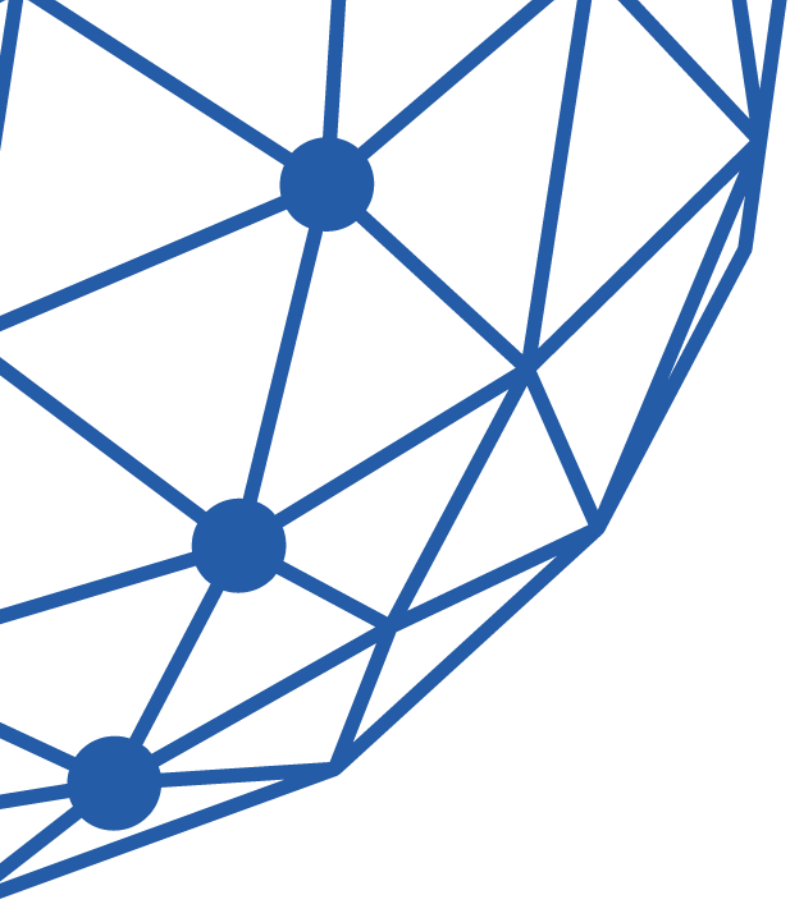

GLOBAL CENTER ON ADAPTATION

ACCELERATING ADAPTATION THROUGH LARGE-SCALE NATURE-BASED SOLUTIONS

A report on the WAC webinar on 7th October 2021

Accelerating Adaptation Through Large-Scale Nature-based Solutions

This session was one in a series of webinars organized by the Water Adaptation Community WAC, hosted by the Global Centre on Adaptation (GCA).

Background

In the context of severe climate change impacts across nations and geographies, nature-based Solutions (NbS) represent a key lead in the global adaptation effort. NbS, and its combination with conventional infrastructural 'grey' measures offers vast potential to build climate resilience while securing local livelihoods, landscape integrity and biodiversity. Currently, there is a distinct lack of scalable NbS projects, especially large-scale projects that can deliver structural changes and impacts. Greater effort must therefore be made to identify a pipeline of large-scale NbS projects that truly accelerate adaptation, and at the same time build the resilience of communities. To address this, GCA and WWF co-organized this webinar session. The main objective was to identify good practices and discuss how to identify and accelerate large-scale NbS to bring adaptation to the speed and scale desired to revert the harmful climate change impacts.

The webinar addresses four key themes in accelerating NbS for adaptation:

- What are some of the best examples of NbS implemented in Asia and Africa?
- What are the key building blocks of Nature-based Solutions (NbS) that are effective at scale?
- What are the various financing mechanisms?
- What could a roadmap to accelerate NbS look like?

Speakers and panellists at the webinar included:

- Patrick Verkooijen, CEO of the Global Centre on Adaptation
- Ede Jorge Ijjasz-Vasquez, Senior Advisor to the GCA
- Mr. Kabir Bin Anwar, Senior Secretary, ministry of water resources, Bangladesh
- Ms. Imelda Dada Bacudo ASEAN Climate Resilience Network-
- Dr. Bregje van Wesenbeeck, Deltares
- Dr. Masood Arshad, WWF Pakistan
- Mr. Karel Heijnert, Royal Haskoning DHV
- Mr. Anirudh Rajashekar, Pegasys
- Mr. Stuart Orr, Global Freshwater Practice, WWF

Setting the scene: Where do we move forward with nature-based solutions

Starting off the session, the webinar host - Mr. Jorge Ijjasz-Vasquez, Senior Advisor to the GCA, reinstated that the field of Nature-based Solutions has matured over the years, with multiple examples to be found of large-scale projects with significant impact. In the big picture of global adaptation, the integration of NbS with traditional 'grey' infrastructure is the one and only way forward to address global climate change.

