



# ANNUAL REPORT

## FISCAL YEAR 2023

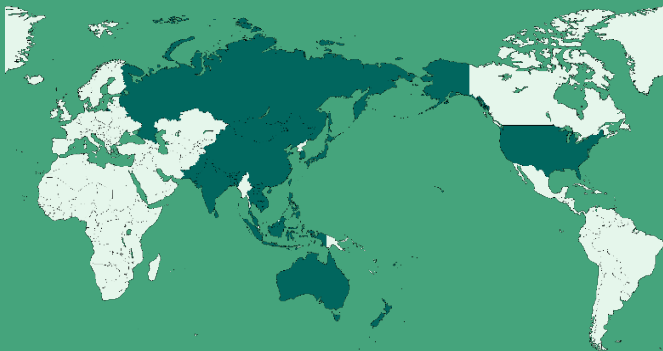
JULY 2023 – JUNE 2024

---

The Asia-Pacific Network for Global Change Research (APN) is an intergovernmental network of 22 countries working towards an Asia-Pacific region that is successfully addressing the challenges of global change and sustainability.

To achieve its mission, a set of programmes and activities are conducted.

- ✓ Funds regional, multi-country and transdisciplinary research projects on global change and sustainability that provide underpinning scientific input to policy-making.
- ✓ Funds and implements projects and workshops to develop the capacity of individuals and organisations to conduct high quality research on global change and sustainability.
- ✓ Fosters and strengthens interactions between the science and policymaking communities to produce actionable science and informed decision-making.



---

## FISCAL YEAR 2023 AT A GLANCE

---

### RESEARCH & CAPACITY DEVELOPMENT

23

Projects completed, implemented by 130 persons, including project leaders and collaborators.

---

### EXTENSIVE NETWORK

7,528

Researchers, government officials, community members and practitioners directly involved in projects.

3,597

Active subscribers to the APN mailing list.

---

### INVOLVING EARLY-CAREER PROFESSIONALS

74%

Percentage of projects that reported involvement of early-career professionals.

---

### KNOWLEDGE MANAGEMENT

2,256

Outputs in the Publications Library.

106,186

Page views of APN projects and publications.

# Climate

## Regional capacity in satellite remote sensing strengthened for improved climate monitoring



**LIMITED ACCESS TO** training and mentorship hampers the ability of early career researchers to apply satellite remote sensing and help address climate variability. Recognising this, the project aimed to strengthen the capacity of early-career researchers across the Asia-Pacific region in satellite remote sensing for ocean and climate monitoring.

The project designed and implemented a capacity building and development (CBD) programme combining virtual and in-person activities. The virtual component was delivered through a Massive Open Online Course (MOOC) platform in 2021 and 2022, which featured thirteen pre-recorded modules and a student mentorship programme encouraging interaction between participants and experts. The MOOC received a Silver Award at the International University Carnival on

E-Learning (IUCEL) 2021. An in-person CBD programme was later conducted, which included tutorial sessions and conference meetings to reinforce knowledge, practical exercises and peer engagement.

Additional outputs included a conference paper presented at the 2022 Institute of Electrical and Electronics Engineers International Geoscience and Remote Sensing Symposium, a pre-conference proceedings volume, an abstract book and an article in the International Journal of Remote Sensing.

As an outcome, participants acquired foundational skills in remote sensing data analysis and strengthened their understanding of ocean remote sensing, while fostering engagement with peers and experts in the field. ■

**PROJECT** Sustained capacity building among early career researchers towards climate resilience by effective ocean monitoring through the satellite remote sensing **PROGRAMME** Scientific Capacity Development Programme **PROJECT LEADER** Dr Nurul Hazrina Idris, Universiti Teknologi Malaysia, Malaysia **ORGANISATIONS INVOLVED** NorthWest Research Associates, United States of America; University of Miami, United States of America; Tokai University, Japan; Hokkaido University, Japan; Federal University of Ceará, Brazil; US National Oceanic and Atmospheric Administration, United States of America; National Taiwan Ocean University, Chinese Taipei; India National Centre for Ocean Information Services, India **GRANT DOI** <https://doi.org/10.30852/p.14064>

► The project supported the participation of 13 early career professionals from eight countries at the WCRP Open Science Conference 2023. This resulted in the formation of collaborative partnerships, the launching of the Global Precipitation Experiment and the development of strategies to enhance the evaluation of climate risks and extreme events.

**PROJECT LEADER** Dr Michael Sparrow, World Climate Research Programme  
**GRANT DOI** <https://doi.org/v10.30852/p.24346>



**WORLD CLIMATE  
RESEARCH PROGRAMME  
OPEN SCIENCE  
CONFERENCE**  
**23 - 27 OCT. 2023 | RWANDA**



# Air, land, coasts and oceans

## Advancing low-emission rice farming in Asia through regional collaboration for sustainable agriculture



**RICE SUSTAINS MORE** than three billion people globally and remains the staple food for the largest number of communities worldwide. In Asia alone, more than 45 million new rice consumers are added annually, intensifying demand amid increasing challenges such as water scarcity, competing water uses and greenhouse gas emissions from traditional cultivation practices.

This project investigated alternate wetting and drying (AWD), an approach that conserves water and supports climate resilience, in rice systems in Sri Lanka and India. Field experiments and process-based modelling were used to quantify seasonal and daily fluxes

of methane and nitrous oxide under different soil moisture conditions. A key output was the development of an air-saturation-dependent exponential (ASEX) model to predict gas movement in paddy soils under varying saturation levels.

