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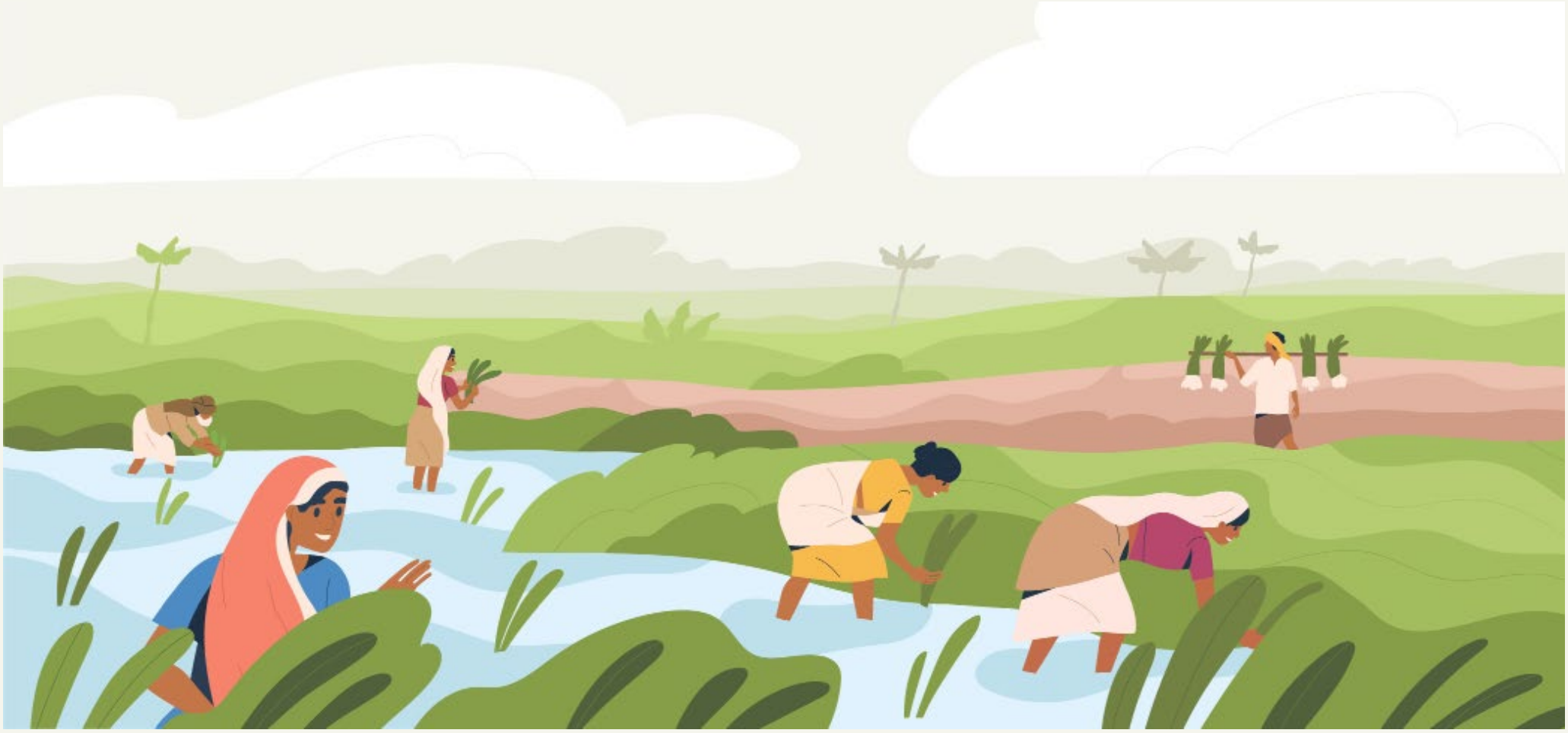
adpc Asian Disaster Preparedness Center



Innovations in Climate Adaptation and Resilience (iCARE) in South Asia

Partnerships, Applicability and Scalability

Context

ADPC is implementing the "Climate Adaptation and Resilience for South Asia" or CARE for South Asia project supported by the World Bank. The project includes a sub-component on ***Innovation for Climate Adaptation and Resilience*** that aims to crowdsource innovative and disruptive technology solutions from around the world for resilience in South Asia (for more information, please refer to page 6).

The Program for Asia Resilience to Climate Change, a trust fund administered by the World Bank and funded by the United Kingdom's Foreign, Commonwealth & Development Office (FCDO), has made US$ 3.5 million available to ADPC to identify and pilot innovations to reduce climate risk and build climate resilience of communities vulnerable to such risks and extremes.

It covers South Asia through two distinctive challenges - ***TechEmerge Resilience India Challenge and Climate Innovation Challenge (CIC)*** to facilitate innovations across different sectors at national, sub-national and local/community levels in the region.

The **TechEmerge Resilience India Challenge** aims to enhance the capacity of the communities through the State Disaster Management Authorities (SDMAs) to prepare and respond to disasters and climate risks, and COVID-19, through cutting-edge technological interventions.

The World Bank in consultation with the National Disaster Management Authority (NDMA), India and International Finance Corporation (IFC) as a technical partner launched this initiative to crowdsource private-sector expertise and market-based innovations.

The **Climate Innovation Challenge (CIC)** aims to crowdsource innovative and disruptive technology solutions from around the world for resilience in South Asia. Through grant awards, matchmaking and pilot-testing, CIC will facilitate innovations across different sectors at national, sub-national and local/community levels in the region.

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Program for Asia Resilience to Climate Change

The Program for Asia Resilience to Climate Change (PARCC) is a trust fund supported by the United Kingdom's Foreign, Commonwealth, and Development Office (FCDO) and administered by the World Bank.

PARCC was launched in 2018 to strengthen disaster and climate resilience in South Asia. The program aims to develop hydromet services and early-warning systems that can save lives, improve livelihoods, and strengthen the resilience of vulnerable communities.

The trust fund is part of the UK's broader program—Asia Regional Resilience to a Changing Climate Program—that works closely with the UK Met Office.

Learn more about the Program by scanning here

Scan here for more information about FCDO

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National Disaster Management Authority, India

The National Disaster Management Authority (NDMA), headed by the Prime Minister of India, is the apex body for Disaster Management in India. Its setting up and the creation of an enabling environment for institutional mechanisms at the state and district levels is mandated by the Disaster Management Act, 2005.

NDMA is mandated to lay down the policies, plans and guidelines for disaster management. India envisions the development of an ethos of Prevention, Mitigation, Preparedness and Response.

The TechEmerge Resilience India Challenge, an initiative by the World Bank in partnership with the National Disaster Management Authority (NDMA), offers solutions that leverage disruptive technologies such as AI, IoT, drones, 3D printing, digital platforms, and more.

These solutions are being deployed by the Himachal Pradesh and Uttarakhand State Disaster Management Authorities (SDMAs) for disaster preparedness and response amidst challenges posed by COVID-19.

Learn more about NDMA, India
by scanning here

ADPC at a glance

Photo by Quang nguyen vinh / Shutterstock.com

Introduction

Asian Disaster Preparedness Center (ADPC) is an autonomous international organization that works to build the resilience of people and institutions to disasters and climate change impacts in Asia and the Pacific. It provides comprehensive technical services across social and physical sciences to support sustainable solutions for risk reduction and climate resilience.

Using its expertise and evidence-based knowledge, ADPC supports countries and communities in building their disaster risk reduction (DRR) systems, institutional mechanisms and capacities in becoming resilient to numerous hazards.

Established in 1986 as a technical training center, ADPC is now an intergovernmental organization for DRR, response and resilience building. Its founding member countries include Bangladesh, Cambodia, China, India, Nepal, Pakistan, the Philippines, Sri Lanka, and Thailand.

ADPC works at the national and local level in partnership with governments, development partners, UN agencies, civil society, and the private sector to put resilience at the core of development.

Where we are

ADPC is headquartered in Bangkok, Thailand, with offices/representation in many countries including Bangladesh, Cambodia, Indonesia, India, Myanmar, Nepal, Pakistan, the Philippines, Sri Lanka, and Viet Nam.

Our team

ADPC has a dedicated team of professionals including hydrologists, meteorologists, social scientists, environmentalists, GIS experts and gender specialists.

Vision

Safer communities and sustainable development through Disaster Risk Reduction.

Core principles

ADPC's efforts to strengthen disaster and climate risk management systems in Asia and the Pacific are anchored in three principles:

Science. Systems. Applications.

