Nature and Climate Nexus: Promoting Nature-based Solutions for Sustainable Infrastructures in Asia and the Pacific

Putting Nature-based Solutions into Practice through Innovation

(GREEN BAG WEBINAR PROCEEDINGS)

October 2022

For more information, and access to the event materials, please visit Development Asia (DevAsia) ADB Knowledge Events page: Nature and Climate Nexus Webinar Series: Promoting Nature-based Solutions for Sustainable Infrastructures in Asia and the Pacific.

DevAsia is ADB's knowledge collaboration platform for sharing development experience and expertise, best practice, and technology relevant to the Sustainable Development Goals. DevAsia also provide opportunities to interact with experts, policy makers, and other practitioners in related fields. It aims to share development knowledge generated from ADB events with the international development community and the public.

Introduction

The green bag webinar on "Putting Nature-based Solutions into Practice Through Innovation," held on October 13, 2022, is a part of the Nature and Climate Nexus Webinar Series which aims to promote nature-based solutions (NbS) for sustainable infrastructures in Asia and the Pacific. The event provides valuable insights into the integration of NbS across six key themes and scales (i) livable and resilient cities, (ii) river basin management and environmental flows, (iii) cultural considerations and local knowledge (iv) disaster risk management, (v) ecosystem services valuation, and (vi) nature-focused infrastructures.

The Asian Development Bank (ADB) organized the webinar in collaboration with the Australian Trade and Investment Commission and Alluvium International. Alluvium's ecosystem-based approach underpins future urban and rural water security in the face of climate change whilst tackling today's needs for poverty alleviation in marginalized sectors of the community. The event is ADB's NbS working group initiative and was prepared with support from the ADBs Technical Assistance project "Regional: Protecting and Investing in Natural Capital in Asia and the Pacific." The two main objectives were to (i) present case studies across Asia and the Pacific, illustrating wide-ranging challenges and pathways to innovative NbS; and (ii) strengthen capacities of ADB colleagues for mainstreaming NbS into operations through knowledge sharing.

Putting Nature-based Solutions into Practice through Innovation

Anthony McDonald, Executive Director (ED), ADB, provided the welcome remarks and set the broader scene for reflection and discussion at the event. ADB positions to be the climate bank for Asia and the Pacific. As the ADB President, Masatsugu Asakawa, have said, "the battle against climate change will be won or lost, in Asia and the Pacific."

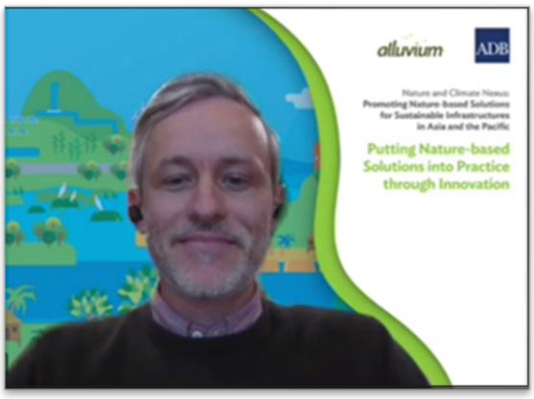
ADB has an ambitious target of $100 billion in climate financing by 2030, comprising $66 billion for mitigation and $34 billion for adaptation. As large as these numbers sound, these are only a fraction of investments needed to meet the challenges ahead – highlighting the critical importance of innovative approaches. Innovation is not about finding a panacea, but instead, requires a range of solutions to the challenges facing DMCs. Equally important as the volume of support, is its quality – "we need to ensure that **climate finance has maximum impact** on the ground."

Good ideas can come from anywhere – after all, ADB's flagship climate initiatives IF-CAP (Innovative Finance Facility for Climate Change in Asia and the Pacific) and ETM (Energy Transmission Mechanism) are adaptions of external ideas. This highlights the critical importance of knowledge networks and partnerships if ADB is to realize the vision of being a solutions bank, and to achieve its core value of being transformational. For instance, just last year at COP26 in Glasgow, ADB joined with other leading multilateral development banks in issuing a joint statement affirming commitment to mainstreaming nature, which includes a commitment to "supporting countries to secure high ambition for implementing NbS."