Building on these studies, the project found that AWD reduced methane emissions by 32–43% in Sri Lanka. In India, a wide variation in AWD outcomes was observed, ranging from 31% to 311%, due to large differences in baseline emissions under continuous flooding. In both countries, AWD resulted in 27–35% water savings without yield penalties. Complementary research

in Japan examined emission mechanisms under conventional flooding and found that gas bubbling from saturated soils accounted for 60% of methane emissions at the heading stage.

The project produced two peer-reviewed journal articles, a Springer book chapter and five additional manuscripts under review. Twelve international conference presentations helped disseminate the results and a targeted policy dialogue was held at the Ministry of Environment, Sri Lanka. ■

**PROJECT** Greenhouse gas emissions from paddy ecosystems (GREPEC): Critical windows of water and gas diffusivity **PROGRAMME** Collaborative Regional Research Programme **PROJECT LEADER** Dr Thuduwe Kankanamge Kelum Chamindu Deepagoda, Lincoln University, New Zealand **ORGANISATIONS INVOLVED** University of Peradeniya, Sri Lanka; National Water Supply and Drainage Board, Sri Lanka; Ministry of Water Supply, Sri Lanka; Rice Research and Development Institute, Sri Lanka; Indian Institute of Science, India; The University of Tokyo, Japan; International Rice Research Institute, Vietnam; Lincoln University, New Zealand; University of Copenhagen, Denmark **GRANT DOI** <https://doi.org/10.30852/p.13577>



► Ocean acidification and marine tourism pose a double threat to coral reefs. This project assessed 24 reef sites and analysed 362 studies across Australia, Indonesia, Malaysia and Vietnam, integrating ecological data with input from over 150 divers and operators. It developed a coral vulnerability index and outreach tools and trained 11 early career researchers to support science-based reef protection.

**PROJECT LEADER** Dr Kirsten Benkendorff, Southern Cross University, Australia  
**GRANT DOI** <https://doi.org/10.30852/p.4605>



# Biodiversity and ecosystems

## Coastal communities in the Philippines and Indonesia empowered for blue carbon resilience

**BLUE CARBON ECOSYSTEMS** (BCEs) such as mangroves, seagrasses and salt marshes face increasing anthropogenic and natural threats, leading to a loss of critical ecosystem services. In the context of climate change, their degradation can contribute to increased atmospheric carbon. Recognising this, the project focused on enhancing local capacities for managing BCEs within the Coral Triangle, particularly in the Philippines and Indonesia.

Through participatory methods and citizen science, the project aimed to promote local engagement and support the use of science-based monitoring and decision-support tools. Localised, mobile-based citizen science tools, participatory mapping protocols and user-friendly monitoring guidelines were developed

and field-tested, encouraging greater community involvement in monitoring BCEs.

Two online and two in-person workshops trained 66 local stakeholders and 48 participants from academia, national government offices and non-governmental organisations.

The project resulted in nine peer-reviewed journal articles and four international conference presentations, contributing to academic knowledge and cooperation among the Philippines, Indonesia and Japan. It also engaged early-career professionals through training activities.

Outcomes included increased



awareness of the benefits of BCEs, wider local participation in monitoring, and encouragement to use citizen-generated data in science-informed discussions on coastal ecosystem management and climate adaptation. ■

**PROJECT** Enhancing capacities of local stakeholders in Coral Triangle in managing Blue Carbon Ecosystems for climate mitigation and adaptation **PROGRAMME** Scientific Capacity Development Programme **PROJECT LEADER** Dr Ryo Kohsaka, Nagoya University, Japan **ORGANISATIONS INVOLVED** Nagoya University, Japan; Marine Research Center, Ministry of Marine Affairs and Fisheries, Indonesia; Padjadjaran University, Indonesia; Tokyo Institute of Technology, Japan; Kobe University, Japan; National Research and Innovation Agency, Indonesia; IPB University, Indonesia; The University of Tokyo, Japan; Bogor Agricultural University, Indonesia; University of the Philippines, Philippines **GRANT DOI** <https://doi.org/10.30852/p.14061>



► This project enhanced regional capacity on marine biodiversity monitoring in East Asia by introducing the indicator species approach. It delivered expert discussions on research gaps and emerging tools such as environmental DNA and provided specific inputs to the NOWPAP Regional Action Plan and the development of Ecological Quality Objectives indicators.

**PROJECT LEADER** Dr Kwang-Sik Choi, Jeju National University, Republic of Korea  
**GRANT DOI** <https://doi.org/10.30852/p.4617>



# Food, water and energy

## Sustainable mangrove-shrimp aquaculture through local action in the Mekong Delta



**IN THE MEKONG** Delta, efforts to promote responsible shrimp farming through international principles have faced challenges in practice. Small-scale farmers in Tra Vinh, Vietnam, found the principles difficult to apply, particularly due to limited attention to social and adaptation needs. This has contributed to declining yields, reduced incomes and continued loss of mangroves in vulnerable coastal areas.

Recognising the need for inclusive and practical approaches, this project aimed to support sustainable shrimp farming practices that align environmental conservation with improved farmer livelihoods.

To achieve this, the project developed the Sustainable Mangrove Shrimp Aquaculture Protocol based on

international benchmarks, adapted to local conditions through research and consultation with farmers, policy-makers, NGOs and private companies. A needs assessment and training module informed a stakeholder workshop that engaged 50 participants in learning about sustainable techniques, the ecological role of mangroves and certification pathways.

A separate consultation workshop enabled farmers and policymakers to co-identify practical solutions. The project also organised a field trip to Bac Lieu Province, where participants observed established shrimp farming models and exchanged insights. In addition, a policy brief was produced and a policy dialogue held in Tra Vinh to raise awareness among local authorities.

