



# ANNUAL REPORT

FISCAL YEAR 2024

JULY 2024 – JUNE 2025

**APN**

ASIA-PACIFIC NETWORK FOR  
GLOBAL CHANGE RESEARCH

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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 policymaking.
- ✔ 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.



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## FISCAL YEAR 2024 AT A GLANCE

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### RESEARCH & CAPACITY DEVELOPMENT

32

Projects completed, implemented by 221 persons, including project leaders and collaborators.

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### EXTENSIVE NETWORK

5,900

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

4,131

Active subscribers to the APN mailing list.

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### INVOLVING EARLY CAREER PROFESSIONALS

56%

Percentage of projects that reported involvement of early career professionals.

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### KNOWLEDGE MANAGEMENT

2,417

Outputs in the Publications Library.

161,496

Page views of APN projects and publications.

# Climate

## Supporting climate resilient management of freshwater lakes



**FRESHWATER LAKES ACROSS** Southeast Asia sustain livelihoods, biodiversity and essential services, from fisheries and agriculture to water supply and transport. Yet these ecosystems face shifting rainfall, land use change, human-induced pressures and rising temperatures that affect lake conditions. To better understand emerging risks, the project assessed climate change impacts on major lakes, focusing on lake surface water temperatures, water extent, runoff and surrounding basins.

Drawing on data from more than 600 lakes across Cambodia, Indonesia, Lao PDR, Malaysia, Thailand and Vietnam, the project generated datasets for lakes and basins covering air temperature, relative humidity, wind direction and speed, shortwave radiation, cloud cover and precipitation over 30 years of observed conditions and 60 years of projections. The analysis showed that

daytime lake surface water temperatures increased by 0.18°C per decade and are projected to rise by up to 2.29°C by 2100 under the worst-case scenario. By translating these trends into down-scaled information, the datasets provide evidence to guide climate-informed lake management and adaptation planning.

The project also strengthened capacity through two thematic workshops, engaging more than 100 participants from academic institutions, government agencies, research institutes and the private sector. Two capacity building training events trained 36 officials from government agencies and universities in climate science, remote sensing of water, Python programming and geospatial modelling. A knowledge exchange with government agencies in Thailand further supported dialogue on applying climate risk information. ■



**PROJECT** Climate Change Risk Assessment for Southeast Asian lakes (CCRASEAL) **PROGRAMME** Collaborative Regional Research Programme **PROJECT LEADER** Dr Salvatore G.P. Virdis, Asian Institute of Technology, Thailand **ORGANISATIONS INVOLVED** Universiti Kebangsaan Malaysia, Malaysia; Ministry of Natural Resources and Environment, Vietnam; National University of Laos, Lao PDR; Ministry of Natural Resources and Environment, Lao PDR; Office of the National Economic and Social Development Council, Thailand; Ministry of Environment, Cambodia; University of Sassari, Italy **GRANT DOI** <https://doi.org/10.30852/p.13130>

► Agricultural extension workers play a critical role in helping farmers respond to climate change. Across Bhutan, Indonesia, Lao PDR and Vietnam, the project trained 176 extension personnel to support climate-resilient agriculture. The trained personnel then facilitated 10 sessions for 220 farmers, while learning forums supported wider exchange on climate change adaptation.

**PROJECT LEADER** Ms Hoang Thi Thanh Huong, Thai Nguyen University of Agriculture and Forestry, Vietnam **GRANT DOI** <https://doi.org/10.30852/p.20542>



► The project brought together 37 women from Cambodia and Vanuatu in an online learning workshop on climate change adaptation and disaster risk reduction. Nine case studies showed how women developed technical skills and confidence, connected local and scientific knowledge, and strengthened their advocacy for gender-responsive climate adaptation policies and practices.

**PROJECT LEADER** Ms Michelle Higelin, ActionAid Australia, Australia **GRANT DOI** <https://doi.org/10.30852/p.13872>

# Air, land, coasts and oceans

## Transforming paddy cultivation with drone-based precision agriculture



**AGRICULTURE UNDERPINS LIVELIHOODS** and food security across South and Southeast Asia, yet the sector faces growing pressure from climate change, water scarcity, soil degradation and water pollution. These challenges are particularly significant for paddy cultivation, where transformation is needed to strengthen food security and meet rising demand for agricultural products. Improved crop monitoring and more efficient management of fertilisers, irrigation, pests and diseases are critical to

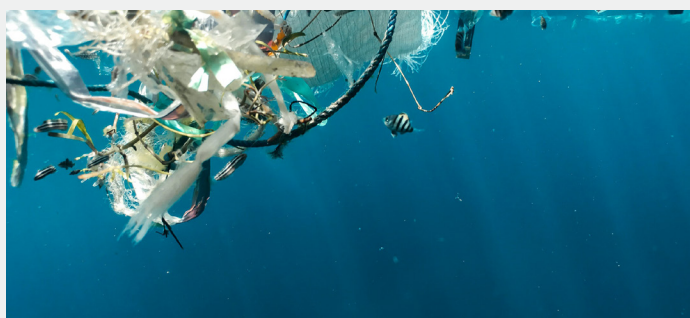
this transformation.

Working across Bangladesh, India, Indonesia, Malaysia and Vietnam, the project introduced precision agriculture and drone technologies as practical tools for improving agroecosystem monitoring in paddy cultivation. It strengthened the capacity of researchers, government officials, agricultural practitioners and industry stakeholders to use drone-based information, supported by training modules tailored to regional needs and local regulations.

Capacity building workshops in the five participating countries trained 187 early career professionals and students in the use of drones for crop monitoring, environmental assessment, land records and disaster preparedness. The workshops also provided practical learning opportunities and supported regional exchange among participants.