These principles encompass the utilization of scientific knowledge and technology to better understand risk, the institutionalization of systems to build resilience, as well as the application of risk reduction measures across a range of sectors and different national contexts within Asia and the Pacific.

Goals

- To reduce the impact of disasters and enhance climate resilience in Asia and the Pacific by providing technical support to countries and communities in developing their policies, plans and programs on climate adaptive DRR.
- To facilitate the exchange of experiences in disasters through networking and collaboration between national, and regional disaster management organizations, academicians, researchers, the media, planners, policy makers, implementers, and the private sector.
- To collaborate with all relevant sectors in helping to strengthen a community's capacity to participate in developmental activities for disaster preparedness with a special focus on integrating local wisdom in modern knowledge.

Learn more about ADPC by scanning here

Strategic themes

ADPC addresses resilience challenges by focusing on the following themes:

Risk governance
ADPC assists governments to translate their policies on climate and DRR into action. We also support risk-sensitive development from the national to community level in addition to providing usable risk information for better decision-making related to disaster and climate risk management.

Climate resilience
ADPC uses science-based information to develop tools that help governments and communities to manage disaster risks associated with extreme hydro-meteorological events. We integrate DRR and climate risk management with social development to build capacities to respond and adapt to a changing climate.

Urban resilience
ADPC provides technical and policy support to authorities and urban communities in planning for safer and more resilient cities. We work with businesses and varying sectors to help reduce disasters and future climate risks for everyone across multiple interconnected urban services.

Health risk management
ADPC helps strengthen health services and systems to be able to respond to emergencies and maintain their operations during disasters. We integrate health risks into the wider DRR sector to ensure that the community's physical and social needs are met.

Preparedness for response
ADPC helps in coordinating plans for emergency response and supports in building the capabilities of response workers, institutions and communities. Thus enabling them to act quickly and efficiently when disaster strikes.

Resilient recovery
ADPC assists countries, communities, and the private sector to prepare and implement post-disaster recovery plans to reduce the impact of future disasters using internationally accepted methodologies. We use these tools to foster resilient recovery, strengthen post-disaster institutional arrangements and build capacities of regional, national, and provincial authorities.

Cross-cutting themes

Gender and diversity
ADPC supports the contribution and participation of marginalized groups inits programming through gender and diversity analysis and activities that promote gender equality and social inclusiveness. This strategic approach focuses on women as agents of changein DRR.

Regional and transboundary cooperation
ADPC works to foster cooperation in regional and transboundary issues related to DRR such as early warning systems which cross national borders, protocols and systems related to receiving international emergency assistance. In addition, the sharing of expertise across boundaries for risk reduction, response and recovery support this. By promoting regional platforms for knowledge sharing and dialogue, ADPC contributes to developing a common understanding and approach to address regional and transboundary issues in risk reduction and resilience building.

Poverty and livelihoods
ADPC recognizes that disasters, poverty and resilience are interconnected and addresses this complex relationship in two ways. We promote pro-poor policies and actions across our programs while promoting and advocating for pro-poor perspectives among our partners.

Regional Consultative Committee on Disaster Management (RCC)

The RCC serves as a non-binding regional mechanism to promote peer advocacy and exchange of expertise in disaster and climate risk management. The RCC meetings provide an opportunity for the member countries to showcase good practices and discuss ways to transform policies and frameworks into action.

Established in 2000, the RCC is comprised of National Disaster Management Organizations (NDMOs) of over 20 countries and ADPC serves as its secretariat.

RCC Members

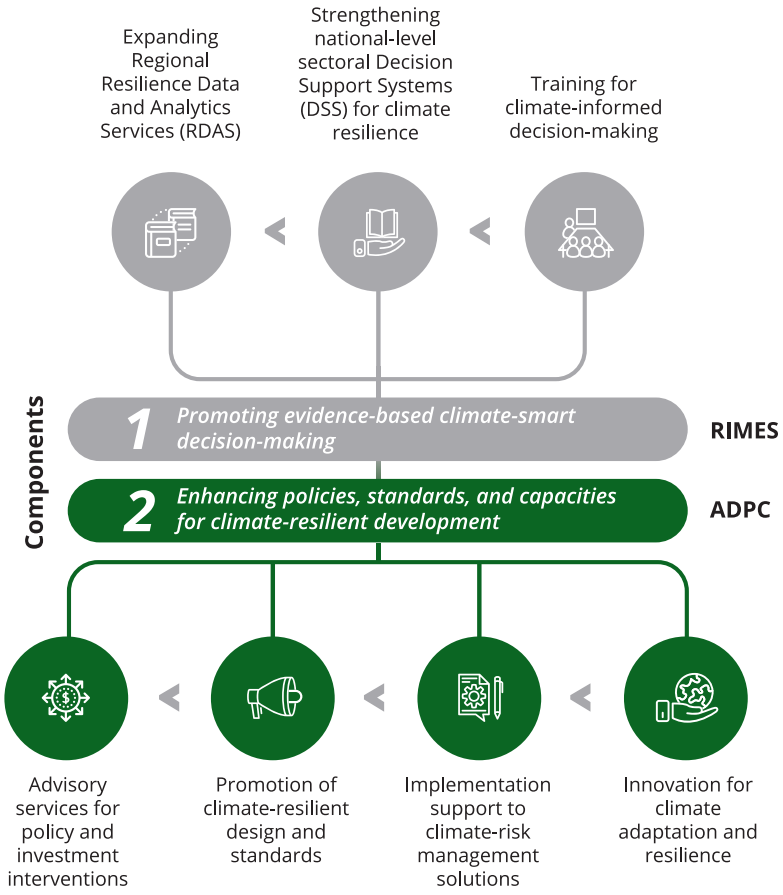
Photo by Siriwatthana Chankawee / Shutterstock.com

Climate Adaptation and Resilience (CARE) for South Asia Project

Facilitating innovators to deploy technology and innovative solutions to enhance climate adaptation across different sectors and levels is part of a 5-year project called “Climate Adaptation and Resilience (CARE) for South Asia.” The project is a partnership between ADPC, Regional Integrated Multi-Hazard Early Warning System (RIMES), and the World Bank to support informed decision-making for protecting development gains in the region.

The project aims to create an enabling environment for climate resilience in the region, focusing on Bangladesh, Nepal, and Pakistan by improving the availability of regional data and knowledge, developing guidelines, tools, and capacities, and promoting climate-resilient decisions, policies, and investments across key sectors.

CIC is a key component of the CARE for South Asia project.



TechEmerge Resilience India Challenge

The World Bank in consultation with the National Disaster Management Authority (NDMA), India and International Finance Corporation (IFC) as a technical partner launched this initiative to crowdsource in private-sector expertise and market-based innovation. It aimed for innovators to share solutions for disaster preparedness and response amidst challenges posed by COVID-19.

Learn more about the initiative by scanning here

Climate Innovation Challenge (CIC)

