CARE for South Asia

Accessing Climate Funds:
From Government Priorities to Community Action

By Graham Clark, Chairman and Chief Executive of Asia Affinity Holdings Limited

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A perspective

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The CARE for South Asia project is a partnership between ADPC, RIMES, and the World Bank to support informed decision-making for protecting development gains in South Asia

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Mr. Graham Clark

Accessing Climate Funds: *From Government Priorities to Community Action*

What are the fundamentals of accessing climate funds?

Accessibility to climate finance to address climate impacts is a global priority. However, accessing climate finance is complex. This is due to the nature and scale of the climate and socio-economic issues that need to be addressed. Opportunities for accessing climate funds must be approached in a structured and systematic way. From the national government's standpoint, accessing climate funds should be targeted to achieve national as well as community-level adaptation and resilience.

National governments must clearly announce their areas of impact and the issues they want to address. These priorities should also align with the global priorities. We know that mostly at a national level there is an urgent need to address increased carbon emissions, invest in renewable energy sources, and at the same time address global health.

Once all governments have outlined their priorities and developed policies to support the changes, I think there are available funds from global institutions to help support them in working towards their climate priorities.

However, I think we need to encourage climate adaptation and resilience at the local level for communities to promote proactive engagement. In a deteriorating environment, we need a "whole-of-society approach", to make significant impacts. I think to address the big impacts of climate change we need community participation from the world's most vulnerable and most exposed to the risks of climate change.

We need to ask tough questions on the Sendai Framework's progress.

"Accessibility to climate finance to address climate impacts is a global priority."

Assessing the international frameworks and aligning with local-level priorities will help the communities adapt to disaster impacts. Additionally, it will also help governments to identify development areas to improve their climate and disaster strategies.

Once the priorities are outlined, we can think about how we can track the financial inflows for those priorities. This will enable us to identify the gaps and the key issues. Investors will first ask, "What are you trying to address?" and "What's the issue you want our money to solve?"

What would be the starting point for governments to access private-sector funding?

To ensure access to climate funding, governments can approach global financial institutions such as the Green Climate Fund or traditional providers of long-term capital such as the life insurance sector, merchant banks, and investment houses.

Another example is the 'United Nations Glasgow Financial Alliance for Net Zero' which was formed at the 26th Conference of Parties and comprises 450 banks, insurers, and asset managers in 45 countries. They can provide the pathway to access climate funds and collectively control US $130 trillion.

The alliance between governments and funders are particularly significant as both are committed to sustainable finance and green and blue investments. Additionally, governments can also reach out to multilateral agencies such as the World Bank and the Asian Development Bank, to acquire the funding needed to drive investment in climate change and disaster risk reduction at national, commercial, and grassroots levels.

Mr. Graham Clark is Chairman and Chief Executive of Asia Affinity Holdings Ltd. in Hong Kong SAR. ADPC spoke with him at the seventh session of the Global Platform for Disaster Risk Reduction (GP2022) in Bali, Indonesia.

Mangrove forest on Andaman Island, India (Photo by Dr. Yuvaraj)

Perspective

Climate Change Impact on the Andaman and Nicobar Islands

By Dr. E. Yuvaraj

The Andaman and Nicobar Islands, a union territory of India nestled in the Bay of Bengal, is known for its picturesque landscape, rich biodiversity, and unique ecosystems.

These abundant resources form the backbone of the islands' economy, as the local communities' livelihoods primarily depend on tourism and fisheries.

The island ecosystems, including coral reefs, mangroves, beaches, and seagrass beds, play a pivotal role in sustaining these economic activities.

"Climate change vulnerability has become more evident in recent years."

Climate extremes and the island ecosystem

However, climate change vulnerability has become more evident in recent years, with the increase of extreme climate events such as cyclones, intense rainfall, floods, droughts, and heat waves.

The climate indices of the last three decades show a decrease in the number of wet days and an increase in maximum rainfall by five consecutive days.

The average maximum temperature and the number of heat days have also increased. This indicates a further increase in extreme climate events such as drought, heat waves, and cyclones.

Climate risks and impacts on communities

Climatic events directly impact the tourism sector by shortening tourists' visiting period, which in turn reduces commercial activities like scuba diving, trekking, kayaking, etc. The local communities' livelihoods are also impacted, resulting in a decrease in sales of local handicrafts.

Additionally, there is an increase in water and power supply demand, damage to the tourism recreation structures, and disruption in the road transportation and ferry services. Moreover, frequent cyclones and floods damage the coastal ecosystems, causing beach erosion and coral bleaching. In the long term, this will reduce tourist visits to the Andaman and Nicobar Islands.

Post-disaster damages of Cyclone Lehar (2013) in South Andaman Island (Photo by Dr. Yuvaraj)

Post-disaster damages of Cyclone Lehar (2013) in South Andaman Island (Photo by Dr. Yuvaraj)

Climate change alters the aquatic ecosystem, disrupting the fish, mollusk, and crab populations. The decline in the ecosystem of mangroves, coral reefs, and sea grass directly impacts the fisheries sector by causing stress on local economies.

Climate risks and impact on critical infrastructure

The high exposure of the Andaman and Nicobar Islands calls for resilient infrastructures to help adapt, prepare, and recover from potential losses and damages.

Efforts are underway to enhance resilience in the power, transport, water supply, and drainage sectors. There is also a shift from traditional fuel generators to solar panels for power generation.

However, the efficiency of solar panels is challenged by the region's cloud cover and frequent rainy days.

This also calls for alternative green energy like windmills and tide-generated energy. Other initiatives to build resilience are climate-resilient engineering, design, preparedness for transportation services, and strategic water harvesting and drainage methods for water services.

Integrated development planning for critical infrastructure starts with climate adaptation and resilience building.

Need for integrated development planning

To address the multifaceted challenges posed by climate disasters, there is a need for integrated development planning and prioritizing critical aspects. There is also a need to manage risks for local communities, whose livelihoods are intricately linked to the island's exposure.

Furthermore, implementing climate-resilient practices in these sectors can enhance coping capacity, with the present and future climate variations. This will balance economic growth and build resilience to ensure sustainable development.

Dr. E. Yuvaraj is an Assistant Professor at the Department of Coastal Disaster Management, Pondicherry University, Port Blair, Andaman & Nicobar Islands, India.

A damaged railway track in Rayagada district. Odisha, India (Photo by: Dr. Malini Prava Sethi)

Rising Tides and Sinking Villages:
Odisha's Battle with Climate Change

By Dr. Malini Prava Sethi

The State of Odisha in India faces severe climate change impacts. In the last 12 years, at least 16 natural disasters have impacted the lives and livelihoods of the coastal communities.