Providing the opening remarks, Dr. Patrick Verkooijen – CEO, GCA—pointed to the recent climate extremes of flooding and heatwaves in Europe, Asia and America, warning that countries are not prepared enough to deal with climate change impacts. Seeking solutions in nature can help us build healthier, wealthier and more resilient economies. NbS bring multiple benefits; they can serve multiple natural resource management and economic development objectives. The GCA, together with the WWF and other partners, is working towards scaling up NbS to accelerate adaptation. This will be done

through much stronger financing, developing a pipeline of large-scale NbS projects, and building capacity to plan and implement them. All of this will contribute towards making them business-as-usual as much as infrastructural projects.

Providing a global South perspective, Mr. Kabir Bin Anwar – senior secretary, Ministry of Water Resources, Bangladesh, reflected upon the critical vulnerabilities faced by frontline countries to a wide range of climate change impacts. He mentioned the importance of using nature-based solutions, such as mangrove ecosystems, riverine ecosystems, and terrestrial ecosystems—examples that figure prominently in the country's adaptation portfolio. Bangladesh is actively implementing NbS across different landscapes. Highlights include tree-planting (focusing on fruit trees), and about 56 active irrigation projects to supply water for agriculture and freshwater ecosystems.

Good practices in leveraging NbS in Asia and Africa

The webinar put together a collection of four presentations highlighting Asian and African cases. The central topic was 'What do large scale NbS projects look like & how do we begin to finance these ideas?

Using three cases from Africa, Dr. Bregje van Wesenbeeck from Deltares highlighted how nature-based solutions were put into practice. Some common features across cases include the flexibility and wide applicability in different bio-physical environment, and in different hazard contexts. The challenge, however, is to ensure that the solutions serve the planned objectives and do not collapse after the initial investments.

In Rwanda, Deltares and partners are active in controlling flood risks caused by storm water in urban wetlands of Kigali city. Intensified rainfall under climate change, combined with rapid urbanization in the last 20 years, creates the perfect recipe for devastating urban floods. Urban wetlands are identified as the key solution to the problem; thus investments were made in rehabilitating wetlands close to the city. A good example is the Gikondo wetland, which was the result of restoration of an industrial site into a fully functional wetland for flood buffering. Apart from flood protection service, the restored wetland also improves biodiversity and brings about social benefits for local communities. The current challenge is ascertaining how to achieve these objectives over a long term.

Another inspiring example comes from the Lukanga swamp (Zambia) which helps boost water and energy security in the country's Central Province. The swamp works as a sponge that stores water during the wet season, and slowly releases water in the dry season, thereby maintaining river flow during summer. The intervention involved rejuvenating the swamp which was up against encroachments, sedimentation, and invasive species. This was done by developing an economic case for rehabilitation, based on the principle of payment for ecosystem services. A wide range of monetizable and non-monetizable services were quantified, and then matched with small-scheme payments and taxes to generate financial resource for the services.

The last case was from Kenya, where the focus is on use of mangroves for coastal protection in different coastal counties. Observation and modelling exercises show that mangroves can help reduce up to 90% of the wave heights during extreme weather events. Preserving and boosting the mangroves' coastal protection function involves creating linkages between with an array of other ecosystems, and with upstream catchment areas to optimize resources for conservation.

Three main insights were generated based on the three cases:

- Key to leveraging NbS for adaptation is developing a holistic approach that takes into account the whole catchment and employs a wide range of management objectives.
- One should restrain from investing in NbS with biodiversity conservation as the sole purpose. Investments should be fully integrated with infrastructure development and other management objectives.

- Attention should be paid to the South-South communities of learners and practitioners, to identify and scale up best practices.

Subsequently, Dr. Masood Arshad from WWF Pakistan presented insights from implementing NbS in the *Recharge Pakistan* Project. This project (2020-2030) focuses on large-scale NbS for integrated flood risk management, spanning most of Pakistan. Recharge Pakistan will implement floodplain management, wetland restoration, hill torrents and catchment management as key solutions to reduce flood risk and enhance groundwater recharge. The investment is expected to benefit 10 million direct beneficiaries along the Indus River. For such a project to take shape and take off successfully, Dr. Masood emphasized the importance of stakeholder engagement and creating local ownership. The project also focuses on integrating NbS with 'hard' infrastructure to harness both sets of solutions.