NbS can be very effective in climate adaptation, including through enhancing flood control systems, and improving wastewater treatment facilities – but this requires a strong understanding of the specific circumstances faced in each DMC. This is why "putting NbS into practice through Innovation" is a timely topic. It is important for ADB to understand how nature can provide pathways for innovative solutions to the challenges our DMCs face.

Innovative Nature-based Solutions

Suzanne Robertson, Principal Operations Coordination Specialist of ADB, moderated the event. Her knowledge and experience in ADB operations as well as knowledge works, especially on nature-positive investments, contributed to an engaging exchange between Alluvium and ADB colleagues. Being familiar with ADB's directions in relation to NbS and the initiatives of the Government of Australia, enabled her to steer discussions not only at the project implementation level but at a strategic standpoint for investing on innovative NbS.

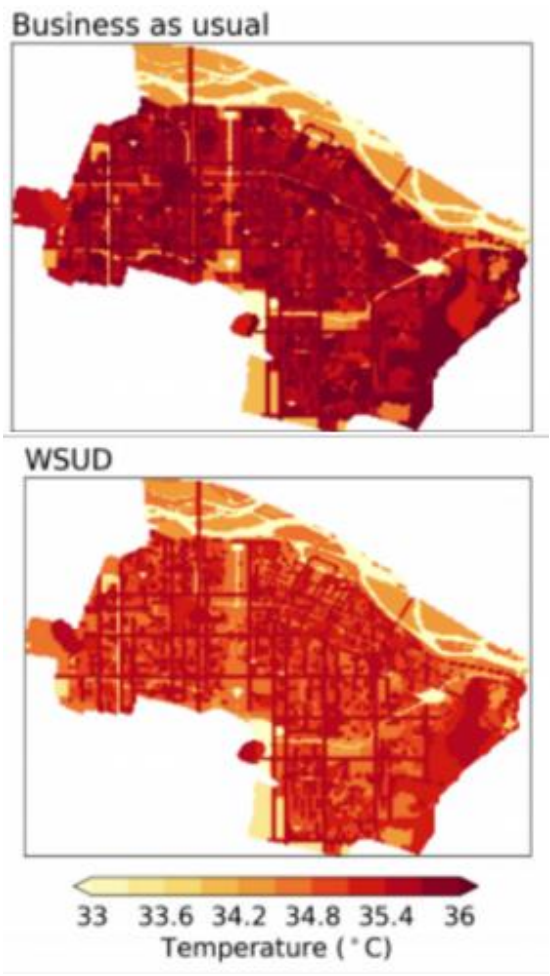


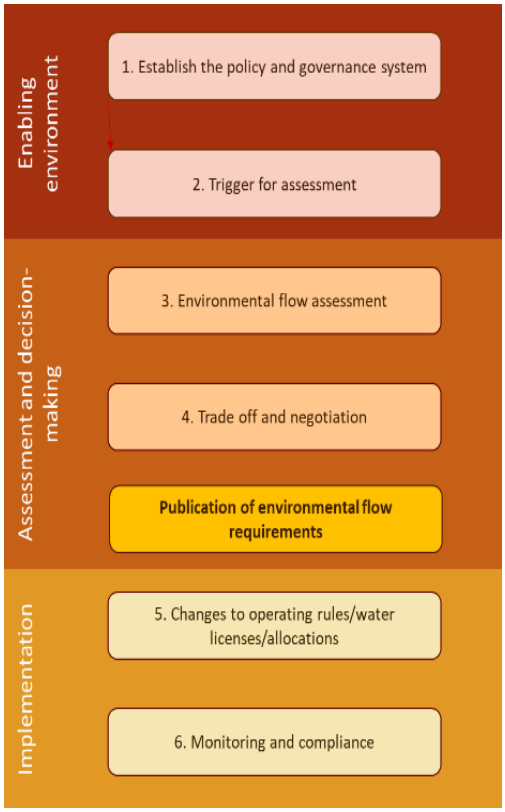
Simon Tilleard of Alluvium International shared the presentation on putting NbS into practice through innovation – an accumulated knowledge and experiences of Alluvium's 150 staff of scientists, engineers, planners, ecologists, and economists. Alluvium aims to solve the complex and systemic challenges at the intersection of our society and environment. The organization is composed of seven organizations: Alluvium Consulting Australia, Mosaic Insights, Natural Capital Economics, Eco Futures, Alluvium International, Alluvium India and the Alluvium Foundation.