Frequent tropical cyclones and floods have intensified sea erosion and doubled vulnerabilities in the coastal districts of Balasore, Bhadrak, Ganjam, Jagatsinghpur, Kendrapara, and Puri.

A comprehensive vulnerability analysis is needed, encompassing diverse social, environmental, physical, agricultural, and health parameters.

Such assessments and capacity development strategies will strengthen policy implementation, increase the use of scientific and community-based knowledge, and enhance capacities.

Additionally, there is a need to address increasing vulnerabilities in agro-climatic zones. The approach to climate solutions requires coordination mechanisms between practitioners, government agencies, and academic institutions. This will help with the utilization of scientific data, local resources, and knowledge to enhance agricultural productivity.

Sinking coastal communities

Rising sea levels caused the submergence of 16 coastal villages, leading to the displacement of 247 people.

"In the last 12 years, at least 16 natural disasters have impacted the lives and livelihoods of the coastal communities."

The Integrated Coastal Zone Management (ICZM) project predicts the possibility of coastal erosion in different areas like Satabhaya, Kendrapara district, the Paradip port, the bank of Jamuna, the beach areas of Puri, and the northern part of Gopalpur port.

Sea walls and geotextile tubes were used at Pentha in Kendrapara district to prevent erosion along the Bay of Bengal.

Although resilience and adaptation activities protect villages, the extent and severity of the erosion are significant.

Take, for instance, the cases of the Podampeta and Ramayapatnam villages of Ganjam district.

Members of India's National Disaster Response Force (NDRF) responding to floods in Odisha in 2019 (Photo by: Dr. Malini Prava Sethi)

A resident traverses through the floods in Srirampur Mathasahi Village, Kendrapara district in Odisha (Photo by: Dr. Malini Prava Sethi)

Podampeta is a site of extreme events caused by sea level rise, and since 2015, the tides have become increasingly aggressive each day.

So far, the sea has engulfed 200 houses. Another 100 houses stand in a dilapidated condition. Some fishing communities now plan to migrate to other states for the sake of their livelihood..

Lessons from Odisha

Under the second phase of the ICZM project, the state government plans to deploy geo-synthetic tubes and large tube-shaped bags made of porous, weather-resistant synthetic material filled with sand to withstand sea waves.

This sets a stage of hope to address climate challenges in vulnerable regions of South Asia. While the world is committed to resilience, climatic impacts are becoming more severe and increasing the communities' susceptibility.

Under the state initiatives of ICZM, a massive mangrove plantation was carried out. As the roots of the mangroves act as tide breakers, their foliage provides a buffer for the swift winds and cyclones.

Mangrove restoration and regeneration are practiced globally, as an ecosystem-based solution to protect the coast from the impacts of climate change.

Odisha was the first state in the country to come up with a Climate Change Action Plan. Under which, the Odisha government has taken up afforestation initiatives using scientific knowledge and methods.

Other steps undertaken are rainwater harvesting and creating green buffer areas for industries. This will not only fight climate impacts but will also reduce pollution levels. The climate action plan initiatives will strengthen institutional capacities to build resilience and coastal capacities.

Dr. Malini Prava Sethi is an Assistant Professor at the Department of Geography at Ravenshaw University in Odisha, India.

Climate Change Lessons and Local Government Experiences from Assam, India

By Mr. Pallav Gopal Jha

The riverine island of Assam-Majuli, in the northeastern part of India, is affected by frequent floods and river erosion.

In 2017, during the monsoonal period the early warning dissemination from upper riparian states indicated that a possible breach in the dam could inundate the low-lying village areas.

I reached the village of Karotipar to help with the rehabilitation of the locals to the relief camps. The flood-affected village consisted of a majority of indigenous groups (Mishing tribes). The inhabitants live in high-stilt traditional houses (designed with century-old architectural knowledge, which allows them to stay safe along rivers and also during high flood seasons).

I facilitated with the village head to rehabilitate families to government relief camps. Thousands of people and animals were eventually sheltered.

The beautiful, pristine Majuli Island, nestled amidst the mighty Brahmaputra River, faced its worst flood of the decade that year.

After sunset that day, the upper riparian zone received heavy rainfall and the Subansiri river rose to almost 5 feet in a few hours.

We started receiving emergency calls from different village heads pleading for help. My phone battery died shortly after the communication.

Majuli district is an island and the last ferry would be at 3:30 PM, given such limitations in transportation the response mechanisms are challenging. The possibility of loss of life increases manifold. And unfortunately, despite timely and efficient early warning systems (EWS) and preparedness, huge losses and damages were incurred that year.

What has changed?

Has the river morphology or the frequency of extreme weather events changed? I also often wonder about the changing interrelationship of humans and the environment?

"Climate change impact is exacerbated due to increased population, conflicts, and limited access to basic resources."

Flooded settlements at Majuli Island, Assam, India (Photo by Pallav Gopal Jha)

Settlements at Majuli Island, Assam, India (Photos by: Pallav Gopal Jha)

Settlements at Majuli Island, Assam, India (Photos by: Pallav Gopal Jha)

The world is committed to climate resilience, but risks are increasing manifold

International initiatives like the United Nations Framework Convention on Climate Change (UNFCCC), Kyoto Protocol, and Paris Agreement promote climate adaptation measures to combat climate change through cooperation and collaboration.

In the last few years, events like heat waves, wildfires in the European and South American region, extreme cyclonic events in Atlantic and Pacific coasts, and erosion and floods in the South Asian region were witnessed.

The impact was exacerbated due to increased population, conflicts, and limited access to basic resources.

The COVID-19 crisis response mechanism was complex. Apart from following 'social distancing norms' to ensure safety, the basic resources had to be accessible to people across multiple locations.

This response was different from flood and cyclone response mechanisms, which start with rehabilitating the affected communities in safe centers till normalcy is attained.

The pandemic demanded a paradigm shift in disaster response strategy as the socio-economic vulnerabilities were manifold, and existing risks caused triggers leading to climatic disasters.

How is India addressing climate adaptation and resilience?

India builds efficient climate strategies through its various policy interventions, international cooperation, and collaboration to implement 'human-nature interaction' actions at the grassroots level.

The strategies integrate traditional best practices and knowledge that have prevailed through centuries.

For example, the Ministry of Environment Forest and Climate Change (MoEF), Government of India, announced G20's first environment and sustainability group, emphasizing blue economy and coastal sustainability, restoration of degraded lands, and ecosystems enhancement of biodiversity and strengthening of the circular economy.

India is also a party to the UNFCCC, Kyoto Protocol, and Paris Agreement. Under the Paris Agreement in 2015, India submitted its Nationally Determined Contributions (NDCs) based on climate change priorities, sustainable development, poverty eradication, and economic growth.