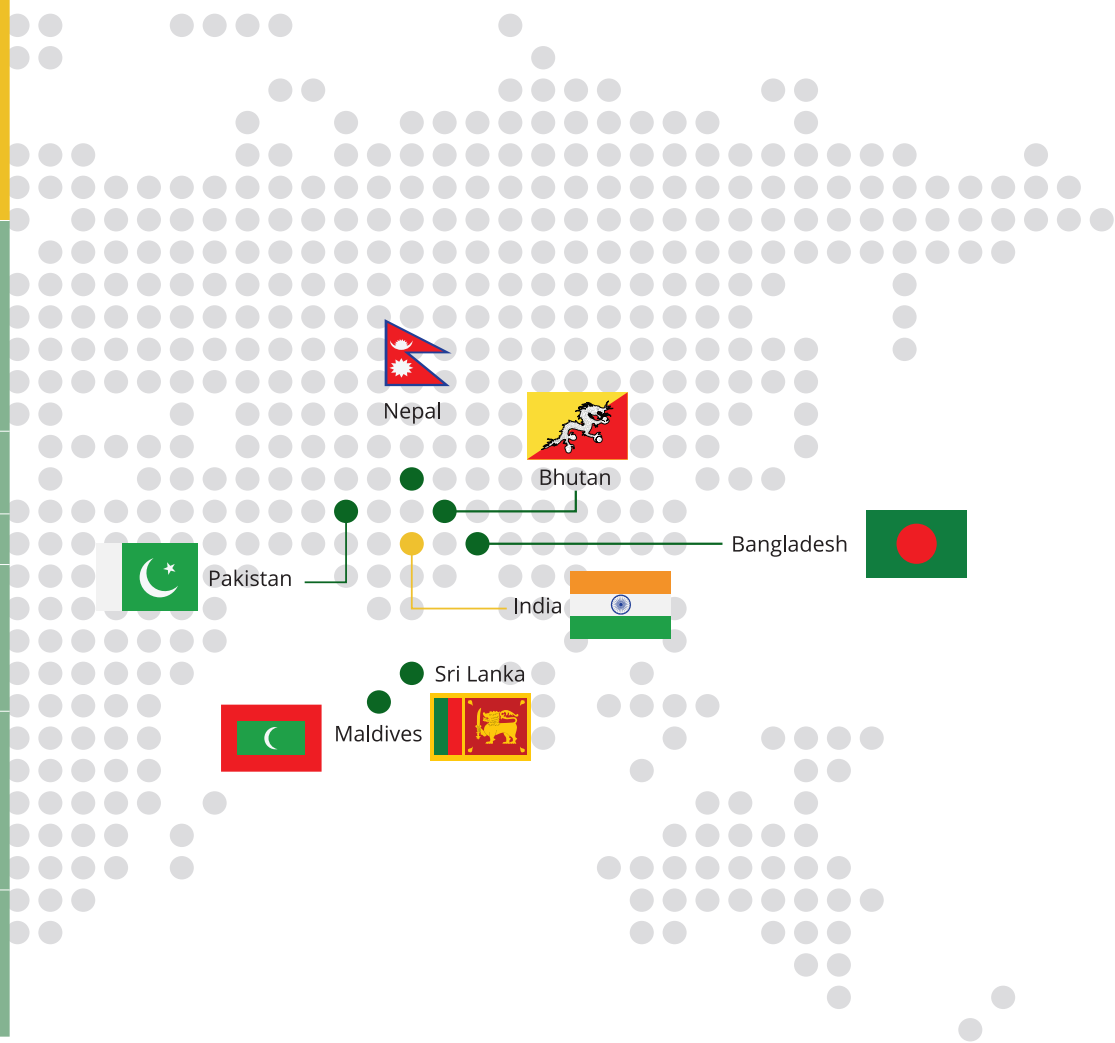
The CIC aims to promote climate adaptation and resilience innovation in South Asia region through award of grants to eligible and qualifying innovators to facilitate innovative solutions for their application and scale-up across different sectors, and tiers (national, sub-national and local/community) for greater impact.

Learn more about the CIC by scanning here

Photo by Andrii Yalanskyi / Shutterstock.com

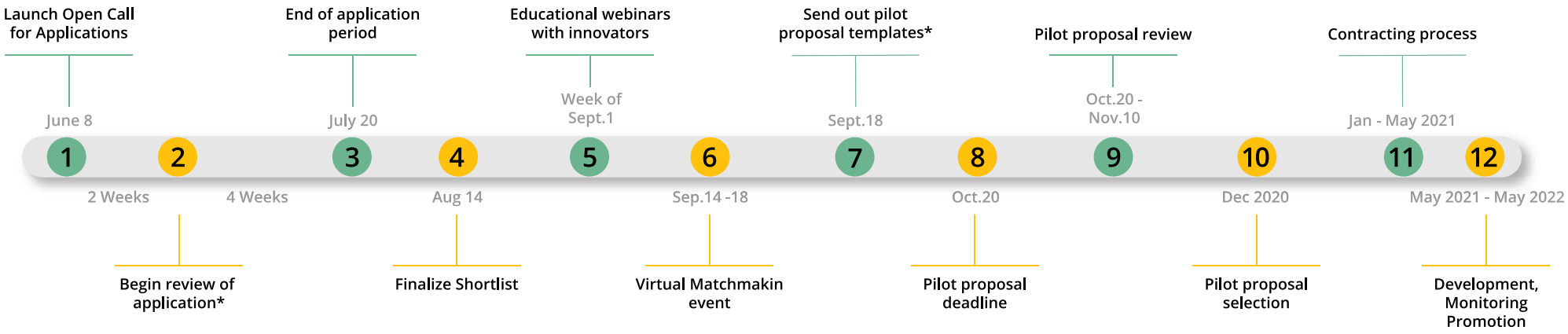
Geographical Coverage

#	Country	Grantees/Innovators
1	India	• Pragathi Foundation • SeismicAi Ltd. • Nelen & Schuurmans • ideaForge Technology Pvt Ltd. • Saif Automations Services LLP. • Project OWL Inc. • Quantela Inc.
2	Bangladesh	• Carthago Consultancy BV • Curtin University • CropIn Technology Solutions Pvt. Ltd. • Asian Institute of Technology • Seoul National University, R&DB Foundation
3	Bhutan	• Geoneon Pty Ltd. • Tarayana Micro Finance Pvt. Ltd.
4	Maldives	• Small Islands Geographic Society
5	Nepal	• Oy Arbonaut Ltd. • Naxa Pvt. Ltd. • Stonestep TFD Pvt. Ltd. • Aisan Institute of Technology
6	Pakistan	• Pakistan Council of Research in Water Resources • Pro Nature Alliance Research & Development Pvt. Ltd. • Zephyr Consulting Ltd.
7	Sri Lanka	• Alliance for Appropriate Technology Exchange Ltd. • CropIn Technology Solutions Pvt. Ltd. • University of Salford

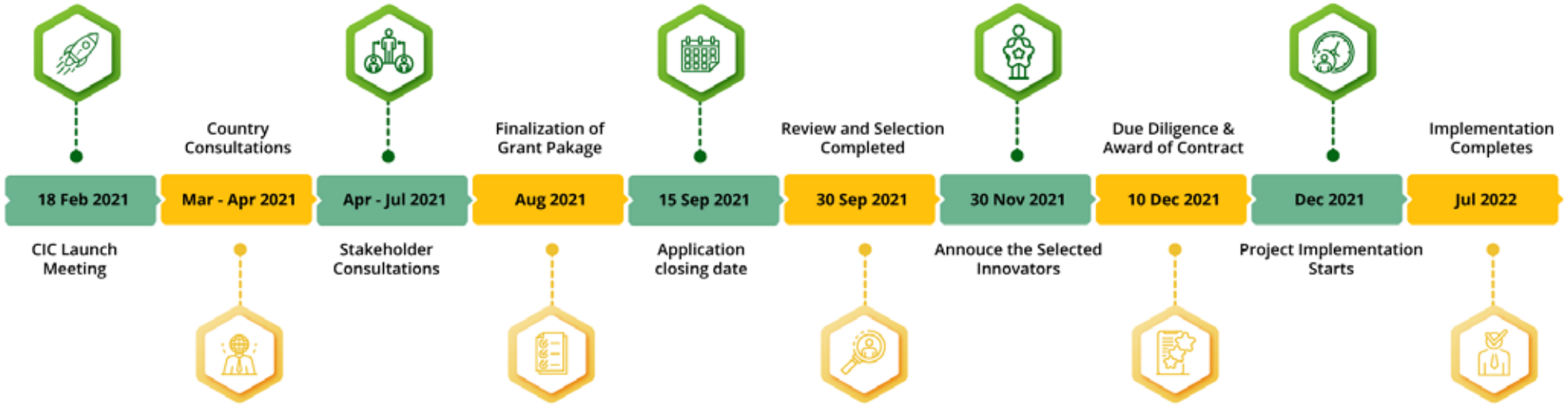


TechEmerge Resilience India Challenge Climate Innovation Challenge

Timeline: TechEmerge Resilience India Challenge



Timeline: Climate Innovation Challenge (CIC)