Project cases that were presented highlighted the problems, solutions, innovations, and uptake of stakeholders:

Flood response – rebuilding the river with pile fields. The below image depicts typical interventions when people think of solutions that are nature-based. In this case, large flooding caused major devastation on the riverbank. With critical infrastructure nearby, the erosion had to be halted. The **NbS** used here are pile fields (wooden logs driven into the riverbed) and revegetation to stabilize the riverbank. The stabilization design aimed to both improve riparian condition and connectivity as well as instream values. Another **innovation** was the use of specially designed large wood structures to simulate fish habitat and encourage fish to return to the river section. For **uptake**, it is most helpful to visualize results with before and after photos such as below. In addition to being able to show the underpinning modelling and design analysis, simple communication tools such as these before and after photos helps to show landowners, communities, and decision makers that these approaches work, and look better than concrete designs.

Water sensitive vision for the greenfield city of Amaravati, India. Intended to be the new capital of Andhra Pradesh, the site had challenges around high temperatures, potential flooding as well as water security through the dry season which are projected to worsen with climate change. The **NbS** was to develop a water sensitive vision and strategy for the city with a focus on blue-green infrastructures which included urban water and green management approaches. The **innovation** was the use of modelling tools to analyze the cooling benefit of Water Sensitive Urban Design (WSUD) approaches which include urban forestry and irrigation. The innovative modelling helped quantify forestry impacts on temperature and heat stress levels in the city (at the city and street level scales). Increasing street trees and irrigated grass has the potential to reduce temperatures and improve human thermal comfort across the city. Adding trees along canals also gives the most micro-climate benefits in the morning as opposed to the afternoon. The **uptake** had two critical aspects: 1. Early integration of principles into city master planning process and having strong buy-in from master planners; and 2. Showing the multiple benefits of WSUD including improved living conditions and wellbeing due to lower temperatures.





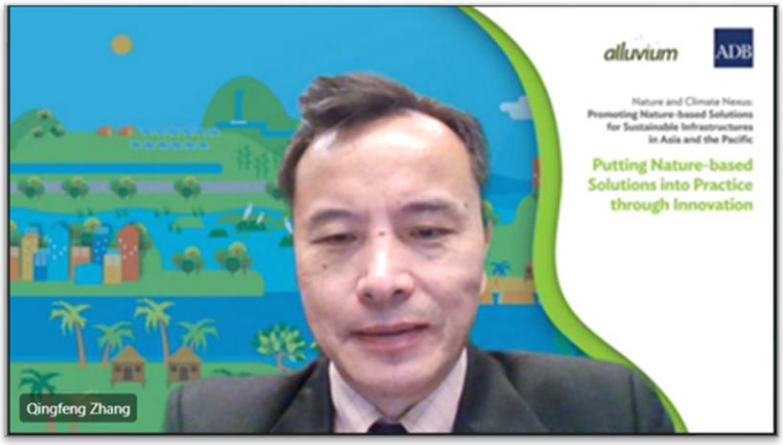
Integrating nature into basin planning – the use of environmental flows in Viet Nam. Viet Nam's basins are being rapidly developed, currently with little regard for environmental impacts as irrigation, hydropower and urban water takes precedence. The Viet Nam Ministry of Natural Resource and Environment (MONRE) was mandated under the 2012 Water Law to publish environmental flows but needs guidance on how this can be done at scale across the country. The **NbS** being co-developed with MONRE is an assessment and implementation framework for environmental flows describing the quantity, timing, and quality of freshwater flows and levels necessary to sustain aquatic ecosystems which, in turn, support human cultures, economies, sustainable livelihoods, and well-being. The **innovation** is the first national framework for environmental flows in Asia and Pacific. The framework also features trade-offs and decision-making as well as implementation of the flows through linking with policy and planning. The **uptake** is being facilitated by the strong alignment to government mandates – e.g., publishing of minimum flows – which is ensuring strong buy-in from government.