In August 2022, India updated its NDC targets to reduce the emissions intensity of its GDP by 45 percent, from the 2005 level, by 2030.

Further, in November 2022, India submitted its Long-Term Low-Carbon Development Strategy. India's long-term strategy lays the pillars of low-carbon development pathways.

Similarly, states of India have developed State Action Plans on climate change. Assam's State Action Plan outlines strategies for water resources, floods and erosion, agriculture and forest, and biodiversity.

Political will and leadership drive the implementation of such strategies.

What other climate change lessons can be learned from Assam, India?

The *Jan Bhagidari* (public participation), a mega plantation initiative called *"Amrit Briskshya Andolan"* (afforestation drive) has been taken up.

In the social context, the Indian traditional wisdom of *"vasudaiv kutumbkum"*, which means one earth, one family, one future value of all life, and interconnectedness of each other in the universe, promotes living in harmony with the ecosystem.

The interplay of environment, earth and resource use can be balanced through innovative leadership and sustainable approaches to help rural and urban areas.

Such approaches can protect indigenous cultures. And policy interventions will combat long-term impacts.

Within this context, the dynamic changes caused due to human interventions can be reversed using Nature-based Solutions (NbS).

Jadav Molai Payeng, of Majuli Island, single-handedly planted and tended trees on a sandbar on the island. He created a thriving 'Molai Forest' of 1360 acres, now home to tigers, deer, monkeys, etc.

Through his work, he has highlighted the advantages of NbS, by creating a flourishing environment and reducing the risks of flooding and erosion.

Majuli Island serves as a reminder that climate resilience is about adapting to new realities and harnessing indigenous knowledge to forge harmonious alliances with nature.

Mr. Pallav Gopal Jha is the Commissioner of Taxes, Assam, India, and Project Director, Assam Urban Infrastructure Investment Program.

Climate Innovations and Private Sector Engagement of Nepal

By Mr. Anil Pokhrel

Nepal's National Disaster Risk Reduction & Management Authority (NDRRMA) was established through the Disaster Risk Reduction and Management (DRRM) Act of 2017 to coordinate and implement DRRM-related functions in the country.

Its mandates include leading, facilitating, and supporting federal, provincial, and local governments on disaster risk reduction, response, and reconstruction.

Through Nepal's legal and policy frameworks, we can interact with the private sector to collaborate on innovations and find solutions to climate change impacts.

Supporting inclusive risk assessment

The first example I would like to share is the BIPAD portal – an integrated and comprehensive disaster information management system that facilitates disaster communication and post-disaster event coordination in the country.

We took a crowdsourcing approach to develop this system and recognized the strength of the private sector, youth, and academia working in the IT industry.

Over the past three years, we have been closely engaging with all these stakeholders, to develop the BIPAD portal and build it into an ecosystem where many youth-led firms' initiatives come together.

Through this national platform, we organize dialogues to find solutions to address the scarcity of data. We've gathered data on housing exposure, at a household level, for close to two dozen municipalities in the country.

This work has also been supported by the Asian Disaster Preparedness Center (ADPC). Close to 20,000 houses have been mapped with details such as types of walls and roofs and whether houses are vulnerable to strong winds, earthquakes, or flooding.
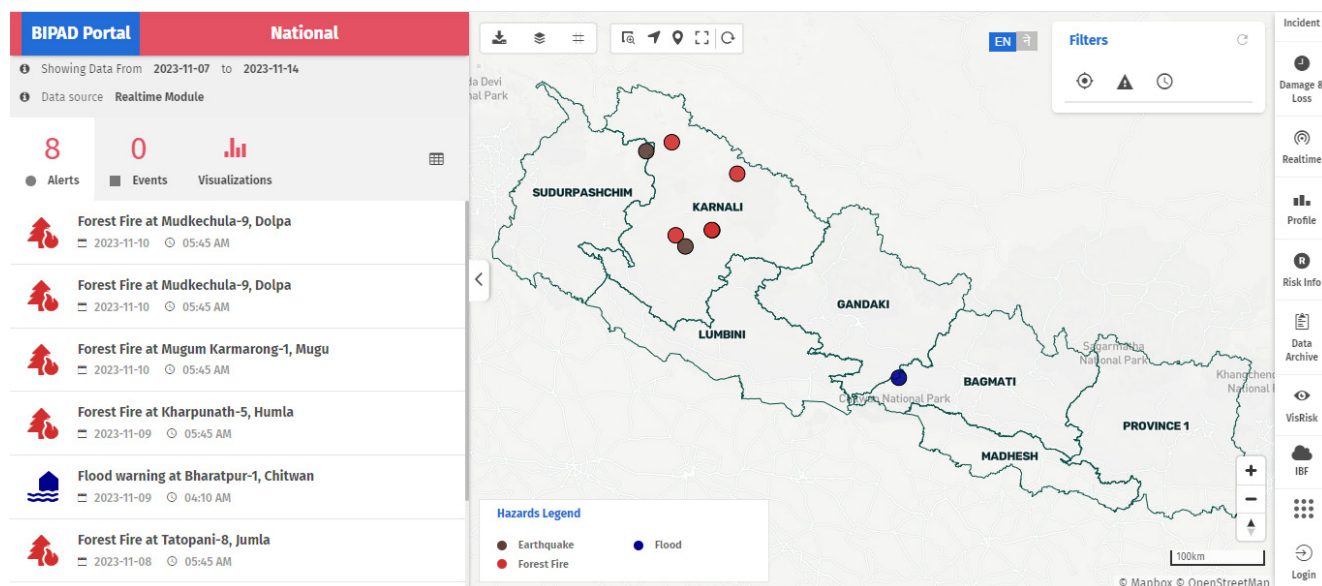
Developing audio-based early warning solutions

The second example I want to share is about the early warning systems. We engaged with the Department of Hydrology and Meteorology (DHM), the Ministry of Water Resources and Irrigation (MoWRI), and the Ministry of Forest and Environment (MoFE) to disseminate information to the household level.

In some unserved areas in the country, we noted that most residents don't have access to smartphones, especially farmers and cattle herders, and it was quite difficult to reach out to them. Therefore, we developed an audio system that runs on solar power and electricity and dispatched them to over 40 locations nationwide.

This system runs from NDRRMA, army offices, provincial districts, and local emergency operation centers. During the COVID-19 pandemic, these systems were used for local awareness and information, and more recently, they were used to warn communities of wildfires. We can use multiple languages, which can be decided by the residents and ward officials.

"We can interact with the private sector to collaborate on innovations and find solutions to climate change impacts."

Other Lessons from Nepal

A third example I want to share is Nepal's growing production of hydroelectricity. After a tile-producing factory reached out to us to ask how they could make their business more disaster-resilient, we suggested that they install a new water pump system that could manage the factory's water needs and be used to extinguish fires.

