaps between diverse communities and project stakeholders.

Inclusive decision-making processes involve all stakeholders' representatives, including marginalized and impacted communities. Our technical and study visits reached out to community decision-making bodies, allowing our course participants to experience diverse representation that reflected the varied interests of the communities involved. Social impact assessments before, during, and after hydropower projects help understand and quantify the potential positive and negative impacts on communities. These results can enhance project plans before, during, and in the operation of hydropower projects.

Building on knowledge gained in online modules provided a robust framework for our technical study tours during 2023. The framework draws on evidence-based environmental and social frameworks, including monitoring tools such as operational controls, surveys, inspections, audits, and evaluations. The courses and technical visits covered the importance of national legislation, business guidelines and multilateral banking requirements for the protection of natural capital. Tools for developing the Environmental and Social Action Plans (ESAP) ensuring all participants upgraded, updated, and reviewed planning and compliance documents related to their work environments. Maintaining compliance as a quality improvement indicator was examined with the role of supervision, dealing with the unexpected and corrective action plans within an integrated ESMS (Environmental and Social Management System) during the technical visits.

Transformation is needed to prepare for the just transition. The five capitals approach adopted by ICH ensures the continued offering of a holistic set of action-orientated courses that will enable governments and the private sector to develop the policy frameworks that will guide industry actions.

Here with all our partners at ICH, we are looking forward to 2024 and **continued progress towards a just transition.**

Laura C. Bull
Head of Studies
International Centre for Hydropower

ICH courses in 2023: Promoting sustainable hydropower development throughout the world.

		Venue	Dates in 2023
Project name			
1	Gestión Integral del Recurso Hídrico II Online (Integrated Water Resource Management II) Regional LAC	Online	27-28 February
2	Gestión Integral del Recurso Hídrico II (Integrated Water Resource Management II) Field Trip	Colombia	6-10 March
3	Condition Monitoring and Maintenance Planning of the Francis Turbine	Uganda	6-10 March
4	Operation and Maintenance Module II	Indonesia	6-10 March
5	Hydropower Project Management & Financing	Cambodia	13-16 March
6	Instrumentation and Monitoring for Dam Safety - AFRICA - Part II	Uganda	20-24 March
7	Gender and Hydropower III	Nepal	2-5 April
8	Turbine Testing Lab - Hydropower Financing and Risk Management	Nepal	23 April
9	Hydropower Financing and Risk Management	Nepal	24-27 April
10	Rehabilitation and Modernization of HP	Online	26-28 April
11	Social Impact Assessment and Resettlement Management in Renewable Energy Projects	Ghana	8-12 May
12	Prevention and Administration of Social and Environmental Conflicts	Online	10-12 May
13	Environmental and Social Monitoring	Online	7-9 June
14	Revenue Protection and Infrastructure Security in Electricity Utilities: AFRICA	Eswatini	12-16 June
15	Electricity Transmission and Distribution for the Future	Online	12-16 June
16	Transición y Seguridad Energética (Transition and Energy Security)	Panama	5-7 September
17	Regional PowerTrade Programme (Africa 2023) Grid and Market Integration – Hydropower and other Renewables	South Africa	11-15 September
18	Seguridad de Presas en América Latina VIII - Gira Técnica23 (Rehabilitation and Modernization II – Technical Tour)	Uruguay/ Argentina	11-13 September
19	Prevention and Administration of Social and Environmental Conflicts Asia	Nepal	9-13 October
20	Sustainable Finance Instruments and Environmental and Social Governance in HP Renewable Energy Sectors	Nepal	16-17 October
21	Enhancing Governance in Africa's Renewable Energy Sector	Kenya	24-26 October
22	Reservoir Sediment Management for Sustainable Hydropower in Africa	Zambia	8-17 November
23	Regional PowerTrade and Grid Reinforcement	Cambodia	13-16 November
24	Prevention and Administration of Social and Environmental Conflicts LAC	Colombia	27 Nov-1 Dec
25	Planning and Design of Hydropower Tunnels in Himalayan Geology	Nepal	28.Nov-1. Dec

NORWAY

Throughout 2023, we continued to develop the potential of hybrid delivery models, by using on-line foundational training followed up by technical tours at a regional level, visiting working facilities to see real-world examples of good practice.

As technology improves, improving efficiency of existing infrastructure can be a cost-effective undertaking. The first course of 2023 examined **Rehabilitation and Modernisation of Hydropower Facilities** to enable countries to improve efficiency of their existing renewable energy facilities and accelerate the energy transition. The online course explored how to achieve sustainable asset management over the long term, using a risk management and life-cycle analysis approach to optimise rehabilitation programs and justify the need for investment in the physical capital.