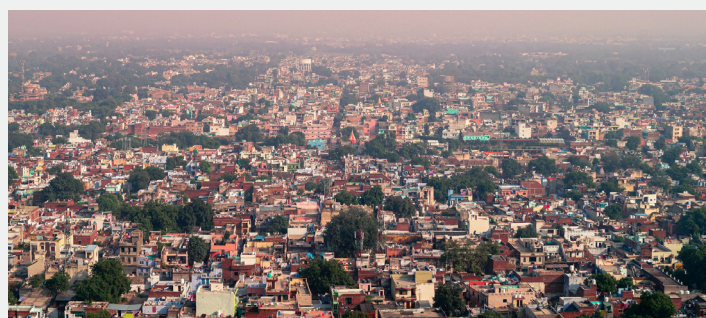
Ten modules and recorded sessions were made publicly available, extending the reach of the workshops beyond direct participants. Together with the regional training network, these resources provide a foundation for broader use of precision agriculture tools in crop monitoring, resource management and climate-resilient farming. ■

**PROJECT** Knowledge sharing and capacity building workshops for precision agriculture using UAVs techniques in the South and Southeast Asian Region **PROGRAMME** Scientific Capacity Development Programme **PROJECT LEADER** Dr Ram Avtar, Hokkaido University, Japan **ORGANISATIONS INVOLVED** Indian Institute of Technology Roorkee, India; Sant Longowal Institute of Engineering and Technology, India; Jahangirnagar University, Bangladesh; Universiti Teknologi MARA, Malaysia; Universitas Gadjah Mada, Indonesia; Can Tho University, Vietnam **GRANT DOI** <https://doi.org/10.30852/p.20534>



► Rivers often carry plastic waste from land into coastal waters, yet the role of river plume fronts in concentrating microplastics remains unclear. Using observations and modelling in China and Malaysia, this project demonstrated that estuarine fronts can accumulate floating microplastics, supporting hotspot prediction and targeted mitigation strategies.

**PROJECT LEADER** Dr Shiye Zhao, Japan Agency for Marine-Earth Science and Technology, Japan **GRANT DOI** <https://doi.org/10.30852/p.18776>



► Across South Asia and the Tibetan Plateau, the project developed baseline information on atmospheric mercury, where data remain limited despite risks to the Himalayan environment. Measurements revealed distinct seasonal patterns, with transport from South Asia influencing mercury levels before the monsoon and reduced cross-border movement during the monsoon.

**PROJECT LEADER** Dr Rukumesh Paudyal, Himalayan Environment Research Institute, Nepal **GRANT DOI** <https://doi.org/10.30852/p.19972>

# Biodiversity and ecosystems

## Mainstreaming traditional and local ecological knowledge for ecosystem-based disaster risk reduction in the Koshi River Basin

**THE KOSHI RIVER** Basin is one of the largest Himalayan river basins within the Ganges system, extending from Nepal through India to Bangladesh. Its floodplain is home to diverse communities that are highly exposed to floods, landslides, sedimentation and other hazards, while holding rich knowledge, practices and community systems developed over generations in response to recurring environmental disturbances.

Despite this long history of local adaptation, disaster risk reduction strategies in the three countries have prioritised engineering measures such as dams and embankments. To support socially and culturally grounded approaches, the project examined the role of traditional and local ecological knowledge in strengthening ecosystem-based disaster risk reduction and informing

disaster management policies and plans.

Through field research, policy assessments and stakeholder consultations, the project documented local adaptation practices, from traditional weather forecasting and crop selection to vegetation-based slope stabilisation and floodplain resource use. Building on this evidence, it developed frameworks to classify traditional ecological knowledge and assess the current and potential integration of ecosystem-based disaster risk reduction, as well as traditional and local knowledge, into national policies. A web portal was also established to share cases and resources for disaster mitigation planning.

The project produced six peer-reviewed journal articles, nine policy briefs,

training materials and a conference presentation. A sharing workshop and training engaged students, disaster risk reduction professionals and policymakers, while 16 young researchers were mentored through project roles and fieldwork. ■



**PROJECT** Enhancing ecosystem-based adaptation to disaster risk reduction in the Himalayan river basin: Integrating traditional and local knowledge in disaster management plans in Nepal, India and Bangladesh **PROGRAMME** Collaborative Regional Research Programme **PROJECT LEADER** Dr Prakash Kumar Paudel, Kathmandu Institute of Applied Sciences, Nepal **ORGANISATIONS INVOLVED** Indian Institute of Technology Kanpur, India; Bangladesh Agricultural University, Bangladesh; Huntington Consulting, United States of America; Asian Institute of Technology, Thailand; Tribhuvan University, Nepal; Institute of Himalayan Risk Reduction, Nepal **GRANT DOI** <https://doi.org/10.30852/p.18629>

► Mangrove carbon and nutrient sinks were examined through sediment core analysis and field observations across five countries in East and Southeast Asia, assessing how climate change and human activities affect their role in coastal ecosystems. The project published seven peer-reviewed papers and convened an international conference, strengthening regional collaboration and evidence for mangrove conservation and blue carbon management.

**PROJECT LEADER** Dr Loh Pei Sun, Zhejiang University, China  
**GRANT DOI** <https://doi.org/10.30852/p.13490>



► The project strengthened capacity for ecosystem service valuation in India, Bangladesh, Bhutan and Thailand through 38 online workshops, 10 in-person workshops and six field visits. More than 200 decision makers, practitioners, administrators and researchers participated, while awareness was raised among over 300 wetland-dependent community members. Two publications and an open-access curriculum were produced.

**PROJECT LEADER** Dr Dipayan Dey, South Asian Forum for Environment, India  
**GRANT DOI** <https://doi.org/10.30852/p.13694>



# Food, water and energy

## Bridging urban and rural planning for resilient food, energy and water systems

**URBAN AND RURAL** areas depend on each other for food, energy and water, yet planning often remains divided across sectors and administrative boundaries. As climate change and rapid urbanisation intensify water stress, fragmented planning can increase risks to livelihoods, resource security and regional development, requiring stronger grassroots evidence for coordinated action. To strengthen grassroots evidence for coordinated action, the project focused on Nagpur, India and Gazipur, Bangladesh, combining surveys, consultations, hydrological modelling and spatial assessment.