Pilot Projects

TechEmerge Resilience India Challenge		
#	**Project Name**	**Grantees/Innovators**
1	Community Driven Radio (CDR) through open-source technology in India	Pragathi Foundation
2	AI-based real-time Earthquake Early Warning System in India	SeismicAi Ltd.
3	Flood Forecasting System in India	Nelen & Schuurmans
4	Emergency Communication Network using Ducklinks in India	Project OWL Inc.
5	Unmanned Aerial System to map Industrial Areas and Hazardous Zones in India	ideaForge Technology Pvt Ltd.
6	Incident Management and Reporting System in India	Quantela Inc.
7	Self-propelled Self-steerable Lifebuoy for Flood Rescue in India	Saif Automations Services LLP.
Climate Innovation Challenge		
8	Customized Irrigation and Climate Advisory Services through Citizen Science in Pakistan	Pakistan Council of Research in Water Resources
9	Tidal River Water Custodian in Bangladesh	Carthago Consultancy BV
10	Infrastructure Vulnerability to Slope Instabilities and Floods in Bhutan	Geoneon Pty Ltd.
11	Sustainable Agriculture Technology (SAT) in Pakistan	Pro Nature Alliance Research & Development Pvt. Ltd
12	ADOPT Model for Technology Diffusion - Innovating Non-monetary Interventions for Climate Smart Agriculture in Bangladesh	Curtin University
13	Integrated Pest Management using Seamless Climate Information in Bangladesh	Seoul National University, R&DB Foundation
14	Smart Vertical Farming: Achieving Food and Nutritional Security of Urban and Semi-Urban Communities in Sri Lanka	Alliance for Appropriate Technology Exchange Ltd.
15	Heylhi – An Online Application for Coastal Erosion and Flooding Information Collection in Maldives.	Small Islands Geographic Society
16	Technology Driven Microloan Fund for Climate Adaptation of Remote, Vulnerable Mountain Communities in Bhutan	Tarayana Micro Finance Pvt. Ltd.
17	Building Food Security through Agro-met Innovative Advisory Services in Nepal	Oy Arbonaut Ltd.
18	Smart Farm – A Complete Advisory Dissemination System in Nepal and Sri Lanka	CropIn Technology Solutions Pvt. Ltd.
19	Household Level Risk Assessment Tool - A Digital System for Evidence-based Decision Support to Plan Effective Risk Financing Strategies in Nepal	Naxa Pvt. Ltd.
20	SLAMDAM - Water-filled Flood Barrier in Pakistan	Zephyr Consulting Ltd.
21	Climate Resilient Infrastructure for Social Transformation and Adaptation (CRISTA) in Bangladesh and Nepal	Asian Institute of Technology
22	Parametric Flood Insurance for Climate Vulnerable Communities in Nepal	Stonestep TFD Pvt. Ltd.
23	MOBILISE 3.0: Digital Toolset for Building Resilient Communities in Sri Lanka	University of Salford

1. Community Driven Radio (CDR) through open-source technology in India

2. AI-based real-time Earthquake Early Warning System in India

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SeismicAI EARTHQUAKE AND TSUNAMI EARLY WARNING SYSTEM

CHALLENGE

Historical records reveal that devastating earthquakes have been a regular feature of the entire Himalayan system. The increasing population concentration in seismically sensitive zones has raised the degree of human vulnerability to such events underscoring the need for a solution that will increase the national resilience to earthquakes. The geography of the region is such that seismic events originate in areas that cross political borders such that any early warning system must be able to monitor for events that occur outside of the sensor network and must be able to provide reliable and adequate early warning.

PILOT

A network of 3 seismic stations will be deployed in the state of Uttarakhand. The 3 stations will communicate with a cloud-based system that will monitor and asses the information collected from the seismic stations. The system will detect events of magnitude greater than 4 that occur in a distance up to 40 km from at least 2 of the seismic stations.

PILOT DELIVERABLES

At the end of the pilot, a detailed report will be provided that summarizes the performance of the system. Comparing SeismicAI's performance with that of the official earthquake catalog will help in assessing SeismicAI's ability to scale to a full statewide system and provide an effective and reliable warning that will increase the state's resilience to earthquakes.

SeismicAI SOLUTION

SeismicAI is a global provider of earthquake and tsunami early warning (ETEW) and seismic monitoring solutions for the private and public sectors. Our ETEW as-a-service offering includes robust and cost-effective on- and off-network solutions enabling business continuity and public safety. With our breakthrough solutions, enterprises, organizations and governments can minimize loss of life and physical damage, while ensuring a business-as-usual approach before, during and after seismic events.

WHY US?

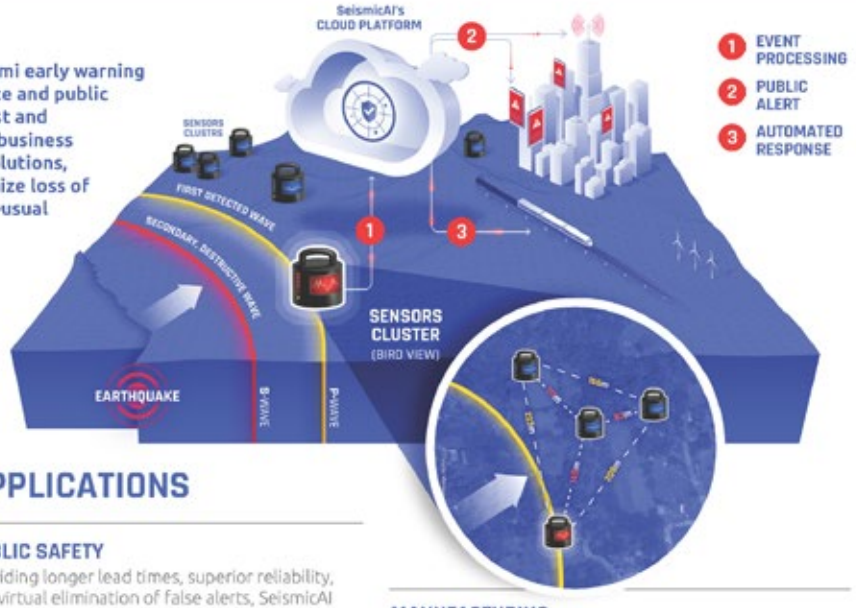
SEISMOLOGICAL EXPERTISE
Our team of professionals includes leading seismology scientists and technology experts

LOCATION-AGNOSTIC SYSTEMS
Our small and flexible decentralized systems are easily deployed anywhere in the world

RAPID TIME TO OPERATION
Our array-based network architecture gets systems up and running in just weeks, not months or years

ENTERPRISE / GOVERNMENT ACCESSIBILITY
Our cost-effective on-/off-network solutions are easily accessible to entities of all sizes

END-TO-END SOLUTION
Our systems detect the epicenter, predict an event's magnitude, and trigger preventive actions



APPLICATIONS

PUBLIC SAFETY
Providing longer lead times, superior reliability, and virtual elimination of false alerts, SeismicAI is the preferred earthquake and tsunami early warning vendor for schools, hospitals, high-rise buildings, and other public facilities.

TRANSPORTATION
By automatically slowing down trains, closing bridges and tunnels, and alerting drivers, our earthquake and tsunami early warning solutions can mitigate infrastructure and collateral damage of quakes and tsunamis.

UTILITIES
SeismicAI's solutions ensure that utility adaptations or shutdowns in the aftermath of a seismic event occur as early as possible, and only when needed. This limits potential damage while keeping critical infrastructure and vital services going.

MANUFACTURING
Our on-site solutions can be tailored to any plant in order to trigger real-time preventive measures when required. This enables manufacturers to enhance worker safety, safeguard assets, and keep production going.

SMART CITIES
Our local and regional solutions integrate seamlessly with smart city infrastructure, leveraging IoT and cloud computing to provide critical data for automated responses at unparalleled speed, accuracy and reliability, 24/7.

DEFENSE
SeismicAI's fail-safe monitoring solutions complement and seamlessly integrate with existing systems to add a layer of certainty for critical decision-making of defense establishments.

3. Flood Forecasting System in India

Foreign, Commonwealth & Development Office | THE WORLD BANK | adpc Asian Disaster Preparedness Center | Nelen & Schuurmans

Tech Emerge Himachal Pradesh: Strengthen the preparedness and resilience of **communities and infrastructure in the Ravi river catchment to floods.**

Challenge: Heavy monsoon rains and snow & glacier melt in the Himalayas increase the risk of floods from rivers. As a result communities and infrastructure are vulnerable and need a strengthened preparedness and resilience against floods. Hydropower plants add additional complexity but also a solution.
Foresight in the impacts of floods and when they emerge are a first important step towards a more resilient valley. To gain such insights a hydrodynamic model is required that is able to simulate the flow of the river under certain conditions like heavy monsoon rains or extreme snow & glacier melt.
Access to such a model and being able to forecast floods with interactive simulation enables local decision makers and emergency response authorities to better understand the potential impact of floods and to act timely in case of a flood occurring.