The project built technical capacity through training, consultation and outreach, encouraged stakeholder collaboration, and supported progress towards a more sustainable and locally appropriate aquaculture in the Mekong Delta. ■

**PROJECT** Towards sustainable mangrove-shrimp aquaculture through capacity building and partnership in the Mekong River Delta  
**PROGRAMME** Scientific Capacity Development Programme  
**PROJECT LEADER** Dr Le Thi Van Hue, The Center for Environment and Community Assets Development, Vietnam  
**ORGANISATIONS INVOLVED** Vietnam Institute of Fisheries Economics and Planning, Vietnam; International Collaborating Centre for Aquaculture and Fisheries Sustainability, Vietnam  
**GRANT DOI** <https://doi.org/10.30852/p.13709>

► The project enhanced regional capacity to assess climate change impacts on agriculture by training 62 researchers in Southeast Asia. Through hands-on workshops using the Decision Support System for Agrotechnology Transfer (DSSAT) crop simulation model, participants gained practical skills to analyse climate risks, improve crop planning and share knowledge, fostering regional connections among agricultural research communities.

**PROJECT LEADER** Dr Mohan Geetha, University of Toyama, Japan  
**GRANT DOI** <https://doi.org/10.30852/p.4593>





# Risk and resilience

## Measuring resilience and building capacity to secure livelihoods in the Lower Mekong Basin

**THE LOWER MEKONG** Basin, with approximately 65 million people directly dependent on the river for livelihood and economic activities, is increasingly exposed to challenges from climatic hazards and anthropogenic pressure. These overlapping risks intensify the vulnerability of rural communities and underscore the need for local-level, evidence-based resilience planning.

To address this, the project developed the Livelihood Security and Resilience Assessment (LiSeRA) framework and toolkit, an index-based resource built in MS Excel and R programming package formats. Tailored for policymakers, planners and other stakeholders, the toolkit enables context-sensitive assessments of multi-hazard livelihood resilience. Its adaptable design

and structured methodology make it especially valuable for informing risk management strategies across diverse geographies.

As part of its effort to build regional capacity, the project delivered five national and regional workshops in Thailand, Vietnam, Cambodia and India, reaching 140 policymakers, researchers, practitioners and community stakeholders. These workshops introduced core resilience concepts and provided hands-on training in applying the toolkit to assess vulnerabilities shaped by climate variability and socio-environmental change. A detailed user handbook and four open-access publications, including peer-reviewed articles and a policy brief, extended the reach of project outcomes and fostered

broader uptake.

Together, these efforts ensure that LiSeRA strengthens institutional capacity for evidence-based decision-making and supports the design of resilience policies in a region of high ecological and economic importance in Asia. ■



**PROJECT** Capacity building for measuring multi-hazard livelihood security and resilience in the Lower Mekong Basin **PROGRAMME** Scientific Capacity Development Programme **PROJECT LEADER** Dr Indrajit Pal, Asian Institute of Technology, Thailand **ORGANISATIONS INVOLVED** Jadavpur University, India; Indian Institute of Technology Bombay, India; Kasetsart University, Thailand; An Giang University, Vietnam; Royal University of Phnom Penh, Cambodia **GRANT DOI** <https://doi.org/10.30852/p.20540>

► The project strengthened disaster waste management in Makati, Philippines and Lautoka, Fiji by training over 100 stakeholders. As a key outcome, both cities developed typhoon-specific contingency plans. In addition, a dedicated website was launched to share training materials and knowledge resources, supporting preparedness and encouraging wider uptake of disaster waste practices across coastal cities in the region.

**PROJECT LEADER** Dr Glenn Fernandez, Sichuan University, China  
**GRANT DOI** <https://doi.org/10.30852/p.4620>





# Human dimensions

## Safeguarding plant diversity in Indonesia through ethical science and policy engagement



**INDONESIA, HOME TO** over 15 per cent of the world's flora, is experiencing rapid biodiversity loss driven by population growth, economic development and deforestation. These pressures threaten the survival of plant species and limit opportunities for natural product research, highlighting the need for accessible, ethical approaches to conservation and sustainable use.

To address this, the project introduced Rapid Metabolome Extraction and Storage (RAMES), a low-cost, field-deployable technology that enables ethical metabolomic sampling using minimal plant tissue. The RAMES samples are compatible with Screens-To-Nature (STN) bioassays, which offer a simple, portable and cost-effective method for assessing bioactivity. Leveraging this technology, Universitas Nasional established the Indonesia MAGIC Library, an accessible archive containing 501 metabolomic samples from 296 plant species across 90 families.

The project also delivered two RAMES-STN workshops, training 36 early career scientists from 15 institutions. To support sustained use of the technology, an English-language training manual

and two RAMES-STN material kits were distributed. Four policy-focused forums engaged over 480 participants, broadening awareness and fostering dialogue between scientists and policymakers, with 77 media products supporting public outreach.

*The library serves as a pioneering platform to promote collaborative research in plant metabolomics and natural products across Southeast Asia and beyond.*

These efforts offer a replicable model linking scientific innovation with policy engagement and ethical conservation, while enhancing research capacity and contributing to safeguarding the botanical heritage of Indonesia. ■

**PROJECT** Conservation of Indonesian endangered plant resources for human health: Enhancing scientific capacity and strengthening science-based policymaking in Indonesia **PROGRAMME** Scientific Capacity Development Programme **PROJECT LEADER** Dr Ilya Raskin, Rutgers University, United States of America **ORGANISATIONS INVOLVED** Universitas Nasional, Indonesia; Ministry of Environment and Forestry, Indonesia **GRANT DOI** <https://doi.org/10.30852/p.14062>

► A Green School Network was launched in Vietnam to integrate environmental education and zero-waste practices through school-based interventions. With a policy brief submitted to the Ministry of Education and training delivered to over 600 students and 52 teachers, the project strengthened youth capacity and advanced efforts to reduce marine plastic pollution.