The assessment found that three out

of 10 areas in Nagpur are likely to face severe water shortages under future conditions. All assessed areas in Gazipur were identified as water surplus, although availability levels varied. These findings show that planning responses reflect local water availability, demand and stress conditions, rather than applying a single approach across city-regions.

The project organised three national workshops, one international workshop and one conference session, engaging more than 50 participants in codevelopment exercises. Five early career professionals received research methodology training.

These activities informed an urban-rural partnership framework with 10 recommendations for evidence-based action, covering enabling policy mechanisms, financing, capacity building, guidelines, manuals and innovative solutions. ■



## Building inclusive water resilience in mountain and peri-urban communities

**THE HINDU KUSH** Himalayan region is facing pressure on water systems as rapid urbanisation, climate change and changing lifestyles affect peri-urban communities.

This project explored how peri-urban communities in Nepal and Bangladesh cope with water insecurity shaped by supply, governance, social inequality and local management practices, while drawing lessons from India. Through interviews, focus group discussions, seasonal calendars, problem and solution tree analysis and participatory mapping, it examined links between water access, quality, local governance and household adaptation, generating

evidence for inclusive water management strategies.

The findings showed that water insecurity varies across the region. In Nepal, communities faced challenges around water availability and distribution, while in Bangladesh, water quality was the central concern. These pressures affected health, farming and household income, while prompting local solutions such as water purification, rainwater harvesting, recharge ponds and drip irrigation.

Capacity building was a major outcome. Forty-three participants joined the inception workshop, 26

students received training on water security assessment tools and two graduate students completed thesis research, enabling early career researchers to apply participatory tools and connect science, policy and community needs. ■



**PROJECT** Towards sustainable urban water management in Hindukush Himalayan (HKH) Region: A participatory approach to improving water security in mountain cities **PROGRAMME** Collaborative Research for Early Career Scientists **PROJECT LEADER** Dr Menuka Maharjan, Tribhuvan University, Nepal **ORGANISATIONS INVOLVED** The Energy and Resources Institute, India; WforW Foundation, India; Bangladesh University of Engineering and Technology, Bangladesh; University of Chittagong, Bangladesh **GRANT DOI** <https://doi.org/10.30852/p.16255>

► Conflicts between poverty reduction, agricultural commercialisation and environmental impacts were examined among ethnic minority farmers in Central Vietnam. Through surveys, training and livelihood model testing, the project identified practical crop and livestock options, trained more than 180 farmers and supported policy dialogue on sustainable upland livelihoods.

**PROJECT LEADER** Mr Tien Dung Nguyen, Hue University of Agriculture and Forestry, Vietnam  
**GRANT DOI** <https://doi.org/10.30852/p.22674>



# Risk and resilience

## Improving upland farm resilience through diversified agroforestry systems



**SMALLHOLDER UPLAND FARMERS** in Isabela, Philippines, are highly vulnerable to climate change, typhoons, drought and market disruptions. Many rely on corn monocropping, leaving their farms and livelihoods exposed when prices for seeds, fertilisers and pesticides rise, market prices fall and production is disrupted, as seen during the COVID-19 pandemic.

To strengthen resilience, the project enhanced the capacity of three upland farming communities to shift from corn monocropping to appropriate agroforestry systems. Guided by a resilience assessment of five livelihood assets, the project identified low resilience across the communities, particularly in natural, physical, social and financial capital.

Using the Agroforestry Land Capability Mapping Scheme, the project assessed slope, vegetation and soil fertility, confirming that all sites had limited but viable agroforestry potential.

Based on these findings, agroforestry model farms were designed for each project site. Corn monocropping farms were diversified with perennial crops such as hybrid coconut (*Cocos nucifera*) and calamansi (*Citrus × microcarpa*), while hedgerows using madre de cacao (*Gliricidia sepium*) were established in sloping areas to support soil and water conservation.

The project trained around 120 farmers, local government and technical staff in agroforestry, soil fertility management

and pest management. A policy analysis workshop reviewed existing resilience building policies, while a dissemination workshop shared project outputs and raised awareness. The process led to policy recommendations to support local partners in integrating agroforestry into future resilience building programmes and projects. ■

**PROJECT** Resilience-building among smallholder farmers of selected upland farming communities in the province of Isabela, Philippines  
**PROGRAMME** Scientific Capacity Development Programme  
**PROJECT LEADER** Ms Maria Theresa Nemesis Ocampo, University of the Philippines Los Baños, Philippines  
**ORGANISATIONS INVOLVED** Isabela State University, Philippines  
**GRANT DOI** <https://doi.org/10.30852/p.20533>

► Climate risk assessment helps water practitioners understand hazards, exposure and vulnerability under climate uncertainty. This project upgraded a tool developed in Nepal by adding climate downscaling capabilities to improve the analysis of climate change impacts on water resources. It trained 27 early career professionals and supported four young practitioners in developing case studies.

**PROJECT LEADER** Mr Dibesh Shrestha, Nepal Development Research Institute, Nepal  
**GRANT DOI** <https://doi.org/10.30852/p.23259>



► Urban flooding in Can Tho City, Vietnam and Metro Cebu, Philippines, poses recurring community risks, with women bearing a disproportionate burden and being marginalised in flood governance and policy decisions. The project documented gendered vulnerability and adaptation knowledge, while establishing a framework for gender-inclusive flood risk analysis and community resilience strategies.

**PROJECT LEADER** Mr Van Thai Nguyen, An Giang University, Vietnam  
**GRANT DOI** <https://doi.org/10.30852/p.4602>

# Human dimensions

## Tracking emerging pollutants to protect urban waters in Asia



**RAPID URBANISATION AND** economic growth in East and Southeast Asia are increasing pressure on rivers and lakes as emerging pollutants enter surface waters. To assess these pollutants, the project developed a regional dataset across Bangkok, Beijing, Hanoi, Ho Chi Minh City, Phnom Penh, Seoul and Singapore, covering persistent organic pollutants, antibiotics, microplastics and cyanotoxins. By tracing their distribution, sources and risks, the study strengthened the evidence base for protecting ecosystems and human health.