The factory now uses a mix of wind and hydroelectric power instead of a mix of coal and diesel power with backups. These companies serve as role models and are a classic example of resilient technologies and investments.

Another example is the hospitality industry where we encouraged hotels to stockpile tents. These can work as safe shelters when an earthquake occurs and can be used by the communities.

Investing in disaster preparedness will be more effective when we work closely with the private sector.

Mr. Anil Pokhrel is the Chief Executive of the National Disaster Risk Reduction and Management Authority (NDRRMA) of Nepal. He spoke at the iCARE Innovations Fund Launch in Bangkok, Thailand. Read more about the launch here.

Empowering Climate Resilience:
Innovations and Initiatives in Pakistan

By Mr. Idrees Mahsud

The 2021 Global Climate Risk Index positioned Pakistan among the top 10 countries, most affected by long-term climate risks from 2000 to 2019, considering fatalities and mortalities.

We experience recurrent heatwaves, forest fires, unprecedented floods, seawater intrusion, droughts, and Glacial Lake Outburst Floods (GLOFs). These risks significantly impact surrounding communities and their livelihoods, particularly those working in agriculture.

Therefore, the country needs interventions to reduce climate change impacts, build people's resilience, and protect livelihoods. We are implementing drip irrigation systems, introducing drought-resistant crop varieties, using satellite-based water management tools, and promoting climate-smart agricultural practices to assist our farmers.

To address GLOFs, a Green Climate Fund (GCF) project is helping us build dams and drainage systems in mountainous areas to reduce flooding risk, and we are also installing early warning systems to increase the community's ability to respond rapidly to flood scenarios.

"The country must continue to promote climate innovations and the adoption of new technologies."

Pakistan has taken concrete steps to promote renewable energy – the Quaid-e-Azam Solar Park in Bahawalpur, for example, is the country's largest solar energy-producing facility.

The Quaid-e-Azam Solar Park in Bahawalpur, Pakistan (Photo by Quaid E Azam Solar Power Private Limited)

But apart from solar, we are also switching to wind energy and other renewable sources, and we need to keep scaling this up. We need to sustain these interventions further.

Simultaneously, our efforts are focused on reducing greenhouse gas (GHG) emissions while promoting climate-resilient housing structures in regions adversely affected by climate change, such as flood-prone zones, drought-affected areas, and areas that are susceptible to extreme heat waves or forest fires.

However, we still need to do a lot to ensure these interventions' scalability and sustainability. The country must continue to promote climate innovations and the adoption of new technologies.

Promoting innovations in climate adaptation and resilience in Pakistan

The government can support climate innovations at the national level through laws and policies. One example is the Public Private Partnership Authority Act 2016 and the Public Private Partnership Authority (P3A), which help promote investments and private sector participation in the country's economic development.

While the legal framework and institutions are available in the country, public-private partnerships must be further incentivized to address the negative impacts of climate change on businesses. Businesses must also work closely with the public sector to transition towards more sustainable business practices.

The other areas we need to work on are community engagement and awareness raising. Pakistan helps create community ownership of sustainable initiatives, particularly in forestry, through its Ten Billion Tree Tsunami Programme. Capacity-building is also important to communities and local government agencies, civil society organizations, and non-government organizations.

A crucial factor in the success of mobilizing resources is the availability of funding, and the effectiveness of these interventions depends significantly on funding streams.

Promoting innovations in South Asia and beyond

Pakistan must share its policy success and climate change knowledge among its provinces, cities, and even beyond its national borders. We must also look for such knowledge in other parts of the world. We hope that all countries come together to tackle the climate change challenge collectively, learn from each of them and collaborate, support and assist each other.

I would take this opportunity to commend the interventions that Asian Disaster Preparedness Center (ADPC) is managing at the regional level.

The iCARE Innovations Fund, a component of the Climate Adaptation and Resilience (CARE) for South Asia project, is encouraging innovations in the field of climate change. We hope it will continue promoting innovations in climate resilience in countries like Pakistan.
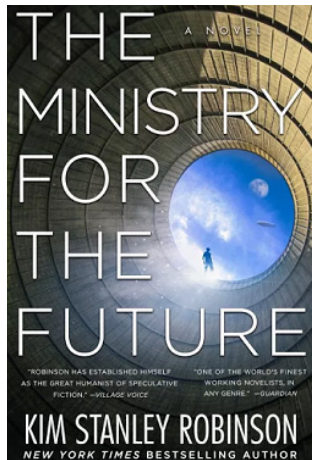

Mr. Idrees Mahsud is a member of the National Disaster Management Authority (NDMA), Pakistan. These are excerpts from his speech at the iCARE Launch. Click here for more information.

Climate Fiction and Climate Realities

Climate Fiction, popularly abbreviated as 'Cli-fi', is a great source of learning about climate change and its potential impacts on humanity

Books:

The Ministry for the Future, 2020 by Kim Stanley Robinson

Following its establishment under the Paris Agreement the fictional Ministry for the Future sets in to mitigate climate-related threats for the present and future generations. Deadly climate impacts not only affect lives but also affect the economy and society.

An imaginative masterpiece, using fictional eyewitness accounts to narrate the profound impacts of climate change on humanity.
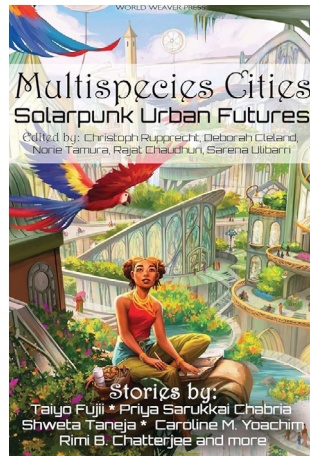
Multispecies Cities: Solarpunk Urban Futures by Priya Sarukkai Chabria, Shweta Taneja, and Taiyo Fujii

Solarpunk Urban Futures edited by Sarena Ulibarri and others (2021): The fictional narrative brings in a glimmer of hope for challenging climate scenarios. The story brings out how humans and other life forms are entangled and will face serious ecological crises.

Set primarily in the Asia-Pacific, the twenty-four stories of this new collection of climate fiction seek to imagine what cities might look like in a future of multi-species co-existence and green justice.

Movies:

Perpetual Planet: Heroes of the Oceans, 2021, directed by Naomi Austin

Legendary oceanographer Sylvia Earle and a cast of pioneering marine scientists tell the story of the incredible work being undertaken across the planet to protect the fragile ecosystem of our oceans. The movie shows us the wonder of the sea and the planet's initiative to solve environmental challenges.

Almost a third of ocean life has been destroyed due to climate change and human activity. The documentary describes the work of scientists and the team's advocates to solve the issues of the environment.