An online version of the **Prevention and Administration of Social and Environmental Conflicts (PREMACA)** training series provided the theoretical foundation for conflict management and transformation. The three-day online training provided tools to identify and analyse elements which can contribute to social-environmental conflicts. The course took participants through approaches that have been proven to transform conflict into opportunities for the benefit of all stakeholders.

The integration of **Environmental and Social Monitoring** into hydropower monitoring systems reinforces the importance of good environmental and social governance practices and its role as a compliance tool. Delivered in June, the importance of managing unanticipated impacts, corrective actions and transparency in reporting was featured. The course recognised the relevance of inputs from all stakeholders to foster sustainable development and contribute to the energy transition by balancing the need for renewable energy with protecting natural and social capital.

The large-scale introduction of renewable energy sources that provide intermittent supply via power converters changes the dynamics of the grid and how it must be planned and operated.

Furthermore, a well-functioning electricity grid is essential for the workings of the electricity markets throughout the world. **Electricity Transmission and Distribution for the Future** was held in June to address and explore these challenges. The course also examined critical elements like social and environmental aspects of the construction of new power lines as well as a peek into the electricity grid of the future.



Norway			
Rehabilitation and Modernization of Hydropower Plants Online • 26-28. April	PREMACA Online • 10-12. May	Environmental and Social Monitoring Online • 7-9. June	Electricity Transmission and Distribution for the Future Online • 12-16. June

AFRICA

Africa's renewable energy sector is undergoing a significant transformation, driven by its abundant natural capital that must be balanced with the urgent need to provide electricity to over 600 million people. Rapid growth and technological advances, alongside decreasing costs and increased investments, are fuelling the expansion of renewable energy projects instrumental for sustainable development, economic growth, job creation, and reducing carbon emissions. Given this dynamic environment, Africa is positioned to play a key role as a leader in the global transition to a sustainable energy future.

In response to these developments, ICH offered a series of strategically designed training programs across the continent, each tailored to meet the unique challenges and opportunities within the region. The programs blended theoretical insights with practical applications under the guidance of international experts. The **Condition Monitoring and Maintenance Planning of Francis Turbines** program customized for Uganda Electricity Generation Company Ltd (UEGCL) was the first course of 2023. These course addressed key areas of turbine maintenance and navigating operational challenges to enhance the efficiency of the hydropower plants.

Convened in Uganda, the **Instrumentation and Monitoring for Dam Safety** program advanced the understanding and application of dam safety practices. It combined practical training with comprehensive technical site visits to three key dams—Karuma, Isimba, and Nalubaale—operated by UEGCL. By integrating advanced technologies like drone inspections, the program emphasized a shift towards more practical, technology-driven solutions.

The **Social Impact Assessment and Resettlement Management in Renewable Energy Projects** held in Ghana in May with support from our member and collaborating partner the Volta River Authority (VRA) boosted participants' ability to conduct thorough social impact assessments and manage resettlement in line with international best practice. Practical exposure to local hydropower facilities and resettlement communities enriched the learning experience significantly.

Addressing operational challenges, we ventured south for the first time into the Kingdom of Eswatini to host the **Revenue Protection and Infrastructure Security in Electricity Utilities** with support from the Eswatini Electricity Company (EEC). This program focused on innovative strategies for mitigating revenue losses and bolstering infrastructure security, including the deployment of advanced metering infrastructure and cybersecurity measures to tackle prevalent issues in the energy sector:

The **Regional PowerTrade Program** centred on integrating renewable energy into Africa's power market and saw attendance from 7 East, West, and Southern African countries. The program emphasised the importance of grid stability, power flow management, and market optimization in a renewable-rich energy landscape, facilitating hands-on learning through simulations to improve participants' capabilities in managing grid stability and power flows effectively. This training aligns with Africa's development goals, contributing to the broader achievements of sustainable development, energy security, and economic growth.



Africa			
<p>Condition Monitoring and Maintenance Planning of the Francis Turbine</p> <p>Uganda • 6-10. March</p>	<p>Instrumentation and Monitoring for Dam Safety - AFRICA - Part II</p> <p>Uganda • 20-24. March</p>	<p>Social Impact Assessment and Resettlement Management in Renewable Energy Projects</p> <p>Ghana • 8-12. May</p>	<p>Revenue Protection and Infrastructure Security in Electricity Utilities</p> <p>Eswatini • 12-16. June</p>
<p>Regional PowerTrade Programme (Africa 2023) Grid and Market Integration – Hydropower and other Renewables</p> <p>South Africa • 11-15. September</p>	<p>Enhancing Governance in Africa's Renewable Energy Sector</p> <p>Kenya • 24-26. October</p>	<p>Reservoir Sediment Management for Sustainable Hydropower in Africa</p> <p>Zambia • 8-17. November</p>	

Our pilot program on **Enhancing Governance in Africa's Renewable Energy Sector** navigated policies, regulatory compliance, and stakeholder engagement, for a sustainable energy transition with a particular focus on leveraging technology to streamline governance processes. This high-level management program held in Kenya aimed to empower sector practitioners with the tools necessary for effective governance in the renewable energy sector. Example case studies from across Africa provided real-world insights into successful governance practices, offering valuable lessons on navigating the complexities of the renewable energy sector.