**PROJECT LEADER** Dr Tran Thi Minh Hang, Vietnam National University, Vietnam **GRANT DOI** <https://doi.org/10.30852/p.22661>





# Capacity development

## Training a new generation in sustainable aquifer management and groundwater resilience



**GROUNDWATER DEPLETION AND** contamination are pressing concerns in India, affecting both water availability and quality. Addressing these issues requires practical, location-specific strategies that integrate scientific tools with community and institutional engagement.

This project advanced site selection for Managed Aquifer Recharge (MAR) by developing a multi-criteria decision framework that integrates GIS, remote sensing, hydrological modelling and machine learning. The methodology was applied in two demonstration areas, Rajasthan and the Hindon River Basin, where traditional systems such as Chaukas were evaluated using tools such as HYDRUS 3D. A key output was the PraJal web portal, providing open-access training materials and an interactive decision-support tool (G-MCDA) for site suitability mapping.

As part of its capacity building activities, the project conducted two training programmes and two stakeholder workshops, engaging over 250 participants from 12 states. These sessions



offered practical training in MAR site selection and supported knowledge exchange among researchers, policy-makers, technical experts and practitioners. A peer-reviewed publication, digital learning resources and outreach materials extended the project's reach.

The project enhanced institutional capacity for sustainable groundwater management and laid the foundation for informed policy and planning to improve aquifer recharge and climate resilience in water-stressed regions. ■

**PROJECT** Capacity development program on-site suitability mapping for managed aquifer recharge (MAR) under varying climatic conditions using remote sensing and machine learning-based hydrological modeling tools  
**PROGRAMME** Scientific Capacity Development Programme  
**PROJECT LEADER** Dr Basant Yadav, Indian Institute of Technology Roorkee, India  
**ORGANISATIONS INVOLVED** National Institute of Hydrology Roorkee, India; Kindai University, Japan; Pusan National University, Republic of Korea  
**GRANT DOI** <https://doi.org/10.30852/p.20538>

► Focusing on the Pampa River in Kerala, India, this project trained 41 stakeholders from government, academia and civil society in river health monitoring. It led to the creation of the Kerala River System Health Needs Assessment and Action Alliance (Krishna3), which launched community-led restoration efforts, including planting 1,000 native saplings along degraded riparian zones.

**PROJECT LEADER** Dr Nadesa Panicker Anil Kumar, M. S. Swaminathan Research Foundation, India  
**GRANT DOI** <https://doi.org/10.30852/p.4598>



# Stakeholder engagement

## Asia-Pacific Climate Change Adaptation Forum



In September 2023, APN and the South Asian Forum for Environment co-organised a session at the 8th APAN Forum in the Republic of Korea. Titled “Enhancing Community Resilience in the Asia-Pacific Region: Promoting Effective Governance for Locally-led Adaptation and Sustainable Practices”, the session featured case studies from India, Japan, Nepal, the Philippines and Vietnam, and highlighted the importance of long-term climate adaptation planning and community resilience in safeguarding livelihoods. Emphasising collaboration and innovation, the session concluded that effective adaptation relies on tailored approaches, self-assessment and continuous learning.

## Future Earth



In November 2023, APN strengthened its collaboration with Future Earth by participating in two key events. APN introduced its Call for Proposals at the Transdisciplinarity for Early-career Researchers in Asia (TERRA) School, hosted by the Research Institute for Humanity and Nature and Future Earth Japan. The targeted seminar engaged 16 early career professionals in exploring transdisciplinary research opportunities. Later that month, APN joined the 3rd Future Earth Japan Summit “Peace and Life in the Era of Anthropocene”, which fostered dynamic discussions on interdisciplinary collaboration, stakeholder engagement and integrative knowledge to tackle sustainability, climate change and planetary health.

**futureearth**  
Research. Innovation. Sustainability.

In May 2024, APN became a member of a consortium led by Future Earth Asia to develop the Meta-Network Hub for Sustainability in Asia. This initiative aims to co-create science-based, transdisciplinary solutions for complex regional sustainability challenges. The Hub will integrate fragmented knowledge across scales and sectors and implement demonstration projects to accelerate SDG progress.

## Gobeshona Global Conference



In March 2024, APN and IGES co-organised the session, “Asia-Pacific Resilience: Empowering Local Solutions Together”, at the Fourth Gobeshona Global Conference. The session addressed climate change, resource degradation and pollution, emphasising transformative adaptation and resilient communities. Local innovation was central, with examples such as floating farms and seed banks illustrating how communities lead adaptation. The discussion underscored integrating indigenous knowledge with scientific evidence, supporting just transition in education and investing in soft skills to build capacity. Tools such as community radios and local monitoring and evaluation mechanisms were recognised as essential for advancing adaptive learning and nature-based solutions.



## Hyogo Activities



In October 2023, APN, Hyogo Prefectural Government and IGES co-organised the “SDGs International Forum for Biodiversity” in Japan. The forum explored ways to implement local SDGs by framing biodiversity as a regional priority and encouraging active engagement by residents and businesses in Hyogo Prefecture. Keynote presentations and panel discussions explored the Kunming-Montreal Biodiversity Framework and pathways to achieving Nature Positive by 2030. The event spotlighted innovative local initiatives and the interconnections between biodiversity and other SDGs, reinforcing the value of multi-sector collaboration for sustainable outcomes.



In March 2024, APN and the University of Hyogo co-organised the “Climate Change × Disaster Reduction Forum” in Japan. The forum addressed the pressing challenges posed by weather-related disasters linked to climate change, calling for proactive engagement and systemic resilience. Presentations examined the science behind global warming and its disproportionate impact on vulnerable populations, with case studies from Mongolia, Fiji and Samoa, offering practical insights into adaptation strategies. The forum fostered a strong sense of shared responsibility and collective action to address climate challenges.