Stakeholders:
DDMA Chamba, SDMA Himachal Pradesh, Centre Water Commision, Indian Meteorological Department, Directorate of Energy, Science & Technology, State/District emergency operation centre, Police and response agencies

Expected Impacts:
1. Increased understanding on the impact of heavy monsoon rains and extreme snow & glacier melt on the discharge of the river.
2. The ability to forecast the impact on the discharge of the river, based on a global weather forecast.
3. The ability to forecast the impact of a flood on infrastructure and residential areas.
4. The ability to simulate measures such as increasing or decreasing the discharge of the hydropower plants, levees.

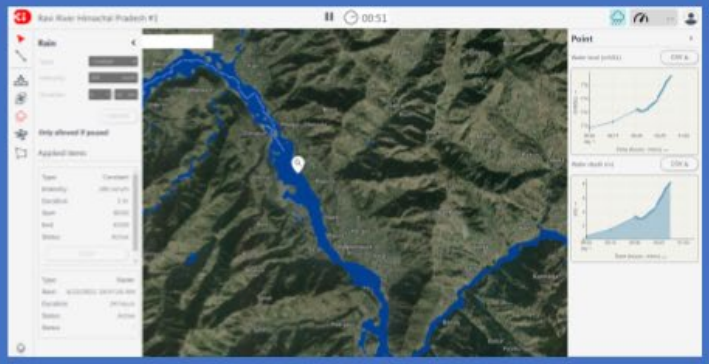
Area of interest:

Ravi River upstream from the City of Chamba where the river Ravi originates in the Himalayas.

Methodology:

- Kick-off meeting
- Desk study understanding the hydrology of the catchment and river dynamics
- Data collection
- Hydrodynamic modeling in 3Di
- Workshops
- Calibrating the model
- IT development
- Capacity building and field visit

Solution piloted for river Ravi:



1. Fully interactive cloud-based hydrodynamic flood forecasting system

2. Cloud-based simulation archive for long-term spatial planning

4. Emergency Communication Network using Ducklinks in India

OWL

TECHEMERGE INNOVATION CHALLENGE

PROJECT OWL Deployment Himachal Pradesh

adpc Asian Disaster Preparedness Center

THE WORLD BANK

Introduction

Project OWL was selected as one of several innovators to deploy a solution for disaster resilience to Himachal Pradesh, India through the WorldBank TechEmerge program. Project OWL worked with a variety of partners including ADPC, RIKA, SDMA and NDMA in the region to prepare for a disaster resilient, solar powered communications network solution.

Deployment

In November 2021, two representatives of Project OWL traveled to Himachal Pradesh and spent 10 days working with local officials, nearly a dozen students at the local University, and community members to deploy dozens of solar powered communications nodes. This is Project OWL's first international deployment, as well as the first deployment in mountainous terrain.

Technology

Project OWL builds devices called DuckLinks. These are small, cost-effective wireless communications nodes that can be rapidly deployed to form mesh networks. Project OWL has deployed DuckLinks with solar-powered options to a variety of regions around the world. This hardware provides an off-grid, resilient communications solution for disaster-prone regions.

5. Unmanned Aerial System to map Industrial Areas and Hazardous Zones in India

Q6 SYSTEM FOR HP-SDMA DISASTER MANAGEMENT

ideaForge
Create. Inspire

Foreign, Commonwealth & Development Office | THE WORLD BANK | adpc

Introduction:

Built on a strong foundation of interdisciplinary engineering, ideaForge is a global leader in UAV technology. Its drones offer class-leading performance, reliability, and autonomy, and have been widely adopted for security & surveillance, surveying & mapping, and disaster management operations. A pilot project has been launched with the Himachal Pradesh State Disaster Management Authority (SDMA) to aid the SDMA in:

'**Disaster preparedness**' through surveillance and survey & mapping, '**disaster response**' **and** '**relief**' by acting as first responder to provide on-ground situational awareness, and '**disaster recovery**' by conducting post-disaster damage assessment.

The pilot project will be implemented over a 9-month period and divided into three phases, each lasting three months. Following a successful pilot deployment, HP SDMA will be able to expand capacity in other Himachal Pradesh districts.

Challenges to Surpass:

- Disaster Unpreparedness
- Interrupted Disaster Response & Relief
- Longer Disaster Recovery Time

Methodology:

- User data collection and finalisation of design blueprint
- Build alpha prototypes and flight exemption application
- Complete the design
- Conduct internal & field testing
- Conduct mock drills
- Start work on local capacity building
- Complete training and local capacity building

Solution Deployment:

Q6 UAV with superior product specifications, high end payload and advanced Ground Control Station (GCS) System.

'Q6' will conduct disaster-prone area surveying and mapping, will help develop a comprehensive policy for implementing countermeasures, and monitor the progress of infrastructure projects undertaken as part of disaster preparedness operations. In a disaster situation, Q6 will **act as a first responder** to provide authorities with on-the-ground situational awareness, and during disaster recovery, Q6 will conduct post-disaster damage assessment, monitor the progress of disaster recovery operations, and assist SDMA in achieving a faster recovery.

Features:

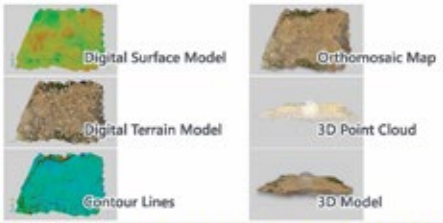
- A single UAV that provides a **comprehensive disaster preparedness, response, and recovery solution**
- Endurance **up to 60 min**, Operational Range **over 5 km**, Wind Resistance **up to 10 m/s (36 kmph or ~20 knots)**, etc.
- **Payloads:** Daylight, Thermal and Mapping Payloads
- **Failsafe Feature:** Auto-Return to Home and Land on Communication Failure, Low Battery, Battery Imbalance, etc.
- Ground Control Station

Other Supportive Modules:

BlueFire Live!™

BlueFire Live!™, a state-of-the-art real-time video streaming solution.

Mapping Outputs:



6. Incident Management and Reporting System in India

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TechEmerge Resilience India Challenge

Developing and Deployment of HP SDMA Incident Management and Reporting System

Project Objective

This pilot initiative of the Incident management and Reporting System implementation is to help the Disaster Management authorities to know the live status of the resources available in each districts to analyze the situation and take precautionary measures with planned and effective response.
The Field Officer Mobile App helps to report the incident types with loss and damages done during the incidents with attachments of relevant photos.

Performed Integrations

- Resource Inventory integration – India Disaster Recovery network
- Existing Resources and Resource Mapping
- Manual Data Entry forms in to report the loss and damage post incidents through Field Officer Mobile App.
- Database of trained Volunteers and personnel.

Phase Activities Involved

- ✓ **Discovery Phase –** Requirements Discussion and usability discussion to define the dashboard and develop prototypes of the dashboards.
- ✓ **Instance Deployment –** Deploy instance in Cloud Environment.
- ✓ **Development Phase –** Develop and customize the dashboards and Mobile App.
- ✓ **Training and Go-Live Phase –** Conduct Trainings, workshops, create user guide, create users for Go-Live.

District wise Trained construction workers availability during disasters

District wise availability of Equipment, Human Resources and Critical Supplies

Analysis of District wise various types of Equipment and Critical Supplies.

- Incidents Reports Generation.
- Incidents reporting through Mobile App (Field Officer).
- Number of Trained volunteers and personnel availability.
- Reporting of losses post any incidents

Measurable Outcomes

Increase Operational Efficiency –

- At present, the volunteers report any incidents/ disasters through WhatsApp and emails that takes 2 to 4hours time to reach the higher authorities. Field officer app will help field officers from various districts/ panchayats across HP state to report the disasters/ incidents and losses within 20 mins.
- Previously, multiple channels like calls, SMS, WhatsApp, emails etc. were used to report the incident, but now the incidents can be reported and tracked through a single platform with the help of Field officer App.

Aid effective decision making –

- At present, it takes a day or two to prepare the reports for the number of incidents, number of losses or type of incidents.
- The integration of Field officer app and dashboards will help HP SDMA to generate and collate the reports within 2 hours.

7. Self-propelled Self-steerable Lifebuoy for Flood Rescue in India

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Remote Operated Lifebuoy under Tech Emerge Resilience 2020

Saif Seas

A World Bank and ADPC supported initiative, under Innovation for Climate Adaption and Resilience
Saif Automations Services LLP & Partners with HPSDMA, India

Introduction:

- **Drowning** is the 3rd leading cause of unintentional injury death worldwide
- Only a 3 minutes window is available to save a person in Distress
- To be able to reach/attend to the distress person with Speed is the key !