2067 (2020), directed by Seth Larney

The movie is set in a place devastated by the effects of climate change. Lives are dependent on something called "Synthetic oxygen" which is causing sickness capable of wiping off humanity. A message from the future is received with the hope of saving the extinction of humankind.

*Does the time machine pave the way to a revitalized earth system?*

Breaking the Jargon

By ADPC

The Climate Dictionary, developed by the United Nations Development Programme (UNDP) is an initiative aimed at providing an everyday guide to understanding climate change. It seeks to bridge the gap between complex scientific jargon and the general public, making climate concepts accessible and relatable to individuals from various backgrounds and levels of expertise.

Scan the QR code below to access the full Climate Dictionary available on SAR-CLIMATE.
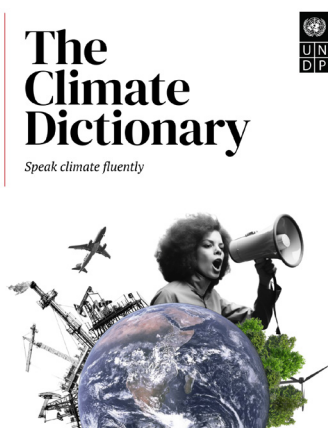
Adaptation: Actions that help reduce vulnerability to climate change's current or expected impacts.

National Adaptation Plans (NAPs): A country's plan and implementation actions to reduce vulnerability to the impacts of climate change and strengthen adaptive capacity and resilience.

Climate finance: Grants, loans, and other financial instruments used to support climate change action. Large-scale investments are needed to transition to help societies build resilience and adapt to the impacts of climate change.

Nature-based Solutions (NbS): Actions to protect, conserve, restore, and sustainably use and manage ecosystems to support climate change adaptation and mitigation efforts, preserve biodiversity, and enable sustainable livelihoods.

COP: An annual Conference of the Parties that brings together all nations who are parties to the Paris Agreement to discuss their next steps to combat climate change and further establish legally binding agreements to support climate action.

REDD+: Reducing Emissions from Deforestation and Forest Degradation. The "+" signifies the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks.

Green jobs: Work opportunities that contribute to protecting and restoring the environment and addressing climate change.

Resilience: The capacity of a community or environment to anticipate and manage climate impacts, minimize their damage, and recover and transform as needed after the initial shock.

Loss and damage: The unavoidable impacts of climate change that occur despite, or in the absence of, mitigation and adaptation.

Weather and climate: Weather refers to atmospheric conditions at a particular time in a particular location. Climate is the average of weather patterns in a specific area over a longer period, usually 30 years or more, representing the climate system's overall state.

Featured Innovations

SmartFarm - A Complete Climate Advisory Dissemination System

Cropin Grow is a farming app that addresses climate challenges in Sri Lanka and Bangladesh - countries heavily reliant on agriculture - by providing real-time weather data and tailor-made advisories to vulnerable farmers. Through Cropin Grow's modules, farmers adopt sustainable practices for increased productivity.

Equipped field officers capture farm data, enabling personalized SMS advisories, empowering farmers to make informed decisions and adapt to climate conditions, enhancing agricultural sustainability and resilience. Together, these will help them to 'grow more' and 'grow better'.

Introduction

App-based field investigation based POP and good agricultural practice-based advisories

Expert input through SMS for the right usage of fertilizers, chemicals and advisories on pest and disease

AI and ML model-based climate-smart advisory that is predictive and prescriptive.

Development and Implementation

2. Error minimizations with a digitized cultivation process

4. Integrate with other applications and data sources to do more and make better decisions

6. Decision support system and capacity building of smallholders

1. Farm Enterprise Resources Planning & monitoring and managing of farms

3. Data-driven decisions to improve farm productivity and profitability

5. Collaboration with local governments and agencies

7. Climate risk mitigation

Expected Impacts

Improved decision-making for local governments through the implementation of a decision support system.

Enhanced capacity of smallholder farmers to mitigate climate risks through access to knowledge and tools.

Partnerships with government agencies to facilitate the implementation and sustainability of the project.

Satellite and AI-Driven Climate Resilience Tool for Bhutan

In 2022, Geoneon partnered with the Department of Disaster Management (DDM) in Bhutan and successfully mapped the vulnerability of critical infrastructure in two regions of South Bhutan. Due to the project's success and interest for broader application, Geoneon, in collaboration with DDM, is developing an open-source tool.

This project leverages satellite imaging and advanced algorithms to support informed decision-making in disaster risk reduction and climate change adaptation, while also building government capacity. Its main objective is to enhance climate resilience by transforming complex natural hazard concepts into accessible, user-friendly formats for informed decision-making.

Introduction

Leveraging advancements in satellite imaging and advanced algorithms to support informed decision-making in disaster risk reduction and climate change adaptation.

Capacity building of the government.

Generate informed decision-making for enhanced climate resilience.

Development and Implementation

Creating a large scale satellite imagery database coupled with advanced algorithms.

Transforming complex concepts of natural hazards and risks into accessible, user-friendly formats.

Acting as an open-source tool for informed decision-making for enhanced climate resilience.

Resulting in disaster risk reduction and climate change adaptation, as well as building capacity among the government.

Expected Outcomes

Improved resilience and adaptability of both critical infrastructure and local communities within the pilot areas.

Strengthen informed decision-making using state-of-the-art technology, leading to more effective risk mitigation and management strategies.

Strengthened capabilities of local personnel through extensive training and consultation processes, ensuring the long-term sustainability and scalability of the project's innovations.