The work combined water quality monitoring, risk assessments and regional knowledge exchange, providing baseline information to support surface water management. Activities included specialised training on microplastic monitoring, modelling and ecological risk assessment, as well as two regional conferences and one online meeting involving 44 early career scientists and lecturers. Together, these activities strengthened collaboration and technical capacity for monitoring emerging pollutants in aquatic environments.

The project produced 10 peer-reviewed international publications, eight national journal articles and 14 conference presentations. A website was established to share project information, scientific activities and data on emerging pollutants, supporting knowledge exchange among researchers, environmental managers and the public. ■

**PROJECT** Establishing a regional dataset on emerging pollutants to support surface water management of seven large cities in East and Southeast Asia  
**PROGRAMME** Collaborative Regional Research Programme **PROJECT LEADER** Dr Thi Phuong Quynh Le, Vietnam Academy of Science and Technology, Vietnam  
**ORGANISATIONS INVOLVED** National University of Singapore, Singapore; Beijing Normal University, China; Seoul National University, Republic of Korea; Institute of Technology of Cambodia, Cambodia; King Mongkut's University of Technology Thonburi, Thailand; Sorbonne University, France; Institute of Research for Development, France; Vietnam Academy of Science and Technology, Vietnam; Vietnam National University, Vietnam **GRANT DOI** <https://doi.org/10.30852/p.4610>

## Turning heat risk evidence into inclusive urban action in South Asia



**SOUTH ASIA IS** vulnerable to extreme heat, with rising temperatures posing risks to health, livelihoods and vulnerable communities. The project worked with municipal authorities and local stakeholders in Colombo, Rajshahi and Surat to develop climate-adaptive and gender-integrated Heat Action Plans (HAP). Urban heat island mapping, household surveys and consultations assessed heat stress impacts and vulnerability factors, generating city-level evidence on heat exposure and gendered vulnerability.

This evidence informed workshops, consultations and regional exchanges, and contributed to the development of the first gender-sensitive framework for integrating heat adaptation into urban planning. Training modules on HAP were prepared in English and translated into Bangla and Sinhalese for local authorities and practitioners. The project also strengthened the South Asia Heat Health Information Network for regional collaboration, information sharing and capacity development.

Over 300 participants attended masterclasses and more than 200 families engaged in heat stress awareness and adaptation activities. By combining city-level evidence, training materials, engagement and regional exchange, the project strengthened the capacity of policymakers, municipal authorities and local stakeholders to design spatially differentiated and gender-sensitive HAP. The approach was shared at COP27 sessions, extending visibility beyond the project cities. ■

**PROJECT** Integrating heat action plans in the climate policy and guidelines for evolving gender-sensitive heat adaptation plan in cities in South Asia  
**PROGRAMME** Scientific Capacity Development Programme **PROJECT LEADER** Mr Rohit Magotra, Integrated Research and Action for Development, India  
**ORGANISATIONS INVOLVED** Integrated Research and Action for Development, India; SLYCAN Trust, Sri Lanka; International Centre for Climate Change and Development, Sri Lanka; Urban Health and Climate Resilience Center of Excellence, India **GRANT DOI** <https://doi.org/10.30852/p.20539>

► Air pollution from urban and industrial areas affects fragile Himalayan environments, water resources and human health. The study identified biomass burning, vehicular emissions and fossil fuel combustion as major contributors to particulate pollution, highlighting the need for cleaner energy use, stronger pollution controls and cooperation on air pollution and climate change at the regional level.

**PROJECT LEADER** Dr Lekhendra Tripathi, Himalayan Environment Research Institute, Nepal  
**GRANT DOI** <https://doi.org/10.30852/p.17215>



# Capacity development

## Strengthening urban river governance through municipal action in Indonesia



**THE CITARUM RIVER** basin in Indonesia is one of the most polluted river systems in the world, with domestic, industrial and agricultural pollution affecting a basin that spans 13 local jurisdictions. Despite national policy promoting integrated water resource management, coordinating local implementation across the basin remains difficult.

Responding to these challenges, the project examined how municipal capacity can support the

implementation of transboundary river revitalisation policies in Bandung Regency and Cimahi City. Through transdisciplinary, case-based research, it linked basin-wide policy ambitions with place-based municipal action by examining the socio-institutional conditions that shape local implementation. Key factors included coordination across levels of government, authority and budget constraints, frontline leadership, boundary-spanning actors and community participation.

The project translated these findings into a peer-reviewed article, a bilingual policy brief and a practical tool to identify municipal enablers for urban river governance. In three hybrid action research workshops, academic collaborators, government agency representatives and non-governmental actors

used the tool to reflect on conditions that could improve river revitalisation outcomes, validate interview findings and co-produce recommendations. The policy brief brought this evidence into dialogue with government agencies involved in Citarum revitalisation, and its recommendations on strengthening municipal capacity for river revitalisation were taken up by the Citarum Taskforce Expert Team, demonstrating the value of place-based evidence in policy processes. ■

**PROJECT** Enhancing local capacity for implementing transboundary revitalisation policies for the Citarum River **PROGRAMME** Collaborative Research for Early Career Scientists **PROJECT LEADER** Dr Wikke Novalia, Monash University, Australia **ORGANISATIONS INVOLVED** Universitas Indonesia, Indonesia; University of Jenderal Ahmad Yani, Indonesia **GRANT DOI** <https://doi.org/10.30852/p.14916>

## Young scientists apply field evidence to strengthen flood resilience in Southeast Asia



**TARGETING YOUNG SCIENTISTS** in Indonesia and Myanmar, this project strengthened scientific capacity in flood risk management by training students to assess flood exposure, water quality and community vulnerability. The project supported progression through six lectures on flood risk concepts for over 100 participants, including 18 officials from the Pekalongan City Government in Indonesia. Following this phase, 25 selected students undertook intensive guided fieldwork in flood-prone coastal communities.