## Integrated Natural Resources and Environmental Management



In November 2023, APN participated in the 4th International Conference on Integrated Natural Resources and Environment Management in the Philippines. As a strategic partner, APN contributed insights from its broad portfolio of activities and research. The event fostered meaningful knowledge exchange on resilience-building, sustainable development and integrated resource management across the Asia-Pacific region. Discussions highlighted the role of multi-scale capacity development in supporting Ridge-to-Reef (R2R) transformation as part of efforts to strengthen responses to environmental and resource management challenges.

## UNFCCC



In August 2023, APN participated in the UNFCCC Adaptation Committee event “Boosting Region-Wide Coherence on Adaptation” in the Republic of Korea. The event provided a key platform for advancing region-wide adaptation efforts, collaborative action and alignment with the global adaptation agenda. APN showcased its diverse and robust portfolio in adaptation, resilience and agriculture, highlighting significant achievements such as the inclusion of the APN Science Bulletin in SCOPUS (July 2023) and a knowledge synthesis of climate change research in Asia, published in Environmental Research (<https://doi.org/10.1016/j.envres.2020.109635>), based on APN projects from 2013 to 2018. It also underscored its global impact, with over 100 project publications cited in the IPCC Sixth Assessment Report, demonstrating its contribution to international climate science and policy.



In June 2024, APN participated in the 16th Meeting of the Research Dialogue at the 60th session of the Subsidiary Body for Scientific and Technological Advice of the UNFCCC in Germany. Discussions centred on developing new nationally determined contributions and promoting low-emission development pathways aligned with the outcomes of the first global stocktake. APN also contributed to the Experts Dialogue on Mountains and Climate Change, engaging in regional knowledge-sharing to strengthen the resilience of mountain ecosystems. The dialogue generated valuable recommendations for scaling up adaptation strategies in these vulnerable areas.

# Side events of the 26th Intergovernmental Meeting in Jakarta

The 26th Joint Intergovernmental Meeting and Scientific Planning Group Meeting was held in person for the first time in six years on 13–14 June 2024 at the National Research and Innovation Agency (BRIN), Indonesia. Attended by representatives from APN's 22 member countries, along with invited experts and observers, the meeting addressed key institutional matters and featured a series of side events.

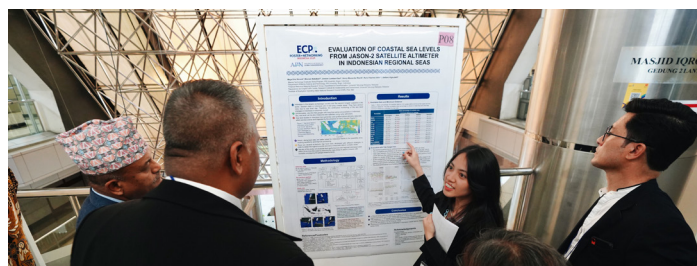
## Driving climate action: APN launched a book on adaptation, disaster risk reduction and loss and damage

APN launched its latest publication, *Linking Climate Change Adaptation, Disaster Risk Reduction, and Loss & Damage*, published by Palgrave Macmillan Singapore, on 13 June 2024. The ceremony featured introductory remarks, a formal unveiling of the book and video messages from contributing authors. A tribute was also paid to Prof. Saleemul Huq, who authored the foreword and was widely recognised for his pioneering contributions to the field of climate adaptation and loss and damage.

This landmark publication is a major output of APN's Climate Adaptation Framework, established in 2013 to address the increasing frequency and intensity of climate-related risks in the Asia-Pacific region. The book explores the interlinkages between climate change adaptation, disaster risk reduction and loss and damage, offering practical insights drawn from field-based research and policy engagement. It features 12 case studies from South and Southeast Asia and provides sector-specific perspectives spanning agriculture, rural livelihoods, energy, infrastructure and natural resource management. The publication serves as a valuable resource for policymakers, practitioners and researchers working at the intersection of climate change, disaster risk and sustainable development.



» Unveiling ceremony of the book.



» Early career professionals participate at the Poster & Networking Session.

## Engaging early career professionals: Indonesian researchers showcase innovative disaster risk reduction research

The 10th APN Early Career Professional (ECP) Poster and Networking Session provided a dynamic platform for emerging Indonesian researchers to showcase innovative work and foster professional connections in the field of global change research. Eleven ECPs shared work on climate change adaptation and disaster risk reduction, covering spatial planning integration, agricultural impacts, nature-based resilience and coastal management. APN members provided constructive feedback, reinforcing support for the growing ECP community in Southeast Asia.

A highlight of the session was the announcement of the prestigious Mitra Award for Global Change Research. Dr Nurrohman Wijaya (Bandung Institute of Technology) received the top honour for his framework integrating climate adaptation and disaster risk reduction into spatial planning in Indonesia. The session also featured a presentation by Ms Ayushmita Pokhrel (Center of Research for Environment, Energy and Water), who highlighted APN-Early Career Professionals (ECAP)'s efforts to strengthen collaboration and capacity building among Asia-Pacific early career professionals.

## Enhancing outreach and engagement: Introduction video of APN launched

APN launched an introductory video that outlines its mandate, key achievements, partnerships and long-term vision for sustainability in the Asia-Pacific region. Serving as a tool for outreach and engagement, the video complements existing communication and knowledge-sharing outputs, including the annual report, the science bulletin and publications referenced in the IPCC Assessment Report, by providing an accessible introduction to the broader portfolio of activities and the regional impact of APN. Watch the video here: <https://bit.ly/APNIntroVid>.