Heylhi 2.0

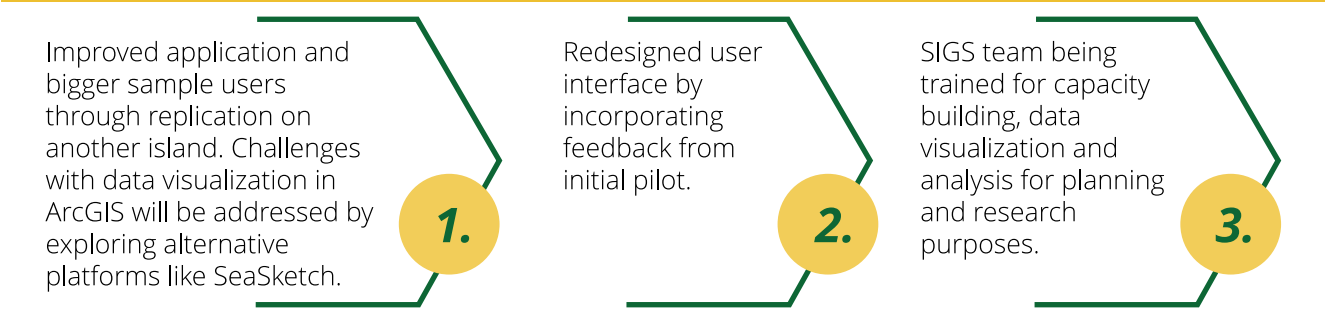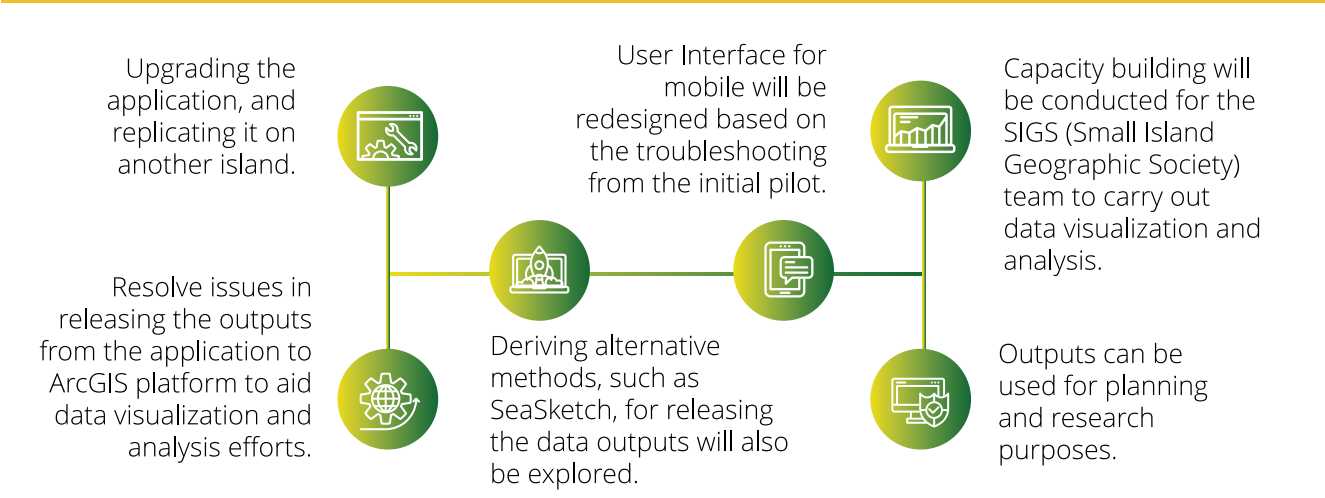Heylhi, named after protective coastal vegetation, is a beta mobile app in the Maldives that uses citizen science to collect data on coastal erosion and flooding. Piloted in HDh. Vaikaradhoo (an island highly prone to flooding and erosion), the project assessed erosion, mapped it with drones, installed monitoring markers, and trained communities.

Heylhi 2.0 plans to upgrade and expand to another island. Its challenges with data visualization in ArcGIS will be tackled using platforms like SeaSketch. The mobile interface will be improved based on pilot feedback, and the Small Island Geographic Society (SIGS) team will be trained for data analysis.

Introduction

1. Improved application and bigger sample users through replication on another island. Challenges with data visualization in ArcGIS will be addressed by exploring alternative platforms like SeaSketch.

2. Redesigned user interface by incorporating feedback from initial pilot.

3. SIGS team being trained for capacity building, data visualization and analysis for planning and research purposes.

Development and Implementation

Upgrading the application, and replicating it on another island.

Resolve issues in releasing the outputs from the application to ArcGIS platform to aid data visualization and analysis efforts.

Deriving alternative methods, such as SeaSketch, for releasing the data outputs will also be explored.

User Interface for mobile will be redesigned based on the troubleshooting from the initial pilot.

Capacity building will be conducted for the SIGS (Small Island Geographic Society) team to carry out data visualization and analysis.

Outputs can be used for planning and research purposes.

Expected Outcomes

Establish a mechanism of long-term data collection that will benefit the Government, local councils, and sectors such as Tourism, Coastal Infrastructure development, and National Planning and Guiding Investments for enhanced climate resilience.

To use collected data in generating maps and statistics, which will support both national and local development planning and further research efforts.

SIGS will be working with experts in data analysis to produce visual and tangible data that can enhance climate resilience in the Maldives.

Digital and Spatial Technologies for Anticipatory Action (DASTAA)

Nepal and Bangladesh, are highly vulnerable to climate change, and lack data-driven disaster preparedness, leading to humanitarian challenges.

The project aims to provide anticipatory actions to 9,000 households in flood-prone areas, fostering collaboration among stakeholders to reduce disaster impacts and protect vulnerable populations.

Introduction

Anticipatory actions to approximately 9,000 households in flood-prone areas of Nepal and Bangladesh

A collaborative mechanism among stakeholders to facilitate coordinated anticipatory actions.

Aiming to reduce the impacts of disasters and protect vulnerable populations from loss of lives, displacement, and economic devastation.

Development and Implementation

Generating Household Level Disaster Risk Management Plans (HDRMPs) for approx. 9,000 households by assessing flood hazard, vulnerability, and exposure of each household in the region.

Provide easy and timely access to forecasts and near real-time observations to households.

Profile vulnerable and marginalized populations ahead of disasters to develop inclusive disaster management strategies.

Support relevant stakeholders in designing targeted Disaster Risk Reduction/Management programs.

Integrate risk and weather information to provide customized early warnings and early action information.

Build the capacity of relevant stakeholders for proactive disaster management.

Expected Outcomes

Equip households in flood-prone regions of Nepal and Bangladesh with improved preparedness measures, enabling them to anticipate and withstand disasters more effectively.

To be able to leverage DASTAA by local governments, humanitarian agencies, and relevant stakeholders in designing better-targeted and inclusive Disaster Risk Reduction/Management programs.

Upscaling of Customized Irrigation and Climate Advisory Services

The Pakistan Council of Research in Water Resources (PCRWR) piloted "Customized Irrigation and Climate Advisory Services through Citizen Science" to enhance farmers' capacity to use technical information for irrigation and climate resilience.

The upscaling of this project aims to provide a platform for citizens and farmers across Pakistan to contribute to data generation. It involves onboarding government stakeholders to integrate Irrigation and Climate Advisory Services (ICAS) into their advisories to farmers, promoting bottom-up information generation to support institutional operations.

Introduction

Developing farmers' capacity in applying technical information.

Building farmer's resilience through awareness about climate parameters.

Platform for citizen driven data generation.

Development and Implementation

01 Providing a platform to citizens and farmers across Pakistan to voluntarily involve themselves in the data generation process.

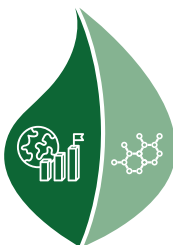**02** Bottom-up information generation to support institutions in their operations.