In Indonesia, 18 students applied scientific methods to collect data through 183 onsite observations and 270 household questionnaires. These field activities included meetings with the Planning and Development Agency

of Pekalongan City and the Agency for Water Resource and Spatial Planning of Central Java Province. Under local NGO guidance, students also visited a climate adaptation pilot site and facilitated focus group discussions with 30 community members representing small businesses, women and youth. In Myanmar, seven participants conducted 20 onsite observations and interviews alongside 100 household surveys in Ba Loat Nyunt.

Collectively, these activities resulted in publishable datasets and an educational video on hurricane impacts, enhancing the ability of young researchers to generate field evidence, engage with community priorities and bridge the gap between scientific theory and practical application. ■



**PROJECT** Developing the capacity of student scientists for supporting disadvantaged communities to cope with flooding (DECAF) **PROGRAMME** Scientific Capacity Development Programme **PROJECT LEADER** Dr Alex Lo, Victoria University of Wellington, New Zealand **ORGANISATIONS INVOLVED** Diponegoro University, Indonesia; Spring University Myanmar, Myanmar; Clemson University, United States of America; Education University of Hong Kong, China; University of Nottingham Ningbo, China **GRANT DOI** <https://doi.org/10.30852/p.22536>

# Stakeholder engagement



## Asia-Pacific Climate Change Adaptation Information Platform

APN continued its engagement with the Asia-Pacific Climate Change Adaptation Information Platform (AP-PLAT) by participating in the 5th International Climate Change Adaptation Platform Meeting in October 2024 in Japan. APN shared its experience in capacity development, locally led adaptation and the integration of indigenous and local knowledge into adaptation strategies. In January 2025, APN participated in the 3rd Regular Meeting of the Capacity Development Program and contributed to discussions on the AP-PLAT Three-Year Action Plan.



## Future Earth

APN participated in a consortium led by Future Earth Asia to develop the Meta-Network Hub for Sustainability in Asia, now known as the Asia Science Mission for Sustainability. The regional initiative aims to address Asia's most pressing socio-ecological challenges through mission-driven collaboration by aligning regional research with policy needs and supporting coordinated action on priority challenges. In October 2024, APN participated in the Meta-Network Hub Co-Design Workshop in Japan, contributing to discussions on governance, stakeholder engagement and research priorities. The initiative has since developed into a regional platform with a clear direction and collaborative framework to advance science-informed sustainability action.



## Hyogo Activities

In December 2024, APN, Hyogo Prefectural Government, IGES, the Hyogo Safety Day Promotion Council and the University of Hyogo co-organised the “30th Anniversary of the Great Hanshin-Awaji Earthquake: SDGs International Forum 2024” in Japan. Marking 30 years since the earthquake, the forum reflected on lessons learned and explored sustainable approaches to disaster prevention and recovery, with a particular focus on disaster waste. Discussions focused on disaster waste and highlighted the importance of preparedness, recycling and resource circulation.



In March 2025, APN, Hyogo Prefectural Government, the Hyogo Environmental Advancement Association and the International Centre for Environmental Management of Enclosed Coastal Seas co-organised the forum “The Future of Climate Change and the Marine Environment - Towards Sustainable Oceans” in Japan. The forum examined the impacts of climate change on marine and coastal ecosystems, plastic pollution and the use of digital technologies for monitoring and management. Discussions highlighted the need for science-based policy, regional cooperation and stakeholder engagement to advance sustainable ocean governance.



## Institute for Global Environmental Strategies

In July 2024, APN participated in ISAP2024, organised by IGES in Japan. Together with Future Earth Asia and IGES, APN convened the “Partnerships for Sustainability” session, which examined how partnerships can accelerate climate and sustainability action across the Asia-Pacific region. Presentations highlighted regional experiences in climate adaptation, resilience building and the integration of indigenous knowledge. A panel discussion and interactive exchange identified enabling factors, including trust, shared goals and adequate resources, as well as challenges such as financial constraints and competing priorities.



**2021  
2030** United Nations Decade  
of Ocean Science  
for Sustainable Development

## UN Decade of Ocean Science for Sustainable Development

The Proposal Development Training Workshops for the Pacific region in August 2024 and Temperate East Asia in June 2025 received official endorsement from the Intergovernmental Oceanographic Commission of UNESCO under the United Nations Decade of Ocean Science for Sustainable Development (UNDOS). The endorsement acknowledged the contribution of APN to advancing ocean science, which aligned with the objectives of the UN Decade on capacity building, knowledge generation and application. Official endorsement was also granted for the Hyogo Activity forum “The Future of Climate Change and the Marine Environment - Towards Sustainable Oceans” held in March 2025.



## UNFCCC

APN continued its collaboration with the UNFCCC Lima Adaptation Knowledge Initiative (LAKI) Phase II for the Hindu Kush Himalaya (HKH) through knowledge support and information sharing. Following a bilateral meeting in July 2024, APN provided progress updates on its synthesis work and shared case studies through regional adaptation knowledge platforms. APN also supported the development of the LAKI HKH publication by contributing substantial case study content.

In November 2024, APN participated in COP29 in Azerbaijan. The conference provided a platform to strengthen partnerships, enhance visibility and explore resource mobilisation for climate adaptation. APN engaged in exhibitions and side events, showcased key publications and held discussions with member countries and regional partners to align priorities and explore collaboration.