Tool for Ecosystem-based Adaptation in the Pacific. The Pacific is widely recognised as one of the most climate and disaster-prone regions. At the same time, it has unique and vulnerable flora and fauna that needs revitalising and protection such as coral reefs. Disaster management is critical to the Pacific's preparation and response to rising sea levels, typhoons, and flooding. The **NbS** was the development of an Ecosystem-based Adaptation decision support tool tailored to the needs of planners at the national, subnational and community levels in the Pacific Islands region. The **innovation** is a simple tool for identifying potential options based on three questions covering sector, ecosystem, and climate impact. The design of the tool to specifically meet the requirements of the region helped in the **uptake** of the solution. The product was launched at COP27 in Egypt.

Ecosystem services valuation in Ayeyarwady basin. The basin is home to 37 million people and is in the early stage of increasingly rapid development. Hydropower, irrigation, and mining, as well as land use change, especially forestry, are competing with traditional lifestyles. Rural communities are directly dependent on the Basin's ecosystem services for survival, yet the economic value of these services was unknown. The **NbS** is the application of novel economic analysis methodologies to value ecosystem services for: (i) irrigation, (ii) inland water transport, (iii) fisheries and aquaculture, (iv) potable water supply, (v) biodiversity, and (vi) ecotourism. The aggregate value of these six key ecosystem services in the basin is up to USD 6.9 billion per annum (9% of total GDP in 2016). Not all ecosystem services were estimated, so the actual value is likely to be significantly higher. The **innovation** in valuation of ecosystem services at the basin scale fed into a State of Basin Assessment – the first comprehensive knowledge base for the Ayeyarwady. The valuation required specialized and service-specific techniques to generate robust results with limited data and across a large basin scale. What matters is not the absolute value of the environment, but the change in value if it is degraded instead of being managed and protected. Showing the value of protecting the environment in basin planning for the Ayeyarwady helped with **uptake** and ensured the environment has a “seat at the table.”

Indigenous voices in Coastal Hazard Adaption Strategies. Large sections of Australia’s north-eastern coastline are under threat from Climate Change and a state-wide program of assessment and adaptation planning for coastal hazards has been initiated. The approach seeks to integrate community insights and concerns with scientific analysis to develop long term solutions to coastal hazards. A range of **NbS** were considered in the Coastal Hazard Adaptation Strategies process which included mangrove restoration, beach nourishment, geotextile sandbags and rezoning of coastal areas. The **innovation** is the use of Indigenous peoples’ traditional ecological knowledge, like their stories, are passed down from generation to generation and continue up until this day. This has allowed Indigenous people to live in a symbiotic relationship with the land and water. The projects aim to integrate insights and knowledge from communities, including Indigenous people’s knowledge, through significant engagement processes. For the **uptake**, strong engagement throughout the project cycle (inception, strategy, design) has meant significant buy-in from communities. This has enabled adoption of green and grey infrastructure approaches building on Indigenous practices, rather than standard concreting approaches to mitigating coastal hazards.

Reflections



Qingfeng Zhang**,** Chief of the Rural Development and Food Security Thematic Group, and OIC Chief of the Environment Thematic Group, ADB, provided reflections and commentary on the importance of NbS in the nature and climate nexus. This year, there had been extreme weather and climate change events that affected DMCs such as the heatwave in India, the devastating floods in Pakistan, and the prolonged severe droughts in Yangtze River in the People's Republic of China.

Based on the presentation, NbS can be applied in different countries and context can help in developing resilient cities, climate change adaptation, disaster risk management, ecosystem services valuation, and coastal protection. This shows that NbS is gaining ground among more decision-makers and highlight the importance of political will to sustain the benefits of using NbS.

As Simon have highlighted, NbS is being more accepted as a key answer to climate change and ecosystem decline. It is important to introduce an integrated approach working across scales and embrace local and indigenous knowledge in devising innovative solutions. For this purpose, we need to strengthen our DMCs' capacities, develop the economic value of NbS, and make the best use of the growing number of tools of NbS.