# Approved projects

**Developing a new integrated physical-statistical-financial approach for regional flood risk reduction under climate change** • Dr Thong Nguyen-Huy, University of Southern Queensland, Australia • <https://doi.org/10.30852/p.26685>

**Exploring technologies innovation for smallholder farmers in the context of climate-smart agriculture** • Prof. Hui Ju, Chinese Academy of Agricultural Sciences, China • <https://doi.org/10.30852/p.25872>

**Capacity building of the National Meteorological and Hydrological Services in the Southwest Pacific region** • Dr Awnesh Singh, The University of the South Pacific, Fiji • <https://doi.org/10.30852/p.25907>

**Fostering people's power for claiming urban climate justice** • Mr Sandeep Chachra, ActionAid Association, India • <https://doi.org/10.30852/p.25947>

**GoAL: Gender-orientated adaptive transformation cross-learning for climate change and disaster risk resilience among India, Nepal, Sri Lanka and Japan** • Dr Lakra Harshit, Indian Institute of Technology Roorkee, India • <https://doi.org/10.30852/p.25924>

**Enabling stakeholder participation and applied research in policy comprehension to mainstream climate resilient agro-farming practices in National Climate Agenda (ESPAR)** • Dr Malancha Dey, South Asian Forum for Environment, India • <https://doi.org/10.30852/p.26683>

**Unraveling urban resilience using City Preparedness Index: Scientific evaluation method for developing policy and action networks** • Dr Yuta Uchiyama, Kobe University, Japan • <https://doi.org/10.30852/p.26692>

**Building capacity through co-production in Indonesia and Malaysia to address the climate change communications gap between scientific and lay audiences through journalists** • Dr Azliyana Azhari, Monash University Malaysia, Malaysia • <https://doi.org/10.30852/p.25886>

**Establishing a pilot network for microplastic monitoring and analysis in the coastal environment of Southeast Asia** • Dr Norfazrin Mohd Hanif, Universiti Kebangsaan Malaysia, Malaysia • <https://doi.org/10.30852/p.26672>

**Mitigation potential of GHGs from open waste burning under present scenario and future optimistic scenarios: Cases of South Asian countries - Nepal and Bangladesh**

• Dr Bhupendra Das, Center of Research for Environment, Energy and Water, Nepal • <https://doi.org/10.30852/p.26689>

**Loss and damage estimation from extreme climate events in rice crop using remote sensing based information for farmers' risk reduction** • Dr Bhogendra Mishra, Science Hub Nepal, Nepal • <https://doi.org/10.30852/p.26678>

**Moving to remain in place: Micro-mobilities and circular migration as adaptive strategies to gendered climate risks in Fiji and Samoa** • Prof. Andreas Neef, University of Auckland, New Zealand • <https://doi.org/10.30852/p.26669>

**Adapting to climate change through climate smart agricultural practices in water-limited landscapes in South Asia** • Dr Ghulam Abbas, Centre for Climate Research and Development, COMSATS University Islamabad, Pakistan • <https://doi.org/10.30852/p.26664>

**Climatic hazard assessment to enhance resilience against climate extremes for Southeast Asian megacities (CARE for SEA megacities)** • Dr Faye Abigail Cruz, Manila Observatory, Philippines • <https://doi.org/10.30852/p.26687>

**Building the technical expertise of LGUs for the robust implementation of Ridge to Reef approach (watershed ecosystem approach) to local and provincial land use and development planning in the Philippines** • Dr Rex Victor Cruz, University of the Philippines Los Baños, Philippines • <https://doi.org/10.30852/p.25917>

**Future-proofing smallholder farmers in selected rural communities in the Philippines through nature-positive food production** • Ms Leila Landicho, University of the Philippines Los Baños, Philippines • <https://doi.org/10.30852/p.25858>

**Nature-based solutions for food security under climate change effects for sustainable development in the Mekong Delta** • Dr Binh Doan Van, Vietnamese German University, Vietnam • <https://doi.org/10.30852/p.26676>

# Completed projects

**Integrated assessment of existing practices and development of pathways for the effective integration of nature-based water treatment in urban areas in Sri Lanka, the Philippines and Vietnam**

• Prof. Veeriah Jegatheesan, Royal Melbourne Institute of Technology University, Australia • <https://doi.org/10.30852/p.18686>

**Understanding the interaction of ocean acidification and marine tourism for sustainable management of coral reefs**

• Prof. Kirsten Benkendorff, Southern Cross University, Australia • <https://doi.org/10.30852/p.4605>

**Protecting ecosystems and livelihoods of the Sundarbans, a World Heritage site: Assessing the impact of natural hazards on forest-based ecosystem services**

• Dr Sanjeev Srivastava, University of the Sunshine Coast, Australia • <https://doi.org/10.30852/p.13609>

**Development of smart greenhouse (SGH) for temperate and alpine regions to enhance agriculture farming for future food sustainability**

• Mr Gom Dorji, Royal University of Bhutan, Bhutan • <https://doi.org/10.30852/p.18745>

**Urban water management and flood risk reduction: A platform to share integrated sustainable practices in Asian coastal countries**

• Prof. Bin He, Guangdong Academy of Sciences, China • <https://doi.org/10.30852/p.13487>

**Transboundary transport of microplastics through atmospheric and oceanic currents in East Asia**

• Dr Lei Wang, Nankai University, China • <https://doi.org/10.30852/p.13496>

**Developing capacity for post-typhoon disaster waste management in coastal cities in China, Fiji, and the Philippines**

• Dr Glenn Fernandez, Sichuan University, China • <https://doi.org/10.30852/p.4620>

**Capacity development program on-site suitability mapping for managed aquifer recharge (MAR) under varying climatic conditions using remote sensing and machine learning-based hydrological modeling tools**