Continuing with the Asian cases, Mr. Karel Heijnert from Royal Haskoning DHV presented the potential and scalability of large-scale nature-based solutions in the Mekong Delta in Vietnam. This is being implemented by a consortium of WWF, Ecoshape, One Architect and Royal Haskoning DHV. The Mekong delta is an economically important region of Vietnam, home to about 18 million people. At the same time, the delta is a climate frontier with a cascade of challenges brought about by sea level rise, flooding, salinization, droughts and coastal erosion.

Through two representative cases in Ca Mau peninsula and Dong Thap Province, the project explored how NbS can help address climate change while providing livelihoods and economic benefits to the local communities. The Dong Thap case features the Tram Chim national park - a riverine ecosystem undergoing radical changes in flood control for rice production. Massive investments in dyke systems to allow for a third rice crop in the past has led to reduced soil fertility and ecosystem degradation. At the same time, the flood control dykes could only protect the rice crop against moderate floods events; vulnerability to extreme floods was not addressed. The solution therefore is to restore the wetland system and restore the floodplains back to their natural state, thereby creating a water retention zone to control extreme floods. Follow-up studies under this case also show that floodplain restoration not only benefit ecosystem health and flood buffering capacity, but also enhance crop productivity in the surrounding areas thanks to improved soil fertility.

Along the coastline, the Ca Mau Peninsula case focuses on use of mangrove for coastal protection and erosion control. Here, the idea is to conserve and promote mangroves for coastal protection, while providing the local communities with suitable livelihoods as an incentive to stop deforestation and encroachments. Mr. Karel stressed on the importance of integrated solutions, proposing a comprehensive package of interventions rather than addressing one problem at a time in Ca Mau's highly complex coastal zone.

Lastly, Mr. Anirudh Rajashekar from Pegasys presented an overview of strategies to mobilize finance for nature-based solutions deployed in Rwanda, Kenya and Zambia. In contrast to conventional infrastructural measures, NbS requires innovative financing strategies that involves in-depth understanding of costs and benefits. In this sense, the main quest is to outline the overarching costs and benefits, and highlight potential funders and funding mechanisms.

Regarding costs and benefits, Mr. Anirudh demonstrated that the main advantages of NbS become visible when compared to a business-as-usual or an infrastructure-dominant scenario to deal with climate change impacts. To verify these advantages, the project looked at three distinctive cases of wetland in Kigali (Rwanda), coastal zone in Lamu (Kenya), and rural areas of Lukanga swamp (Zambia). In each case, different NbS compositions were investigated, namely wetland protection with some concrete drains in Kigali, mangroves coupled with semi-permeable wall in Lamu, and swamp restoration in Lukanga.

To address the required finance for these NbS portfolios, the project focused on a market-based repayable financing model. The main idea behind the model is to monetize the benefits of NbS once they are implemented, and use this newly generated economic benefits to compensate initial investments. The repayment can take different formats, ranging from equity, bonds, commercial debts or concessional loans (debt, grants and guarantees). Zooming in the case of Kigali wetland protection, the project analyses a financial model established around the Rwanda Green Fund and shows a potential Economic Internal Rate of Return (EIRR) of about 22%. Receiving finance from grants,

concessional loans and public funding, the Rwanda Green Fund can push forward a wide range of NbS interventions involving urban agriculture, ecotourism, carbon credits and property taxes. These interventions are shown to be able to generate revenues and justify the investments.

In the mangrove restoration and reforestation case in Lamu, an EIRR of 12% was achieved. Here, the financial model is based on three main sources, namely grants from donors, debt financing, and a tariff applied on businesses and industries located within the development area. In the Lukanga case, the swamp restoration work is suggested to be financed mainly through grants and concessional loans. A hydropower company (Zesco) will be the key anchoring institution and will play a central role in managing the grants and loans.

Envisioning a roadmap to accelerate adaptation through NbS

Having highlighted good practices and financial mechanisms for large-scale nature-based solutions across different biophysical and social-economic contexts, the webinar proceeded with a panel discussion on a possible strategic roadmap to move NbS-powered climate adaptation up to the desired speed and scale.

Taking stock of the previous presentations and discussion, Ms. Imelda Dada Bacudo from the ASEAN Climate Resilience Network emphasized the importance of connecting to the political domain and create political support for NbS. Highlighting the success of introducing and promoting nature-based food production with the ministries of the ten ASEAN member states, Ms Imelda suggested that political engagement is a key requirement to reach adaptation at scale. Another important condition for implementing NbS in adaptation is to create integrated, cross-sectoral solutions that can bring together people from different domains and ministries. Lastly, she recommended aligning financing for NbS with climate change policy framework at regional and national levels. A good way to do this is through multi-country projects which could be financed by sources like the Green Climate Fund or the Global Environment Facility.