Remote Operated Life Buoy

Demo cum training to HPSDMA

Future Scaling:

- Commercial Development in progress.
- Assembly line set up
- Catering to **Indian Navy Order.**
- Recommendation to NDMA for utilization of this technology Pan India
- ADPC/World bank reference for use in South Asian Countries.

Solution:

- Development of a **Remote Operated Lifebuoy** – *Saif Seas*
- Easy to operate
- 7X speed of a swimmer
- No risk to the person trying to save
- Can cover a longer distance

Use of the Technology:

- Used in Lake areas/tourist spots by **HPSDMA**
- Can be used in Rivers, Dams, Flood scenarios and also at Sea
- to transport Food/Medicine to inaccessible locations remotely – **Remote Ambulance**
- With **Sonars** for **Depth finding etc.**
- **Serves as a Platform on Water…..** Unlimited task possibility

8. Customized Irrigation and Climate Advisory Services through Citizen Science in Pakistan

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PCRWR

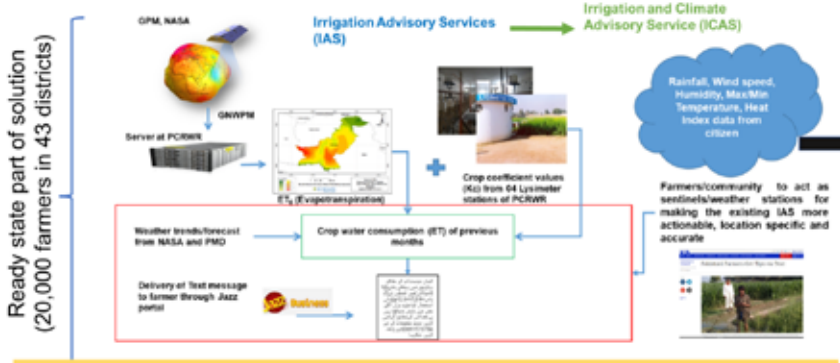
Customized Irrigation and Climate Advisory Services through Citizen Science

Bareerah Fatima[1], Faizan ul Hasan[1]
1.Pakistan Council of Research in Water Resources, Khyaban e Johar, H-8/1, Islamabad www.pcrwr.gov.pk

Introduction

Communities living in Southern Punjab (a province of Pakistan) and the Indus delta (the lowest riparian of the Indus Basin) are extremely vulnerable to climate variability. During the last three years, farming communities in these regions have suffered extreme weather conditions and bear loss of their standing crop. To resolve this challenge there is a need to enhance the spatial coverage of weather observatories in response to this challenge. This option is time consuming as it needs huge investment for establishment and operation of such stations.

Making citizens "satellites" or "Weather observatories" for the greater benefit of farmers in Pakistan and across the region

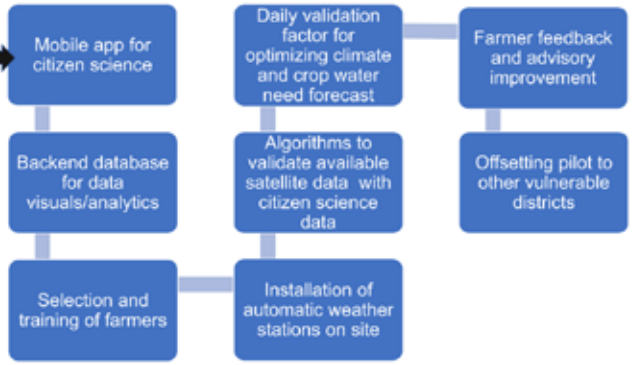


What incentive ICAS would offer

This pilot has the potential to scale out to other climate-vulnerable communities in the region (India and Bangladesh) as Irrigation Advisory Services scaled out. The information thus generated will be easily accessible to people and at limited costs. It offers climate education to participating communities while building their resilience to climate change. Through this approach for climate forecast if farmers are able to reduce individual losses they will reduce the share in national losses in agriculture. ICAS will help develop relationships between people to people and the planet, bringing closer the communities living in delta and canal irrigated areas.

We acknowledge the support of FCDO, World Bank and ADPC for supporting this pilot.

Up to 45 farmers in 3 project districts are selected. Farmers will be given 5 weather gadgets for determining (Air pressure, wind speed, rain gauge, humidity sensor, air pressure sensor). Three set of gadgets per village.



Farmer Selection Criteria

- Farmers present within 50 km radius of studied district
- Farmers with ability to read, write and use smart phones
- Farmers willing to give feedback on irrigation advisory services
- Young members of farming family, including women are encouraged to participate
- Farmers registered for Irrigation Advisory Services of PCRWR

9. Tidal River Water Custodian in Bangladesh

The Challenge

Include the very diverse local communities in the Decision Support for water management in the South West Delta of Bangladesh

Improving livelihoods by handling the complex interaction between many diverse actors and the geo-physical environment. Engineering solutions combined with livelihood approaches.

Balancing Life-stories and Simulation models

The team

Myisha Ahmad, Willem van Deursen, Carthago Consultancy
Shahnoor Hasan, IMACON Water
Jahin Shams, Uttaran, Bangladesh
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The Tidal River Water Custodian is funded by the CARE Climate Innovation Challenge program

10. Infrastructure Vulnerability to Slope Instabilities and Floods in Bhutan

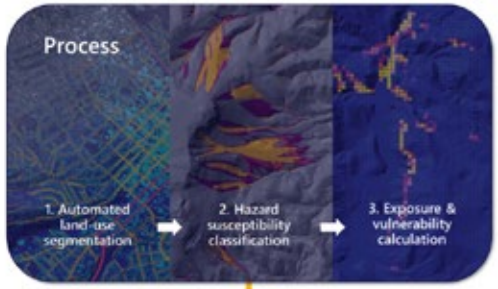
Infrastructure Vulnerability to Slope Instabilities and Floods in Phuentsholing, Pasakha, and Gelephug (Bhutan)

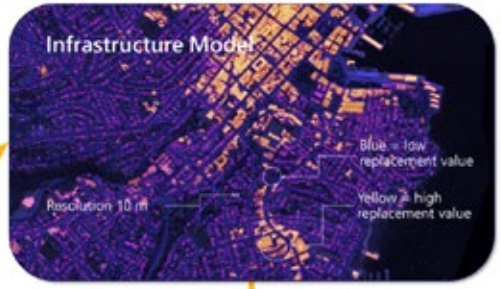
Department of Disaster Management, Bhutan ( ), Geoneon, Australia ( ), and Terranum ( )

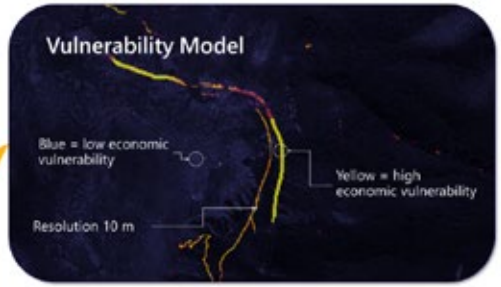
Introduction

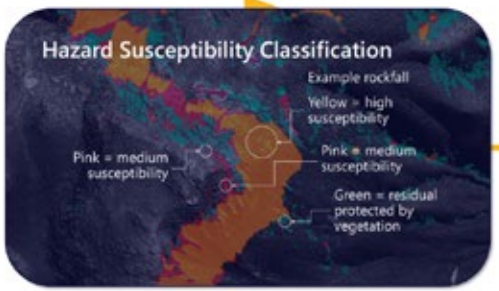
In Bhutan, more than 70% of the population and infrastructures are located along the main river basins, making them particularly exposed to floods and landslides caused by more frequent extreme weather events. Geoneon, in partnership with Terranum, the Department of Disaster Management, and the Department of Roads in Bhutan, is implementing a solution to assess the vulnerability of infrastructures to slope instabilities and floods in Bhutan to support the development of strategies for disaster risk reduction and climate change adaptation.

The aim is to identify hot spots where critical infrastructures are the most vulnerable to climatic disaster, so to support decision-makers to develop appropriate mitigation and monitoring measures to reduce the number of affected people, direct economic loss, damage to critical infrastructure, and disruption of critical services to the community.









ADVANTAGE

Our solution is a data driven approach to anticipate possible impact before disasters happen. It is unique because it can assess efficiently the extent of hazard susceptibility and related vulnerabilities at a large scale and in a reproducible way. It has the strength to be based on scientific knowledge, to be current owing to near-real time earth observation data and scalable because it relies on advanced algorithms and machine learning.