• Dr Basant Yadav, Indian Institute of Technology Rookee, India • <https://doi.org/10.30852/p.20538>

**Integrated climate action planning (ICLAP) 2050 tool in Asia-Pacific cities**

• Dr Mahendra Sethi, Indian Society for Applied Research and Development, India • <https://doi.org/10.30852/p.13485>

**The health and restoration of economically and culturally important rivers of India using biological indicators found in Kerala streams, within the context of climate change impacts and sustainable development**

• Dr Nadesa Panicker Anil Kumar, M. S. Swaminathan Research Foundation, India • <https://doi.org/10.30852/p.4598>

**Asia-Pacific Network for Global Change Research (APN) and the Institute for Global Environmental Strategies – Kansai Research Centre (IGES-KRC) Joint Scoping Activity on Regional Circular and Ecological Sphere (R-CES)**

• Dr Satoshi Kojima, Institute for Global Environmental Strategies, Japan • <https://doi.org/10.30852/p.26583>

**Enhancing capacities of local stakeholders in Coral Triangle in managing blue carbon ecosystems for climate mitigation and adaptation**

• Prof. Ryo Kohsaka, Nagoya University, Japan • <https://doi.org/10.30852/p.14061>

**Capacity development training workshop on crop simulation modelling and effects of climate risks on agricultural production systems in Southeast Asia**

• Dr Mohan Geetha, University of Toyama, Japan • <https://doi.org/10.30852/p.4593>

**Impacts of the COVID-19 pandemic on air quality of the Monsoon Asia region: Crosscountry assessment and facilitating policy**

• Prof. Mohd Talib Latif, Universiti Kebangsaan Malaysia, Malaysia • <https://doi.org/10.30852/p.17306>

**Sustained capacity building among early-career researchers towards climate resilience by effective ocean monitoring through the satellite remote sensing**

• Dr Nurul Hazrina Idris, Universiti Teknologi Malaysia, Malaysia • <https://doi.org/10.30852/p.14064>

**International workshop on key indicator species and habitats for marine biodiversity change in East Asia**

• Dr Kwang-Sik Choi, Jeju National University, Republic of Korea • <https://doi.org/10.30852/p.4617>

**Floating Treatment Wetland System (FTWS) – Sustainable green technology to remediate polluted surface water bodies in the COVID-19 era**

• Dr Sadhana Pradhanang Kayastha, The Small Earth Nepal, Nepal • <https://doi.org/10.30852/p.19914>

**Greenhouse gas emissions from paddy ecosystems (GREPEC):**

**Critical windows of water and gas diffusivity** • Dr Thuduwe Kankanamge Kelum Chamindu Deepagoda, University of Peradeniya, Sri Lanka • <https://doi.org/10.30852/p.13577>

**Partnership for the World Climate Research Programme (WCRP)**

**Open Science Conference 2023** • Dr Michael Sparrow, World Climate Research Programme, Switzerland • <https://doi.org/10.30852/p.24346>

**Capacity building for measuring multi-hazard livelihood security and resilience in the Lower Mekong Basin**

• Prof. Indrajit Pal, Asian Institute of Technology, Thailand • <https://doi.org/10.30852/p.20540>

**Conservation of Indonesian endangered plant resources for human health: Enhancing scientific capacity and strengthening science-based policymaking in Indonesia**

• Prof. Ilya Raskin, Rutgers University, United States of America • <https://doi.org/10.30852/p.14062>

**Towards sustainable mangrove-shrimp aquaculture through**

**capacity building and partnership in the Mekong River Delta** • Dr Hue Le, Center for Environment and Community Assets Development, Vietnam • <https://doi.org/10.30852/p.13709>

**Environmental education in combatting marine plastic waste – The role of youth in schools**

• Dr. Tran Thi Minh Hang, Vietnam National University, Vietnam • <https://doi.org/10.30852/p.22661>



# Finances

APN receives financial contributions from: The Ministry of the Environment, Japan; Hyogo Prefectural Government, Japan; Ministry of Environment, Republic of Korea; and The Ministry for the Environment, New Zealand. In addition to direct financial contributions, APN receives significant in-kind contributions from member countries, in particular the Hyogo Prefectural Government, Japan.

\* The figures include executed expenditures for old and new projects and activities, as well as committed resources for multi-year projects.

## FINANCIAL RESOURCES IN FY 2023 (USD)

Donor contributions FY 2023	Ministry of the Environment, Japan	1,450,366
	Hyogo Prefectural Government, Japan	145,679
	Ministry of Environment, Republic of Korea	37,121
	Ministry for the Environment, New Zealand	18,138
Balance brought forward from FY 2022 (including committed funds for multi-year projects)		1,326,926
Returned funds from completed projects and adjustments		410,624
Total		3,388,854

## USE OF RESOURCES IN FY 2023 (USD)

Executed and committed\*

Core programmes	2,087,247
Frameworks	5,668
Other scientific and policy activities	119,726
Institutional activities	159,770
Personnel, administration and operational costs	505,834
Total	2,878,245

# Members

\* The lists below contain current members of APN at the time of publication.