Lastly for 2023, the **Reservoir Sediment Management for Sustainable Hydropower** training combined practical fieldwork with advanced management strategies. The generous loan of vital sediment measuring equipment from our member

partner, Lunsemfwa Hydro Power Company (LHPC), enabled us to significantly expand the scope of the sediment measurement exercises. The course curriculum reflected the latest developments in sediment management practices and offered practical solutions for sediment management, whilst emphasizing the importance of sustainability and environmental preservation to extend the lifespan of hydropower infrastructure.

Reflecting on the year's accomplishments, we remain focused on the path ahead, dedicated to empowering Africa's renewable energy sector through education and practical experience. The insights gained and the progress made have laid a solid foundation for future initiatives, promising to further enrich our programs, incorporate emerging technologies, and deepen our understanding of the complex interplay between renewable energy development and societal goals.



ASIA

Training for Asia in 2023 began in Padang, West Sumatra, Indonesia. In cooperation with Bung Hatta University and Tamaris Hydro the program focused on **Operation and Maintenance** of hydropower plants. This training program was built on the online course on Waterways Management in 2021, with participants from the University and both the private and public sector. The course included a field trip to the Tamaris operated Gumanti 3 hydropower project which was an opportunity to see learning topics in action.

A training program in Cambodia followed on the topic **Hydro-power Management and Financing**, held in Phnom Penh and organised in collaboration with Electricité Du Cambodge. The program covered the key steps in the development of a hydropower project and included several group work sessions. The program focused on project management including design and costs, procurement, revenues, financial modelling, risk assessment, financing and construction.

The importance of **Gender and Hydropower** continues to be reinforced with Module III. Building on the foundational knowledge introduced by the Gender and Hydropower Training (I and II) held in Nepal in May 2019 and November 2021. It was designed specifically to support industry professionals in Nepal's hydropower sector to adopt and apply practical, gender-smart approaches at workplaces and projects. This training showcased international examples and case studies from Nepal and the region, in partnership with the IFC-led Powered by Women initiative. This has been assisting companies in Nepal reduce gender gaps by building respectful workplaces, engaging with community stakeholders, and encouraging women in leadership and non-traditional roles.

In Nepal two programs were held back-to-back, **Hydropower Financing and Risk Management** in collaboration with the Independent Power Producers Association (IPPAN) and IFC, and a one-day session on **Hydropower Financing and Risk Management**, organised in collaboration with Turbine Testing Laboratory (TTL), Kathmandu University. The course built on previous programs that were held in Nepal in 2014 and 2018 and investigat-



ed the various facets of risks in hydropower development, thus developing the participants ability to identify, qualify, evaluate, and design measurements to monitor and manage the different risks on a strategic level. The Financing Process was covered by IFC and the Securities Board of Nepal. The TTL session was basically a condensed version of the IPPAN course.

Conflict in communities can have significant impacts on project implementation, however if understood it can also be the impetus for transformation into opportunities. **The Prevention and Administration of Social and Environmental Conflicts (PREMACA)** Module II was delivered in Nepal in April and Module III October. This residential training built on the two previous modules and provided techniques and tools to be used to create inclusive spaces for dialogue, promoting the creation of value for stakeholders.

Asia				
Operation and Maintenance Module II Indonesia • 6-10. March	Hydropower Project Mgt & Financing Cambodia • 13-16. March	Gender and Hydropower III Nepal • 2-5. April	Turbine Testing Lab - Hydropower Financing and Risk Mgt Nepal • 23. April	Hydropower Financing and Risk Management Nepal • 24-27. April
The Prevention and Administration of Social and Environmental Conflicts - Asia Nepal • 9-13. October	Sustainable Finance Instruments and Environmental and Social Governance in Hydropower and the Renewable Energy Sectors Nepal • 16-17. October	Regional Power Trade and Grid Reinforcement Cambodia • 13-16. November	Planning and Design of Hydropower Tunnels in Himalayan Geology Nepal • 28. Nov-1. Dec	



This training programme offered Nepali professionals' insights into **Sustainable Finance Instruments and ESG in HP Renewable Energy Sectors**. The financial sector is undergoing a significant transformation as the principles of sustainable development and Environment, Social, and Governance (ESG) are integrated into every aspect of private sector decision-making. This transformation carries significant implications for the energy sector: Building on the achievements of 'responsible investing' through implementing environmental and social safeguards, sustainable finance principles and sustainability instruments within an ESG framework are now a guiding force in development and commercial finance, including infrastructure projects such as hydropower:

Further training was held in Cambodia towards the end of the year, on the topic of **Regional Power Trade and Grid Reinforcement**. The important issues for security of supply, system operations, system balancing, physical and financial power trade were covered in the training. The roles of the state, the regulator and the business partners were highlighted, as well as the impacts of grid availability, interconnectors, and market parameters.