The good news that ADB has established a regional natural capital lab working group across the Bank. This lab has drawn the lessons from our good case studies in GMS and East Asia DMCs. It aims to enhance understanding of and methods to value natural capital, strengthen policy, institutional, governance and regulatory frameworks and tools in payments for ecological services, and catalyze sustainable finance and innovative financing mechanisms. We look forward to working Nick and Simon to test these tools and strengthen the capacity of our DMCs.

As ED Tony mentioned in his opening remarks, ADB, together with other MDBs to jointly sign the statement on nature at the climate COP26, committing to enhance the resilience of our planet and societies to halt and reverse nature loss. Today's discussions provide good inputs for us to implement the statement on nature. The upcoming COP 27 on climate change and COP15 on biodiversity conservation offer good opportunities to strengthen nature-climate nexus.

ADB are also working with our peer partners, Stanford University and Tsinghua University to profile our good work in natural capital accounting, showcasing our good practices on NbS. ADB also look forward to having good cooperation with Alluvium to share knowledge on NbS particularly for the said upcoming international events.

ED Tony shared his own reflection that the presentation reinforces the importance of "**bringing adaptation considerations much earlier in the project cycle,** to allow for a holistic perspective." NbS needs to be integrated from the concept stage to workout fitting into project design and complement overall project objectives.

Q&A and Open Discussion

The participants of the event raised important questions to consider for implementing and mainstreaming nature-based projects. One key consideration is ensuring that any **NbS is gender inclusive and responsive** to help achieve ADB's target 75% of operations being gender mainstreamed. Alluvium's approach is to work closely with local and international experts to ensure that the gender lens is considered at all stages of projects. It is important to raise this concern at the early stages of the project cycle. This also involves creating the right space for discussion and local advice becomes very important as the context varies across the region. It is also important to go beyond engagement and ensure concerns (such as vulnerability) are strongly linked to the project outputs to see actual results aside from stakeholder involvement

Building capacities on NbS is a two-way process. Like most ADB projects, Alluvium engages in-country experts and consultants to bring their knowledge on nature-based designs that may have been traditionally used. This helps in incorporating newer designs and practices in approaches that would be taken. This process is like a on the job training or learning by doing as we continue building capacities on NbS for the future.

There are also **barriers to Developing Member Countries for integrating NbS** fully into project portfolios and profiles. One main barrier is a legacy in many countries of hard engineering and engineers being heads of many decision-making bodies. Overcoming this barrier requires capacity building and knowledges exchange with current and future leaders who are starting into integrate nature-based considerations into project design. Another key barrier relates to the perception that are not cost-effective in the long run due to maintenance costs as well as to the fear of failure. Therefore, it is important to articulate the economic and multiple co-benefits of NbS. The project case of Viet Nam is helpful on this point and can be replicated in other countries by following the process. Suzanne Robertson added that having country project portfolios and profiles can help ADB identify entry points in different sectors as well as support for upstream integration of NbS.

Jim Binney of NCEconomics shared his experience on **NbS trade-offs** and use of modelling tools for planning and decision-making. When looking at the benefits, we need to consider the incremental and marginal values attached to the NbS. This helps define the trade-off, for example, in building an infrastructure or agricultural production. In a project in Viet Nam focused on decommissioning some irrigation and reverting into traditional rice production. This approach resulted in lower agricultural production but contributed to mitigating the annual average damages from flooding in cities. As an added point, knowing the trade-offs also allows us to determine the risks of approaches and the limits of NbS (e.g., for large scale events such as typhoons). The trade-off question also changes over time, as ecosystems tend to require more time as it continues to develop resilience.

In closing, Suzanne Robertson thanked the speaker the presentation which was most informative. One of the helpful key lessons was indeed the issue of mainstreaming which ADB wants to prioritize in **integrating NbS into operations**. She also thanked and expressed appreciation to the organizers and the Environment Thematic Group, especially Isao Endo, Environment Specialist, who is leading the NbS for the environment. Finally, she thanked everyone for their participation and invited them to the upcoming events on NbS under the Nature and Climate Nexus webinar series.