## NATIONAL FOCAL POINTS

### BHUTAN

Tenzin Khorlo  
Ministry of Energy and Natural  
Resources

### CAMBODIA

Roath Sith  
Ministry of Environment

### CHINA

Xiaofeng Fu  
Ministry of Science and Technology

### INDONESIA

Anugerah Widiyanto  
National Research and Innovation  
Agency

### JAPAN

Yukihiro Haisa  
Ministry of the Environment

### LAO PDR

Virasack Chundara  
Ministry of Natural Resources and  
Environment

### MALAYSIA

Mohd Hisham bin Mohd Anip  
Malaysian Meteorological  
Department

### MONGOLIA

Tserendulam Shagdarsuren  
Ministry of Foreign Affairs

### NEPAL

Rajendra K.C.  
Ministry of Forests and  
Environment

### NEW ZEALAND

Douglas Hill  
University of Otago

### PAKISTAN

Muhammad Azim Khoso  
Ministry of Climate Change

### PHILIPPINES

Marcial C. Amaro, Jr.  
Department of Environment and  
Natural Resources

### REPUBLIC OF KOREA

Lee-jae Jang  
Ministry of Environment

### RUSSIAN FEDERATION

Andrey V. Adrianov  
Russian Academy of Sciences

### SRI LANKA

K.R. Uduwawala  
Ministry of Environment

### THAILAND

Monthip Sriratanana  
National Research Council of  
Thailand

### UNITED STATES OF AMERICA

Mari-Vaughn V. Johnson  
United States Geological Survey

### VIETNAM

Le Ngoc Tuan  
Ministry of Natural Resources and  
Environment

## SCIENTIFIC PLANNING GROUP MEMBERS

### AUSTRALIA

Chris Jacobson  
The University of Queensland

### BANGLADESH

Md Giashuddin Miah  
Gazipur Agricultural University

### BHUTAN

Tenzin Khorlo  
Ministry of Energy and Natural  
Resources

### CAMBODIA

Uy Kamal  
Ministry of Environment

### CHINA

Wenjie Dong  
Sun Yat-sen University

### FIJI

Awneesh Singh  
The University of the South Pacific

### INDIA

Hemant Borgaonkar  
Indian Institute of Tropical  
Meteorology

### INDONESIA

Erna Sri Adiningsih  
National Research and Innovation  
Agency

### JAPAN

Kensuke Fukushi  
The University of Tokyo

### LAO PDR

Virasith Phomsouvanh  
Ministry of Natural Resources and  
Environment

### MALAYSIA

Diong Jeong Yik  
Malaysian Meteorological  
Department

### MONGOLIA

Tsogtbaatar Jamsran  
Mongolian Academy of Sciences  
(Retired)

### NEPAL

Madan Lall Shrestha  
Nepal Academy of Science and  
Technology (Retired)

### NEW ZEALAND

Douglas Hill  
University of Otago

### PAKISTAN

Muhammad Arif Goheer  
Global Change Impact Studies  
Centre

### PHILIPPINES

Lormelyn E. Claudio  
Department of Environment and  
Natural Resources

### REPUBLIC OF KOREA

Soojeong Myeong  
Korea Environment Institute

### RUSSIAN FEDERATION

Alexander Sterin  
All-Russia Research Institute of  
Hydrometeorological Information-  
World Data Centre

### SRI LANKA

Athula Karunanayake  
Department of Meteorology

### THAILAND

Chatchai Ratanachai  
Prince of Songkla University

### UNITED STATES OF AMERICA

Mari-Vaughn V. Johnson  
United States Geological Survey

### VIETNAM

Kim Chi Ngo  
Vietnam Academy of Science and  
Technology

## INVITED EXPERTS

### Lance Heath

FreeLance Solutions, Australia  
Fredolin Tangang  
Universiti Brunei Darussalam,  
Brunei

### Ailikun

Chinese Academy of Sciences,  
China

### Yuji Masutomi

National Institute for  
Environmental Studies, Japan  
Subramaniam Moten  
Malaysian Meteorological  
Department, Malaysia (Retired)

### Shiva Khanal

Ministry of Forest and  
Environment, Nepal

### Juan Pulhin

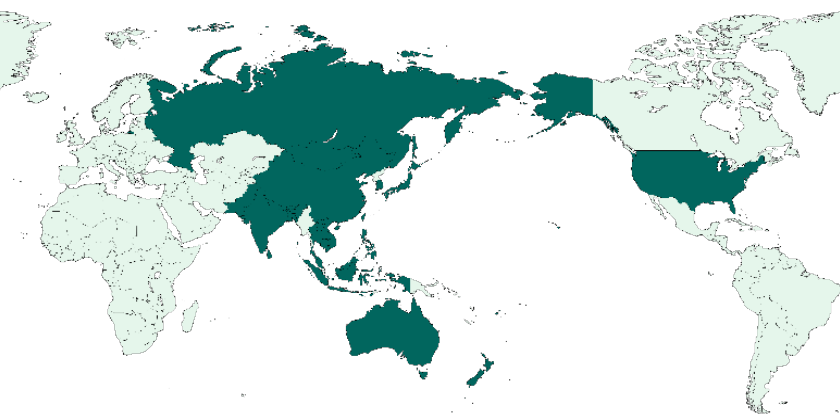
University of the Philippines Los  
Baños, Philippines

### Morgan Wairiu

Solomon Islands National  
University, Solomon Islands

### Sangam Shrestha

Asian Institute of Technology,  
Thailand



#### **APN Annual Report Fiscal Year 2023**

© Asia-Pacific Network for Global Change Research  
Published in June 2025

ISSN: 2185-7628

DOI: 10.30852/ar.2023

Photos by Balaji Malliswamy/Unsplash (cover, p. 10), Debarghya Meikap (p. 1), James Thornton/Unsplash (p. 2), Wahyu Trianto/Unsplash (p. 3) and Quang Nguyen Vinh/Unsplash (p.5). Other images by the APN Secretariat or courtesy of APN project teams.

#### **APN Secretariat**

East Building 4F, 1-5-2 Wakinohama Kaigan Dori,  
Chuo-ku, Kobe 651-0073, Japan

Tel: +81-78-230-8017

Email: [info@apn-gcr.org](mailto:info@apn-gcr.org)

Website: [www.apn-gcr.org](http://www.apn-gcr.org)