The final training program of the year was held in Kathmandu, Nepal, and focused on the **Planning and Design of Hydropower Tunnels in Himalayan Geology**. Resource persons were sourced from local experts and internationally. The program included an interesting two-day field trip to the under construction Tanahu Hydropower Project near Pokhara which included lively discussions and sharing of experiences among the participants and resource persons.

One planned program on contracts and dispute resolutions, that was to be held in Bhutan, had to be postponed due to timing issues and will be arranged in 2024 instead along with a variety of other plans that are already underway!



LATIN AMERICA

Efforts continue to strengthen the capacity needed for a just energy transition in Latin America and the Caribbean (LAC). Hydropower plays a significant role in the energy mix of many countries in this region due to its abundant water resources. However, it is vital to ensure that hydropower development is pursued sustainably and equitably, considering its impacts on natural and social capital.



2023 was a remarkable journey with on-site courses in LAC. Aware of the relevant role of hydropower in the region's nexus between water, energy, and agribusiness, we continue to deploy training programmes to professionals within the five capital sustainability spheres.

The sustainable management of reservoirs is a key facet in the face of vulnerability due to climate change. Integrated water resource management allows for a holistic and deductive approach to consider cross-sectoral aspects, scale and timing. Linking factors of governance and the participation of social actors in decision-making, the **Integrated Water Resources Management II** took place in Colombia with visits to the Hidroituango Hydropower project and San Carlos Power Plant.

Modernization and Rehabilitation of Hydropower Assets often involve implementing advanced monitoring and control systems that optimise the operation and maintenance of hydropower plants. Predictive maintenance techniques, remote monitoring, and automation technologies improve reliability, reduce downtime, and extend the lifespan of equipment, thereby maximizing energy output and minimizing costs. This was the basis of a technical tour where participants from seven countries took place in "Salto Grande Binational", a remarkable experience complemented by an International Dam Forum by ORSEP and Salto Grande Binational, bringing together seven countries.

Latin america			
Integrated Water Management Programme II - Online Online • 27-28. February	Integrated Water Management Programme II - Technical tour Colombia • 6-10. March	Power markets LAC Energy Security and Energy Transition Panama • 5-7. September	Rehabilitation and modernisation of Hydropower Plants Argentina • 11-13. September
PREMACA LAC Colombia • 27. Nov-1. December			



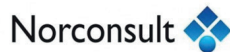
ICH delivered the new training series **Energy Security and Energy Transition** in Panama City in September 2023. There is a need to rethink the region's energy future to guarantee sustainable access to this vital service and leave no one behind. The training topics included technical solutions to the energy and climate crisis, guaranteeing energy security and the best use of available resources. The importance of considering new renewable resources for an optimal energy mix was also covered. The participants examined tools for financing mechanisms, intersectoral approaches along with innovative and sustainable business practices. Participation from the public sector strengthened government agencies' institutional and technical capacity for energy security and established an action plan to promote its progress.

The **PREMACA** training series has enabled the adoption of tools to overcome the challenges conflict presents for the development of new electricity generation and distribution. In 2023, the training moved from the meeting rooms to the heart of communities and the core of technical sites and involved local leaders to share their experiences of conflict transformation.

Inclusion and diversity are the energy that moves our sector in Latin America and the Caribbean. We look forward to 2024!

ICH Members

Norwegian members



Mutual members



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 Ingenieros del Peru)



EAST AFRICAN POWER LTD



Escom, Malawi



Arusha Technical College ATC



Jade Consult Pvt. Ltd Nepal



Electricidad de Cortés - ELCOSA



Liberia Electricity Corporation



Aryabhata 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



Lilongwe Water Board



Empresas Públicas de Medellín EPM



M & Company Engineers and Contractors Pvt. Ltd India



Ministry of Water and Environment Uganda



Kafue Gorge Regional Training Centre - KGRTC



National Disaster Reduction and Management Authority Nepal



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)



Institut de Technologie ITC



Jammu and Kashmir energy development agency (JAKEDA)



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



SARDC



Vidhyut Utpadan Company Limited
Nepal



UETCL



TANESCO Limited, Head Office



University of Medellin



Sustainable Strategies



Volta River Authority



Sustainability Framework



Zambezi River Authority



Tanahun Hydropower Limited



ZESCO



UEGCL

Gaining Through Training



Norad



International Centre
for Hydropower



International Centre for Hydropower

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