## University of Otago

In December 2024, APN participated in DevNet Conference 2024, organised by the University of Otago in New Zealand. APN hosted the session “Integrated Approaches to Climate Change, Disaster Risk Reduction and Sustainability in the Pacific Region”, featuring projects on community resilience, traditional knowledge integration, marine plastics and adaptive climate practices. Discussions highlighted approaches such as cashless adaptation, micro mobility and capacity building, while addressing gender inclusivity, community relocation and equitable climate finance. APN also expanded outreach and partnerships through conference booth activities.

# Advancing Pacific priorities through regional engagement and scientific capacity

## Strengthening regional engagement through the First Pacific Subregional Committee Meeting

The First Pacific Subregional Committee Meeting, held on 29 August 2024 in Suva, Fiji, marked an important step in expanding the engagement of APN in the Pacific region. APN members from Australia, Fiji and New Zealand, together with regional stakeholders, shared regional challenges and needs, and discussed ways to increase support for research conducted in the Pacific and the participation of regional researchers and institutions in APN activities. Discussions also covered future engagement with organisations such as South Pacific Regional Environmental Programme (SPREP) and the Pacific Climate Change Centre (PCCC), participation in DevNet 2024 and the 9th Asia-Pacific Climate Change Adaptation Forum, and opportunities to organise a dedicated session on Pacific issues. The meeting highlighted the importance of aligning APN activities with regional priorities while avoiding duplication with existing initiatives.

## Courtesy calls as avenues to stronger partnerships

To strengthen regional partnerships in the Pacific region, the Secretariat conducted three courtesy calls from August to September 2024. Meetings with the Ministry of Environment and Climate Change of Fiji, the National University of Samoa and regional organisations, including SPREP and PCCC, advanced dialogue on collaborative research, capacity development and knowledge exchange. The discussions helped clarify shared priorities for addressing global change challenges and aligning initiatives with regional needs, reinforcing the commitment of APN to sustained and responsive engagement in the region.



» Meeting with Ms Genevieve Jiva, Manager of the Climate Change Division, Ministry of Environment and Climate Change of Fiji.



» Meeting at the Pacific Climate Change Centre, with colleagues from SPREP, PCCC and JICA.



» Opening ceremony of the Pacific Proposal Development Training Workshop in Suva, Fiji

## Enhancing regional collaboration and proposal development capacity among Pacific early career professionals

APN held its first Proposal Development Training Workshop for the Pacific region from 26 to 29 August 2024 in Suva, Fiji, marking a significant step toward strengthening scientific capacity and regional collaboration. Co-hosted by the University of the South Pacific, the workshop brought together 30 early career professionals, from the Cook Islands, Fiji, Japan, the Marshall Islands, New Zealand, Papua New Guinea, Samoa, the Solomon Islands and Vanuatu, to strengthen their skills in developing competitive, regionally relevant research proposals.

Through a hands-on programme, participants worked in diverse teams to identify regional research gaps, codesign research questions and develop proposal concepts aligned with global change priorities. Supported by Pacific-based trainers, they engaged in practical exercises that simulated grant submission processes. The trainers included APN national Focal Points, Scientific Planning Group Members, Invited Experts to the Steering Committee, APN project leaders and local experts.

Another focus was the integration of traditional and Indigenous knowledge in science policy dialogue, exploring the skills needed to ensure research approaches are locally grounded and culturally appropriate. Peer networks and cross-disciplinary, cross-country collaboration were further strengthened through the Asia-Pacific Network of Early Career Professionals for Global Change Research (APN-ECAP) initiative.

As participants continue to develop and submit their proposals, the workshop lays a strong foundation for sustained regional collaboration and future research initiatives addressing critical Pacific challenges.

# Approved projects

## Fire risk mapping and projection in the Asia-Pacific region based on big data and artificial intelligence techniques •

Dr Jin-Soo Kim, City University of Hong Kong, China •

<https://doi.org/10.30852/p.29583>

**Benzotriazole UV-328 in marine plastic debris in typical Southeast Asia countries** • Dr Lixin Zhu, East China Normal University, China • <https://doi.org/10.30852/p.29594>

**Research-based capacity building for advancing urban nature governance in China for climate resilience and ecosystem restoration** • Dr Linjun Xie, University of Nottingham Ningbo, China • <https://doi.org/10.30852/p.30555>

**Integrating climate and biodiversity priorities into urban planning through capacity building: Advancing a collaborative approach for urban planners and forest officials in Assam, India** • Dr Himangana Gupta, South Asian Forum for Environment, India • <https://doi.org/10.30852/p.30467>

**Adapting the impact of land use and climate change through smart irrigation water management to support food security (SIWAMA)** • Dr Chandra Setyawan, Universitas Gadjah Mada, Indonesia • <https://doi.org/10.30852/p.29714>

**Harnessing earth observation (EO) to enhance decision making for eutrophication and harmful algal bloom (EuHAB) impact mitigation and adaptation** • Dr Eko Siswanto, Japan Agency for Marine-Earth Science and Technology, Japan • <https://doi.org/10.30852/p.29588>

**Co-developing nutrient thresholds in submarine groundwater discharge: An integrated transdisciplinary and capacity development project towards safeguarding the future of coral reefs in the Pacific region** • Dr Chris Leong, Research Institute for Humanity and Nature, Japan • <https://doi.org/10.30852/p.30394>

**Assessing urban heat islands in Southeast Asia megacities: An integrated study of land use, climate change and heatwave occurrences** • Dr Wan Shafrina Wan Mohd Jaafar, National University of Malaysia, Malaysia • <https://doi.org/10.30852/p.29703>

**Mapping, tracking and identifying the emission sources of PM2.5 using multiple satellite sensors and assimilated ground observations for health risk assessment in Southeast Asia** • Prof Kasturi Kanniah, Universiti Teknologi Malaysia, Malaysia • <https://doi.org/10.30852/p.29580>

## Enhancing climate resilience in South Asia and China: Predicting precipitation shifts and their impacts for disaster risk reduction and resource security •