A question raised was ‘how do we ensure that NbS actually add value to biodiversity and ecosystem health, given that it should not be assumed that all green solutions are good?’
In response, Dr. Bregje reflected on the linkages between NbS and biodiversity, and shared her observation that many projects under the NbS umbrella have not measured biodiversity. To avoid this, we need to make baseline studies a standard practice, and use monitoring tools to measure the changes in biodiversity and ecosystem health prior to and after intervention. This would help avoid ‘green-washing’ and environmental damages. Besides, more expertise and resources should be allocated to NbS projects to ensure proper baseline and impact evaluation studies.

Taking a systemic approach, Karel Heijnert argued that another element of a successful roadmap for NbS-powered adaptation would be to achieve the right kind of integration in approach. Design and implementation of NbS should not focus merely on nature and ecosystems, but rather cover all relevant aspects including finance, institutions, livelihoods, land rights, ownership, etc. NbS should present itself as an approach to link and simultaneously address all these aspects of building climate resilience and prosperity for the target region. This way, the NbS implementation can become truly scalable and sustainable in the long run.

Responding to the question as to what are the building blocks of scaling up NbS and their relative priorities, Mr. Anirudh called for building a strong awareness of the full life-cycle of benefits of the green solutions compared to conventional grey infrastructural solutions. In this regard, we should highlight not only the ecological benefits, but also economic benefits and the efficacy to address climate impacts. Furthermore, he also pointed to the importance of more data and information to guide decisions on investments and risk management for NbS.

On the institutional side, Ms. Imelda raised concerns about the lack of coordination and integration, even though in some cases expertise and financial resource is sufficient to drive adaptation at scale.

Limited coordination and integration now represent an important barrier to accelerating adaptation and NbS. A good solution is to bring out champions that can connect different stakeholders and government departments to push adaptation forward.

As final remarks and points for follow-up discussion beyond the webinar, the speakers reflected on two practical aspects of accelerating NbS at scale, namely (a) the uncertainties that NbS must deal with and (b) standard guidelines for their implementation. Dr. Bregje remarked that in general NbS offer suitable solutions under uncertainties as they are no-regret measures. According to her, going back to nature and investing in natural resources will always bring about positive benefits despite future uncertainties.

Dr. Karel cautioned against the idea of seeking a universal approach when it comes to NbS for adaptation. What is universal with NbS, is that all measures require considerable space. To make NbS to work for everyone we need to go out to the field and to listen to all stakeholders, to move things forward in a sustainable manner.

Mr. Anirudh reiterated the idea of stressing upon no-regret options and focus investment on those options to accelerate adaptation. In this sense, we need to implement proper scenario assessment to ascertain the way forward.

Lastly, Ms. Imelda called upon stakeholders, development partners, and the scientific community to focus on communicating adaptation in simple and policy-compatible terms to ensure uptake. It is also relevant when working with partners from the policy domain to focus on proven examples that can be readily scaled up.

Ways Forward

Envisioning the way forward, Stuart Orr, Global Freshwater Lead, WWF reinstated that our climate crisis is indeed a water crisis. No matter where we live, we are at increasing risk of flood, droughts, heatwaves and many other climate impacts. Simultaneous to our efforts to achieve net zero emission by 2050, we must urgently scale up adaptation efforts and build up resilience. This requires a substantial increase in the financial resources available for climate adaptation. He argued that the webinar had demonstrated the potential of partnerships to boost the implementation of large-scale adaptation through NbS. He also noted how various NbS cases discussed at the webinar demonstrated a strong link to water. He emphasized upon the need to take such projects and examples to the next level, and make sure that similar projects are funded and properly implemented. Mr. Stuart extended his invitation to interested parties to join the Water Adaptation Community, to find opportunities to collaborate and materialize large-scale adaptation projects.

The Water Adaptation Community (WAC) is a multi-actor platform that supports collaboration, learning and practical action in water climate adaptation and resilience. It works as a broker between solution seekers and solution providers in the water cycle. It supports the understanding of what adaptation means in practice and supports efforts for adaptation mainstreaming. It does this by engaging Communities of Practice, including NGOs, scientists, experts, policy makers and decision-makers in the most pressing questions and adaptation issues, consolidating and supporting knowledge brokering and innovation through stories, blogs, webinars and e-learning. The focus is on governance, finance and behavior change.

For further information and reference, please check the below links.

The Water Adaptation Community https://communities.adaptationexchange.org/
IUCN Global Standard for NbS https://www.iucn.org/theme/nature-based-solutions/resources/iucn-global-standard-nbs

The Resilient Asian Deltas Initiative
https://wwf.panda.org/discover/our_focus/freshwater_practice/freshwater_inititiaves/resilient_asian_deltas_initiative/?