03 Onboarding stakeholders from the government agencies to understand and take up the ICAS solution as reinforcement to their advisories to farmers.

Expected Outcomes

Sustainability and upscaling of irrigation and climate advisory services through citizen science

Popularising the concept of "citizen science" for climate change adaptation.

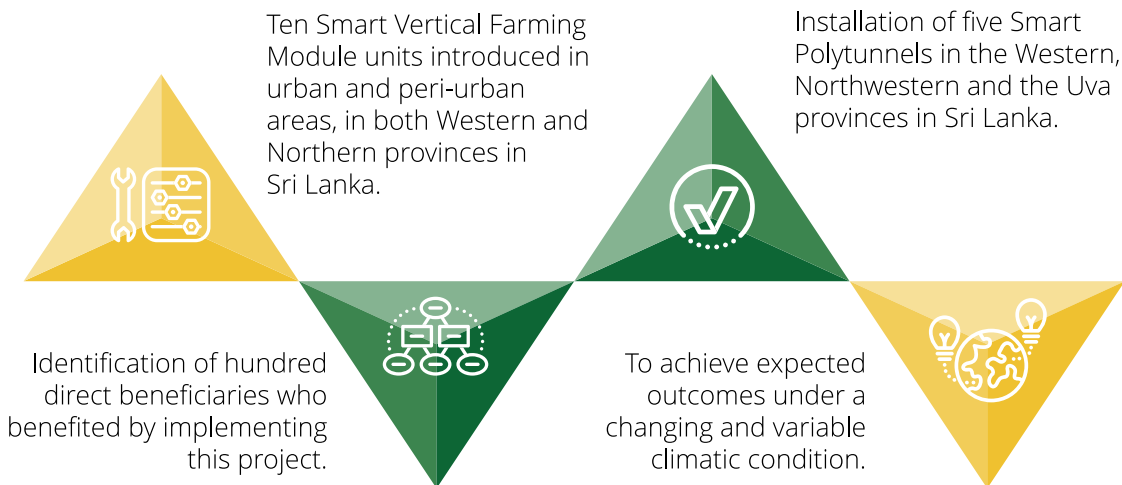# Strengthening Commercially Oriented Urban and Peri-Urban Farming Communities

Embsys (Pvt) Ltd under the Climate Innovation Challenge aims to strengthen commercially oriented urban and peri-urban farming communities by introducing smart polytunnels to increase food security under the changing and variable climatic conditions in Sri Lanka.

The project aims to help people in urban and peri-urban areas, who do not have much space for farming, to use smart agricultural tools to grow crops and earn money under different climate conditions.

Introduction

1. Confluence of the urban areas with farming practices using modern technology.

2. Climate resilient environment practices by communities skilled in smart agricultural practices.

3. Harnessing farming practices in variable climatic conditions.

Development and Implementation

Ten Smart Vertical Farming Module units introduced in urban and peri-urban areas, in both Western and Northern provinces in Sri Lanka.

Installation of five Smart Polytunnels in the Western, Northwestern and the Uva provinces in Sri Lanka.

Identification of hundred direct beneficiaries who benefited by implementing this project.

To achieve expected outcomes under a changing and variable climatic condition.

Expected Outcomes

Higher yield of fresh and leafy vegetables with less consumption of water and nutrients.

Enhance women participatory with improved preparedness measures to anticipate and withstand changing and variable climatic conditions.

Efficient growing techniques under a climate resilient environment practised by trained and knowledgeable community in smart agricultural practices.

Build new partnerships and employment opportunities to address the provincial unemployment issue.

Climate Resilient Infrastructure for Social Transformation and Adaptation (CRISTA) – 2.0

The Dhading district in Nepal faces climate-induced hazards, damaging critical infrastructure like roads and power systems. To address this, the Asian Institute of Technology (AIT) developed Climate Resilient Infrastructure for Social Transformation and Adaptation (CRISTA) which offers near-real-time monitoring using geospatial data, vulnerability assessments, a crowdsourcing app, and a GIS dashboard. After its successful pilot, CRISTA is sure to enhance decision-making for climate resilience and adaptation in Dhading.
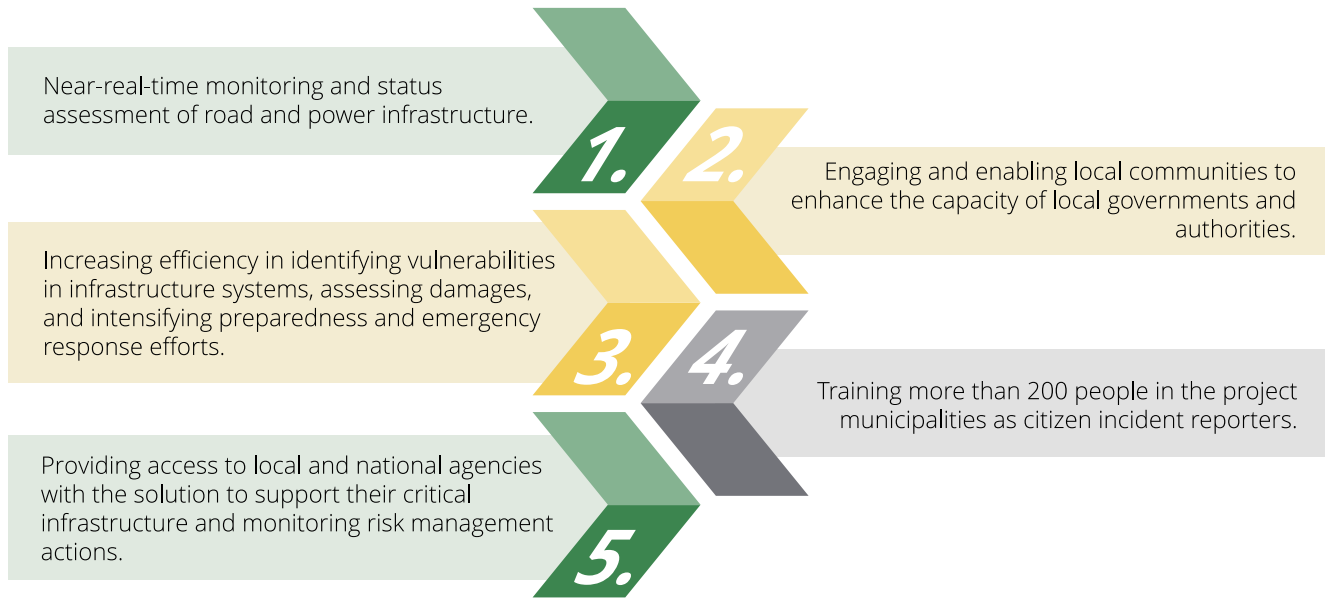
Introduction