Dr Dhiraj Pradhananga, The Small Earth Nepal, Nepal •

<https://doi.org/10.30852/p.29592>

**Empowering communities: Visualising citizen science contributions in disaster risk reduction (CSDRR)** • Dr Sanjiv Neupane, Smartphones For Water Nepal • <https://doi.org/10.30852/p.30369>

**Bridging academic researcher and vulnerable island communities in the Philippines – Enhancing capacities for climate and disaster risk management in low-income municipalities in Batanes, Philippines** • Ms Joy Santiago, University of the Philippines, Philippines • <https://doi.org/10.30852/p.30321>

**LEAD41PH (Leadership for Environmental Action and Development through Foresight-One-Planetary Health): A multi-stakeholder capacity building on policy and practice for sustainable use of aquatic resources integrating a Foresight-One-Planetary Health approach** • Dr Ronilo Jose Flores, University of the Philippines Los Baños, Philippines • <https://doi.org/10.30852/p.30507>

**Enhancing the science policy interface to manage microplastic influx from major cities into the oceans in Southeast Asia** • Dr Wenchao Xue, Asian Institute of Technology, Thailand • <https://doi.org/10.30852/p.29585>

**Evaluation of nature-based solutions for the enhancement of urban water security in Southeast Asian cities** • Dr Huu Quynh Anh Le, University of Economics Ho Chi Minh City, Vietnam • <https://doi.org/10.30852/p.29578>

**Promoting the adoption of circular economy in agriculture for sustainable development in northern mountainous region of Vietnam** • Dr Bac Ho Van, Thai Nguyen University of Agriculture and Forestry, Vietnam • <https://doi.org/10.30852/p.30485>

**Strengthening food security via strategic agricultural water management: A case study on assessing water demand from high-resolution SAR remote sensing for enhanced operational plans in water works systems of Vietnam and Cambodia** • Dr Thuy Thi Ngo, Vietnam Institute of Meteorology, Hydrology and Climate Change, Vietnam • <https://doi.org/10.30852/p.29711>

# Completed projects

**Connecting women-led local realities with the global discourse on climate adaptation and DRR: Interrogating women's lived experiences in Cambodia and Vanuatu** • Ms Michelle Higelin, ActionAid Australia, Australia • <https://doi.org/10.30852/p.13872>

**Enhancing local capacity for implementing transboundary revitalisation policies for the Citarum River** • Dr Wikke Novalia, Monash University, Australia • <https://doi.org/10.30852/p.14916>

**Investigating the impacts of human activities and climate change on mangrove systems in East and Southeast Asia** • Dr Pei Sun Loh, Zhejiang University, China • <https://doi.org/10.30852/p.13490>

**Integrating heat action plans in the climate policy and guidelines for evolving gender sensitive heat adaptation plan in cities in South Asia** • Dr Rohit Magotra, Integrated Research and Action for Development, India • <https://doi.org/10.30852/p.20539>

**Building capacities among AP-PLAT partners in the “science of pricing ecosystem services” for enabling ecosystem-based adaptation for a sustainable future** • Dr Dipayan Dey, South Asian Forum for Environment, India • <https://doi.org/10.30852/p.13694>

**Future water resources, its quality management and nutrient flux in Asian coastal megacities** • Prof Shin-ichi Onodera, Hiroshima University, Japan • <https://doi.org/10.30852/p.4609>

**Knowledge sharing and capacity building workshops for precision agriculture using UAV techniques in the South and Southeast Asian regions** • Dr Ram Avtar, Hokkaido University, Japan • <https://doi.org/10.30852/p.20534>

**Impacts of river plume fronts on the distribution and the fate of plastic debris based on high-resolution observations, and implications for waste recovery** • Dr Shiye Zhao, Japan Agency for Marine-Earth Science and Technology, Japan • <https://doi.org/10.30852/p.18776>

**Developing an urban-rural partnerships framework to mitigate climate-induced water availability impacts on Food, Energy and Water (FEW) security at the regional level** • Prof Rajib Shaw, Keio University, Japan • <https://doi.org/10.30852/p.13515>

**Interlinkage of ecosystem services and human wellbeing to enhance climate-smart landscapes in small watersheds: Analysis for policy-relevant solutions in the South Asian context** • Dr Shamik Chakraborty, University of Toyama, Japan • <https://doi.org/10.30852/p.4604>

**Potential impact of climate change on norovirus incidence and seasonality: Water ecology and human health** • Dr Jian Pu, United Nations University Institute for the Advanced Study of Sustainability, Japan • <https://doi.org/10.30852/p.4581>

**Enhancing coastal risk reduction science and practice by considering climate, ecosystems, and communities in the tropical region** • Prof Aidy Mohamed Shawal Bin M. Muslim, Universiti Malaysia Terengganu, Malaysia • <https://doi.org/10.30852/p.22128>

**Seasonal influence on transboundary mercury transport over the Himalayas: Implications for society** • Mr Rukumesh Paudyal, Himalayan Environment Research Institute, Nepal • <https://doi.org/10.30852/p.19972>

**Transboundary air pollution on the northern and southern slopes of the Himalayas: Chemical characteristics and their climatic and health implications** • Dr Lekhendra Tripathi, Himalayan Environment Research Institute, Nepal • <https://doi.org/10.30852/p.17215>

**Influence of transboundary air pollutants into the atmosphere of Kathmandu, Nepal** • Ms Jasmita Khadgi, Kathmandu Institute of Applied Sciences, Nepal • <https://doi.org/10.30852/p.13794>

**Enhancing ecosystem-based adaptation to disaster risk reduction in the Himalayan river basin: Integrating traditional and local knowledge in disaster management plans in Nepal, India and Bangladesh** • Dr Prakash Paudel, Kathmandu Institute of Applied Sciences, Nepal • <https://doi.org/10.30852/p.18629>

**Building capacities for climate-resilient water resources development under climate uncertainty** • Mr Dibesh Shrestha, Nepal Development Research Institute, Nepal • <https://doi.org/10.30852/p.23259>