11. Sustainable Agriculture Technology (SAT) in Pakistan

Pro Nature Alliance

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Climate Innovation Challenge
Pro Nature Alliance R&D- Sustainable Agriculture Technology

INTRODUCTION

Agriculture is the backbone of Pakistan's economy (48% labor and 70% dependent as main source of income), and the country is mostly self-sufficient in plant and animal-based foods. The current agriculture production system in Pakistan is a major contributor to greenhouse emissions contributing 42% of total emissions due to its conventional and nonproductive nature. In the current system, tilling is exposing the conserved carbon and moisture towards the atmosphere together with disrupting the soil physiology due to which extra fortification is required in the form of inputs which are resulting in high costs of production (input costs account for more than 50% of the cost of production). Furthermore, water wastage is high with a few crops consuming more than 90% of available surface water. Currently, Pakistan has low productive soils, high costs of production, low productivity of crops and ultimately a production system which is noncompetitive, unsustainable, and non-climate smart.

EXISTING SITUATION

To tackle these issues, Pro Nature Alliance Research and Development with the support of Pakistan's National R&D organization, the Pakistan Agriculture & Research Council has adapted and formed a package of technology based on Regenerative Agricultural Practices (RAPs). The SAT machines backed by practices have already been tailored for the Pakistani context. Both on farm and on station trails have been conducted successfully at PARC/NARC, and they can now be rolled out into larger trials using different crops.

RAPs like no tilling, organic mulching etc. and machines like raised bed makers, precision planters etc. are not new and are being used all around the world including in Pakistan to some extent. PNA's innovation is the combination of these practices backed by machines (with high precision) which can be used for different crops, and which have been adapted and localized for Pakistan.

MAIN ISSUES HAMPERING PROPAGATION

- Small holder farmers are generally risk averse, since farming is there only source of both sustenance and income. For these farmers seeing is believing and they learn best by doing.
- Lack of authenticated and validated data
- Reliance on expensive imported machines and lack of locally manufactured machines having good precision
  - o Imported machines are unaffordable for most farmers
  - o Locally made raised bed makers do not make permanent raised beds and can only be used for 1 crop
  - o Locally made precision planters only have 40-50% precision and are unaffordable for most farmers since they can only be used for one crop

SUSTAINABLE AGRICULTURE TECHNOLOGY (SAT)

Based on Regenerative Agricultural Practices (RAPs). SAT is a climate-smart technology that has been developed and customized keeping in view the Pakistani context. SAT is a combination of 3 innovative technologies backed by climate smart practices:

a) The customized raised bed maker which makes 42-inch permanent raised bed with water furrows on soft soil. The raised bed maker can be used with the most common type of tractor in Pakistan.

b) Customized precision planter which can be adjusted for different crops. The precision planter has a fixed (7 by 7) row to row distance and adjustable seed to seed distance (Wheat 7 inches, Maize 9-11 inches, Cotton 15-18 inches)

c) Organic mulcher which makes organic mulch which reduces weeds and saves the soil from heat and cold stress. The organic mulcher is mounted on the same machine as the precision planter. With the organic mulcher on the front and precision planter on the back.

CONCLUSION

We at PNA believe that the Sustainable Agriculture Technology is the first practical step towards the revolution in the agriculture sector of Pakistan.
Upon successful completion of the CIC grant at end of July 2022, PNA would like to request that additional funding be provided to roll out and trial the SAT on Wheat, on a larger scale in Punjab and Sindh. For successful adaptation, on a large scale especially amongst small holders in Pakistan, seeing is believing and learning by doing is essential.

ACKNOWLEDGEMENTS

The PNA team would like to thank the World Bank, FCDO and ADPC for giving it the opportunity to roll out and trial it's Sustainable Agriculture Technology (SAT).

ACTIVITIES UNDER CIC

SAT is a transformative set of technology backed by practices which will be easily propagated in neighboring areas after success has been demonstrated. In Pakistan propagation is easiest when based on "seeing is believing". Once farmers of the areas witness firsthand the success that other farmers have had in adapting SAT, they will also be more willing to adapt SAT to grow their agricultural produce.
Therefore, PNA will undertake the SAT trail for different crops covering the entire crop cycle from sowing to harvest. A baseline will be conducted to assess the existing situation of different indicators (situation of water use, cost of production, productivity and other parameters) before SAT was employed in that area for a particular crop. Then an impact assessment will be conducted upon harvest of the crop using SAT in comparison to the baseline. If SAT results in lower water usage, lower land development costs, lower input costs, lower cost of production, production of food safe items and lower GHG emissions then the pilot will be deemed a success. As a part of the CIC, PNA will

- o Select up to five (5) clusters in different agro-ecological zones in Punjab and Sindh. The trial will be undertaken on a total of 1,000 acres of land. PNA will train a total of 100-200 farmers who will participate with PNA in the SAT pilot activity. PNA will ensure adequate participation and access of women to the SAT. For this purpose, PNA will ensure that of the 100-200 farmers that it trains at least 20-30 are women.
- o Given the timing of the CIC grant (End Dec 2021 to End July 2022), the Wheat crop cannot be targeted therefore, PNA will focus on Maize, Vegetables, Cotton and Fodder Crops for the trials.

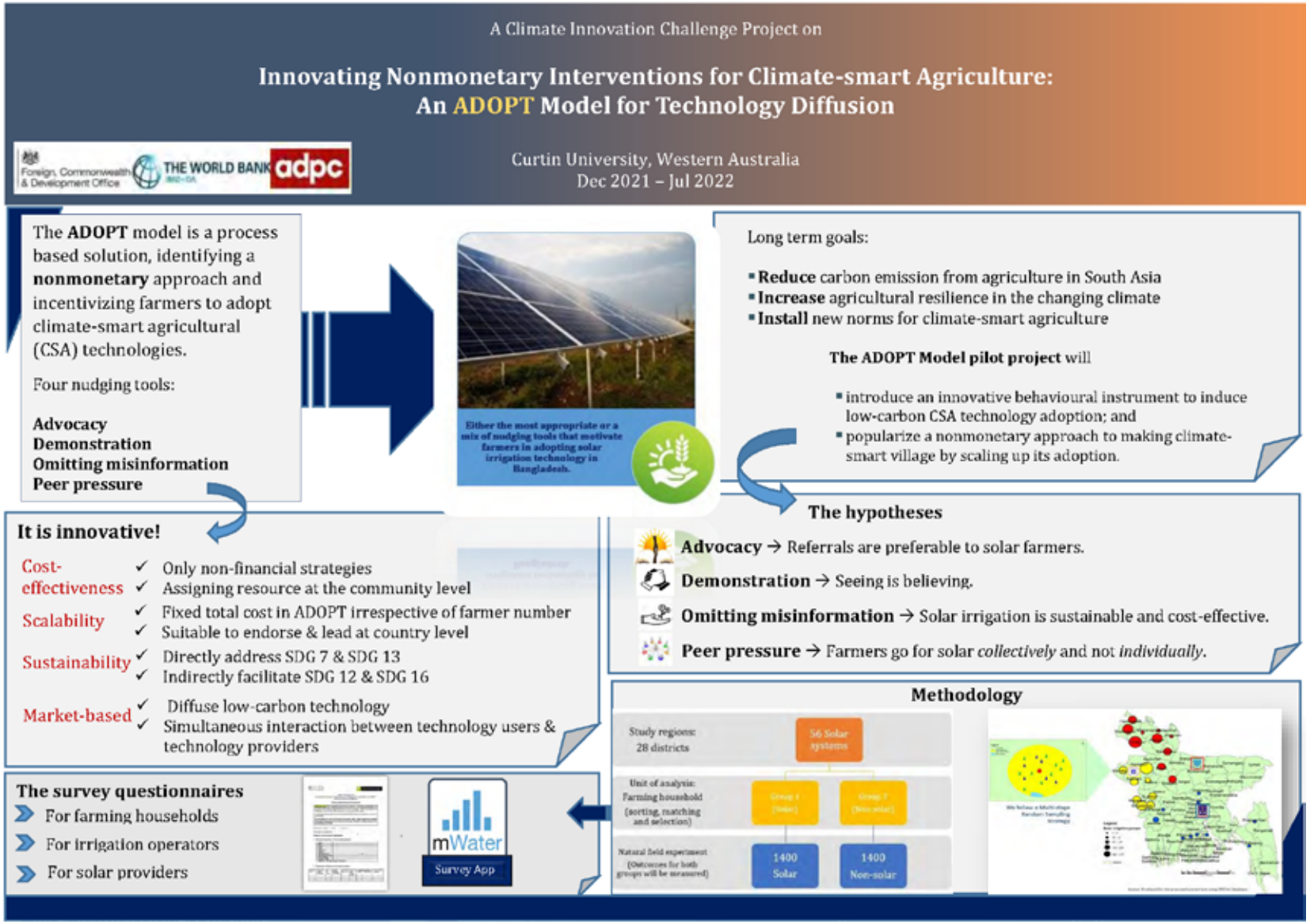
KEY METRICS

a) Reduced water usage of crop in comparison to baseline- 20-30% reduced quantity of water used
b) 30-40% less input cost for the crop in comparison to baseline.
c) Lower land development cost due to no tilling
d) Reduced usage of seed in comparison to the baseline (at least 10% less Maize seed use in comparison to the baseline)
e) 20-30% less cost of production in comparison to the baseline for the concerned crop
f) Lower GHG emission through no till and conservation of moisture and carbon in the soil (Qualitative)
g) Production of safer food and ultimately revival of soil physiology/ biota (Qualitative)