Near-real-time monitoring and status assessment of road and power infrastructure by using granular geospatial database

A human-AI hybrid framework coupled with crowdsourcing mobile application and a web-based GIS dashboard for decision-making and planning
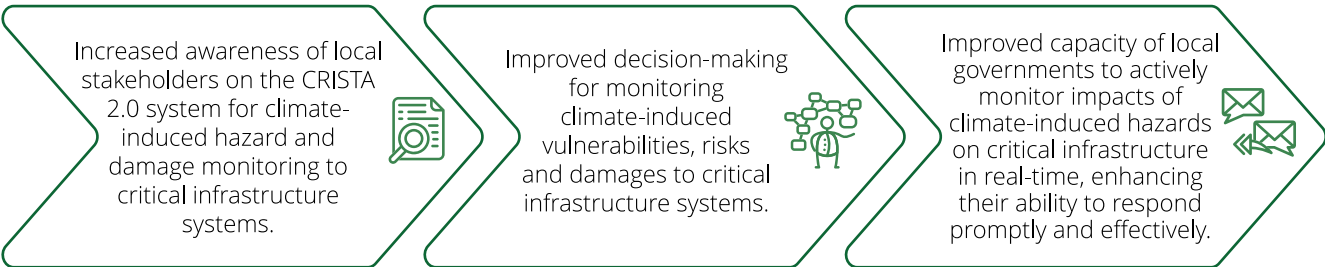
Dynamic and comprehensive risk and vulnerability assessment of the critical infrastructure through learning-based Disaster Damage Assessment (DDA).

Development and Implementation

1. Near-real-time monitoring and status assessment of road and power infrastructure.

2. Engaging and enabling local communities to enhance the capacity of local governments and authorities.

3. Increasing efficiency in identifying vulnerabilities in infrastructure systems, assessing damages, and intensifying preparedness and emergency response efforts.

4. Training more than 200 people in the project municipalities as citizen incident reporters.

5. Providing access to local and national agencies with the solution to support their critical infrastructure and monitoring risk management actions.

Expected Outcomes

Increased awareness of local stakeholders on the CRISTA 2.0 system for climate-induced hazard and damage monitoring to critical infrastructure systems.

Improved decision-making for monitoring climate-induced vulnerabilities, risks and damages to critical infrastructure systems.

Improved capacity of local governments to actively monitor impacts of climate-induced hazards on critical infrastructure in real-time, enhancing their ability to respond promptly and effectively.

CARE for South Asia Project Updates

Transport Sector:

ADPC under the CARE for South Asia project's transportation sector, has conducted assessments to understand the vulnerability of rural roads and infrastructure to various climate hazards.

Field observations were conducted which included road inspections, lab visits, and consultations with LGED officials to gather insights to develop climate-resilience benchmarking frameworks for rural roads.

In the pursuit of enhancing infrastructure resilience to climate impacts, gap assessment studies are being undertaken in both Bangladesh and Nepal. For Bangladesh, the study focuses on critical aspects such as the Bridge Design of LGED 2018, the Bangladesh 2021 Road Design Standards of LGED, and the LGED Maintenance Guidelines 2010.

Whereas the Nepal study mainly focuses on Nepal Road Standard 2070, Nepal Rural Road Standard 2071, Nepal Bridge Standard 2067, Guidelines on Hydrologic and Hydraulic Analysis and River Training Works for Bridge Design, and the Guidelines for the Design of Flexible Pavements (2021).

In addition, the comprehensive gap assessments are focused on outlining technical recommendations for updating the national standards in Bangladesh and Nepal. These crucial efforts are targeted to ensure that infrastructure design and maintenance practices align with the latest climate-resilient principles.

Training sessions were also conducted to enhance the capacities of the Community-based organizations (CBOs) and to advocate climate adaptation and resilience in developmental activities.

Water Sector:

ADPC under the CARE for South Asia project's water sector aimed to enhance policies, standards, and capacities for climate-resilient development in Nepal and Pakistan. Seven studies were completed, of which, four of the reports received endorsements from the local governments in Nepal.

Consultations on "Enhancing water governance in Nepal" were organized under the guidance of the Water and Energy Commission Secretariat (WECS) and relevant provincial stakeholders provided recommendations on effective water governance at a three-tier federal structure. Other forthcoming assessment studies will identify Climate Resilient Water Infrastructures which include recommendations to update the design manuals and guidelines for irrigation and energy sectors.

In Pakistan, a study to assess the impacts of climate change on groundwater availability was also completed in addition to the National Water Policy, 2018, for Groundwater Atlas for the Sindh and Balochistan provinces. A study to initiate guidelines to reduce the impact of climate change on the Karez landscape was initiated, which will be submitted to UNESCO, as part of the certification process for 'A World Heritage Site'. A compendium of best practices on adaptive water management was initiated where 18 adaptive water management practices were identified under the aegis of the Technical Working Group set up by Sindh Irrigation Department.

A sensitizing training on "Mainstreaming Climate Change Adaptation for Resilient Water Resources Management for CBOs in Nepal" was conducted and attended by 19 participants, with more than 50% women representatives. The training aimed not only to build capacities but also to build avenues for continuous engagement.

Policy Planning and Finance Sector:

ADPC under the CARE for South Asia project's Policy Planning and Finance sector developed a comprehensive handbook on Climate Risk Screening for the Ministry of Planning and Development Special Initiatives (MoPDSI). The handbook covers a wide spectrum of topics, including an overview of the global climate landscape, risk identification and assessment, and detailed methodologies for identifying and assessing climate risks across various sectors. The purpose of this handbook is to equip the officials at MoPDSI with essential tools and methodologies for evaluating and mitigating climate-related risks.

Agriculture Sector:

ADPC under the CARE for South Asia project's agriculture sector has identified CSA practices specifically tailored for the Punjab province in Pakistan. Rigorous review and shortlisting of CSA practices related to Integrated Pest Management (IPM) and Sustainable Agricultural Waste Management (SAWM) are completed. These practices directly address challenges associated with crop waste management. Building upon this foundation, the project has embarked on an essential endeavor: the implementation of SAWM strategies for managing animal and food processing waste. This comprehensive approach ensures a robust selection of CSA practices that holistically tackle waste-related issues within Punjab's agricultural landscape.

The Climate Adaptation and Resilience (CARE) for South Asia project brings together data, tools, guidelines, and capacity to mainstream climate adaptive measures in the agriculture, water resources management, transport, and finance & planning sectors. It contributes to an enabling environment for climate resilience policies and investments in climate-sensitive sectors in South Asia, initially focusing on interventions in Bangladesh, Nepal and Pakistan.

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