**Assessing the profitability of climate-smart agriculture in the Ganges-Brahmaputra river basin of South Asia** • Dr Shobha Poudel, Science Hub Nepal, Nepal • <https://doi.org/10.30852/p.19882>

**Towards sustainable urban water management in Hindukush Himalayan (HKH) region: A participatory approach to improving water security in mountain cities** • Dr Menuka Maharjan, Tribhuvan University, Nepal • <https://doi.org/10.30852/p.16255>

**Integrating geospatial technologies in climate-smart agriculture planning and management in South Asia** • Dr Sudeep Thakuri, Tribhuvan University, Nepal • <https://doi.org/10.30852/p.17443>

**Developing the capacity of student scientists for supporting disadvantaged communities to cope with flooding (DECAF)** • Dr Alex Lo, Victoria University of Wellington, New Zealand • <https://doi.org/10.30852/p.22536>

**Value chain mapping and capacity building of Pakistani government stakeholders to implement Basel Convention's amendments to enhance control of the transboundary movements of plastic waste** • Dr Jabir Hussain Syed, COMSATS University Islamabad, Pakistan • <https://doi.org/10.30852/p.22702>

**Resilience-building among smallholder farmers of selected upland farming communities in the province of Isabela, Philippines** • Ms Maria Theresa Nemesio Ocampo, University of the Philippines Los Baños, Philippines • <https://doi.org/10.30852/p.20533>

**Resilience-building and future-proofing strategies in a multi-stressed scenario in the province of Albay, Philippines** • Prof Juan M. Pulhin, University of the Philippines Los Baños, Philippines • <https://doi.org/10.30852/p.20537>

**Special issue on linking climate change adaptation (CCA), disaster risk reduction (DRR) and loss and damage (L&D)** • Asia-Pacific Network for Global Change Research, Japan, and Slycan Trust, Sri Lanka • <https://doi.org/10.30852/p.16150>

**Climate Change Risk Assessment for Southeast Asian lakes (CCRASEAL)** • Dr Salvatore G.P. Virdis, Asian Institute of Technology, Thailand • <https://doi.org/10.30852/p.13130>

**Exploring gendered knowledge and inclusiveness in community resilience for flooding disaster: Case studies in Can Tho City (Vietnam) and Cebu City (Philippines)** • Mr Van Thai Nguyen, An Giang University, Vietnam • <https://doi.org/10.30852/p.4602>

**Multidimensional poverty, agricultural commercialisation, and environmental impacts: From discovering conflicts to building sustainable livelihood models for upland communities in developing countries** • Dr Tien Dung Nguyen, Hue University of Agriculture and Forestry, Vietnam • <https://doi.org/10.30852/p.22674>

**An innovative capacity building mechanism for extension workers and farmers in the context of climate change** • Ms Hoang Thi Thanh Huong, Thai Nguyen University of Agriculture and Forestry, Vietnam • <https://doi.org/10.30852/p.20542>

**Citizen science and co-experimentation for scaling up climate-smart agriculture (CSA) in the northern mountainous region of Vietnam** • Dr Tuyet Truong, Thai Nguyen University of Agriculture and Forestry, Vietnam • <https://doi.org/10.30852/p.20535>

**Establishing a regional dataset on emerging pollutants to support surface water management of seven large cities of East and Southeast Asia** • Dr Thi Phuong Quynh Le, Vietnam Academy of Science and Technology, Vietnam • <https://doi.org/10.30852/p.4610>

**Environmental education in combatting marine plastic waste – The role of youth in schools** • Dr Tran Thi Minh Hang, Vietnam National University, Hanoi, Vietnam • <https://doi.org/10.30852/p.22661>

# Finances

APN receives financial contributions from: The Ministry of the Environment, Japan; Hyogo Prefectural Government, Japan; and the Ministry of Environment, Republic of Korea. 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 2024 (USD)

Donor contributions FY 2024	Ministry of the Environment, Japan	1,402,699
	Hyogo Prefectural Government, Japan	122,307
	Ministry of Environment, Republic of Korea	38,834
Balance brought forward from FY 2023 (including committed funds for multi-year projects)		1,208,857
Returned funds from completed projects and adjustments		279,448
Total		3,052,145

## USE OF RESOURCES IN FY 2024 (USD)

	Executed and committed*
Core programmes	1,871,490
Other scientific and policy activities	120,293
Institutional activities	111,917
Personnel, administration and operational costs	530,385
Total	2,634,085

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

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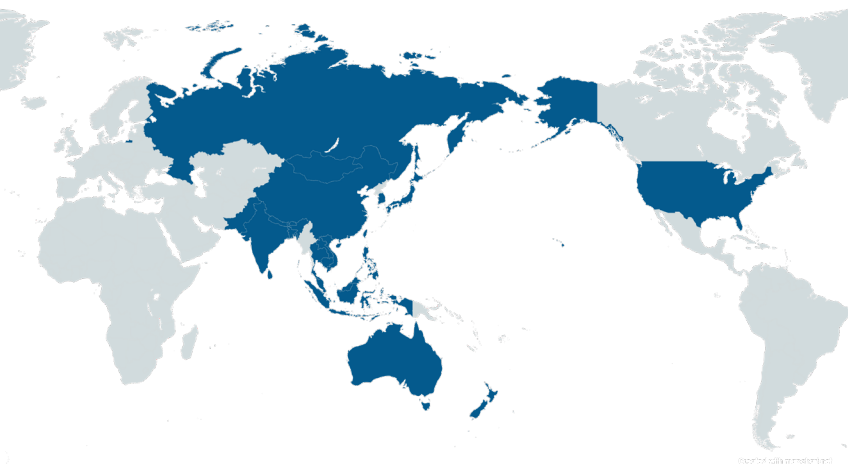
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**APN Annual Report Fiscal Year 2024**

© Asia-Pacific Network for Global Change Research  
Published in June 2026

ISSN: 2185-7628

DOI: 10.30852/ar.2024

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