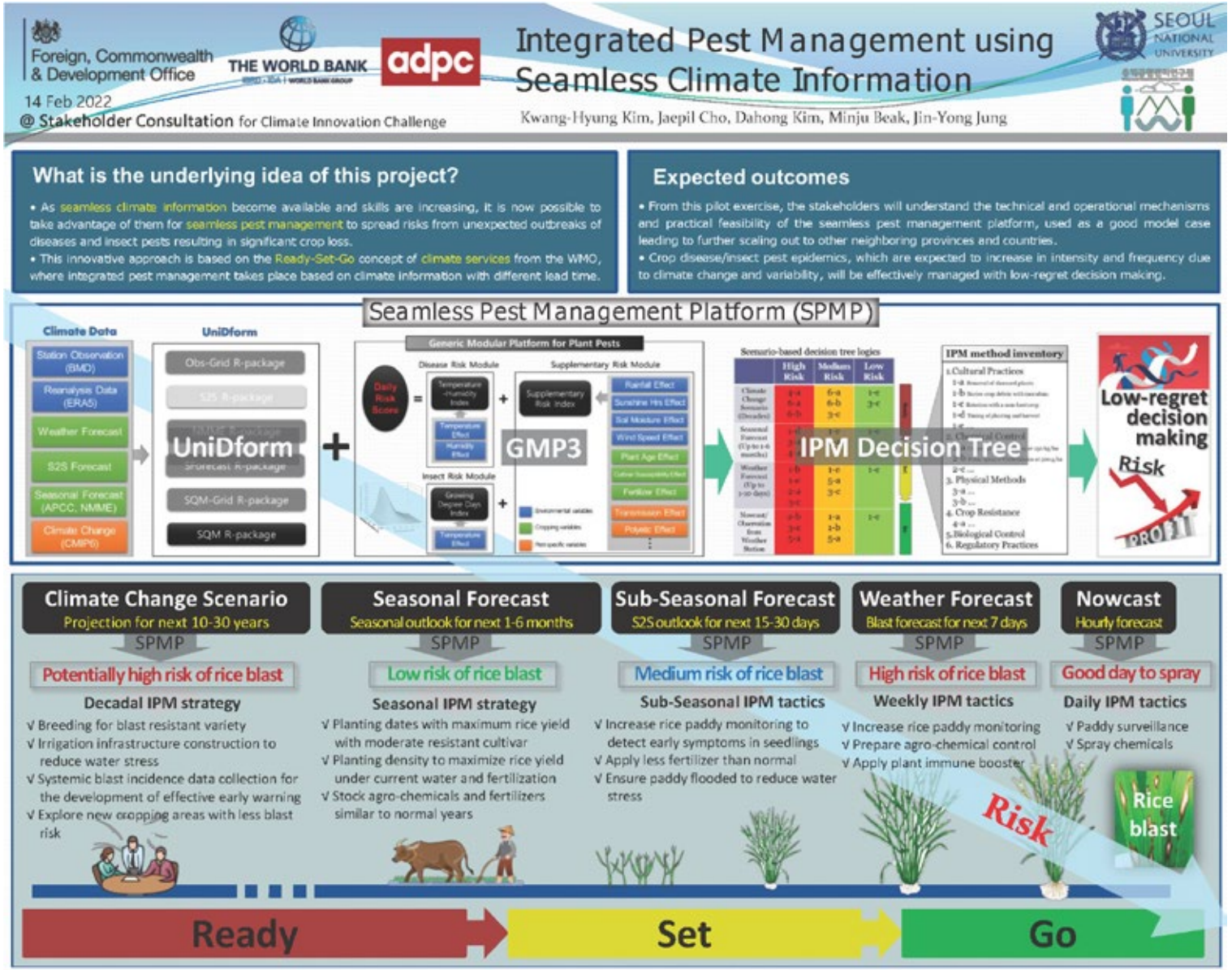
SUSTAINABLE AGRICULTURE TECHNOLOGY (SAT)

Customized Raised Bed Maker | Organic Mulcher | Customized Precision Planter

12. ADOPT Model for Technology Diffusion - Innovating Non-monetary Interventions for Climate Smart Agriculture in Bangladesh



13. Integrated Pest Management using Seamless Climate Information in Bangladesh



14. Smart Vertical Farming: Achieving Food and Nutritional Security of Urban and Semi-Urban Communities in Sri Lanka

Climate Innovation Challenge (CIC)

Achieving Food and Nutritional Security of Urban and Semi-urban Communities in Sri Lanka under a Changing and Variable Climate through Smart Vertical Farming Modules

Alliance for Appropriate Technology Exchange (Guarantee) Limited - (AfATE), Kandy, Sri Lanka

INTRODUCTION

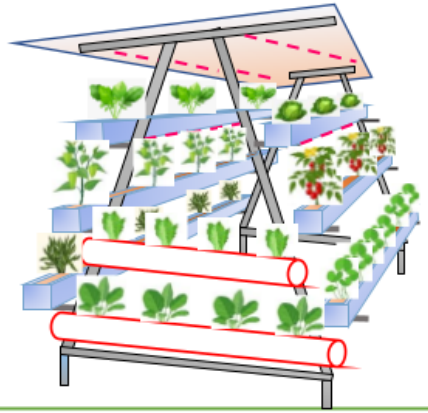
Urban home gardening through Smart Vertical Farming Module (SVFM) opens a new window for food security in Sri Lanka. It also helps urban and semi-urban communities to have an easy access for safe foods and spend their leisure times with a productive activity. It is of paramount importance to implement climate-proofed adaptation interventions in the context of water, nutrient and pest & disease management in a controlled manner, especially where the land resource is scarce in these exposures. Automated features such as enhanced photosynthesis rates of crops with artificial lighting, nutrient management through fertigation and modern ICT techniques for the manipulation of modules will be unique compared to a conventional controlled agriculture system.

Limitations of Urban Farming in Sri Lanka

- Limited available space for urban farming
- Time limitation due to busy & hectic schedules
- Knowledge limitation on urban farming
- Knowledge limitation on modern agricultural technologies

Our Solution ……. Smart Vertical Farming Module (SVFM) using State of Art Technologies

Planting will be done in six gutters with solid plant medium and two hydroponics pipes under controlled environmental conditions.



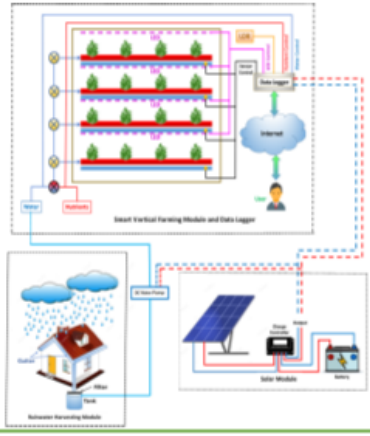
Sensors used in SVFM

- Soil moisture sensor
- Soil pH level sensor
- Light intensity sensor
- Temperature & Humidity sensor

Unique features of SVFM

- Automated water and fertilizer supply
- Artificial lighting as and when required
- Limited man hour involvement
- Less impact for extreme weather events
- Rainwater harvesting module
- Solar power as main source
- Remote manipulation via Web App

SVFM & other supportive modules

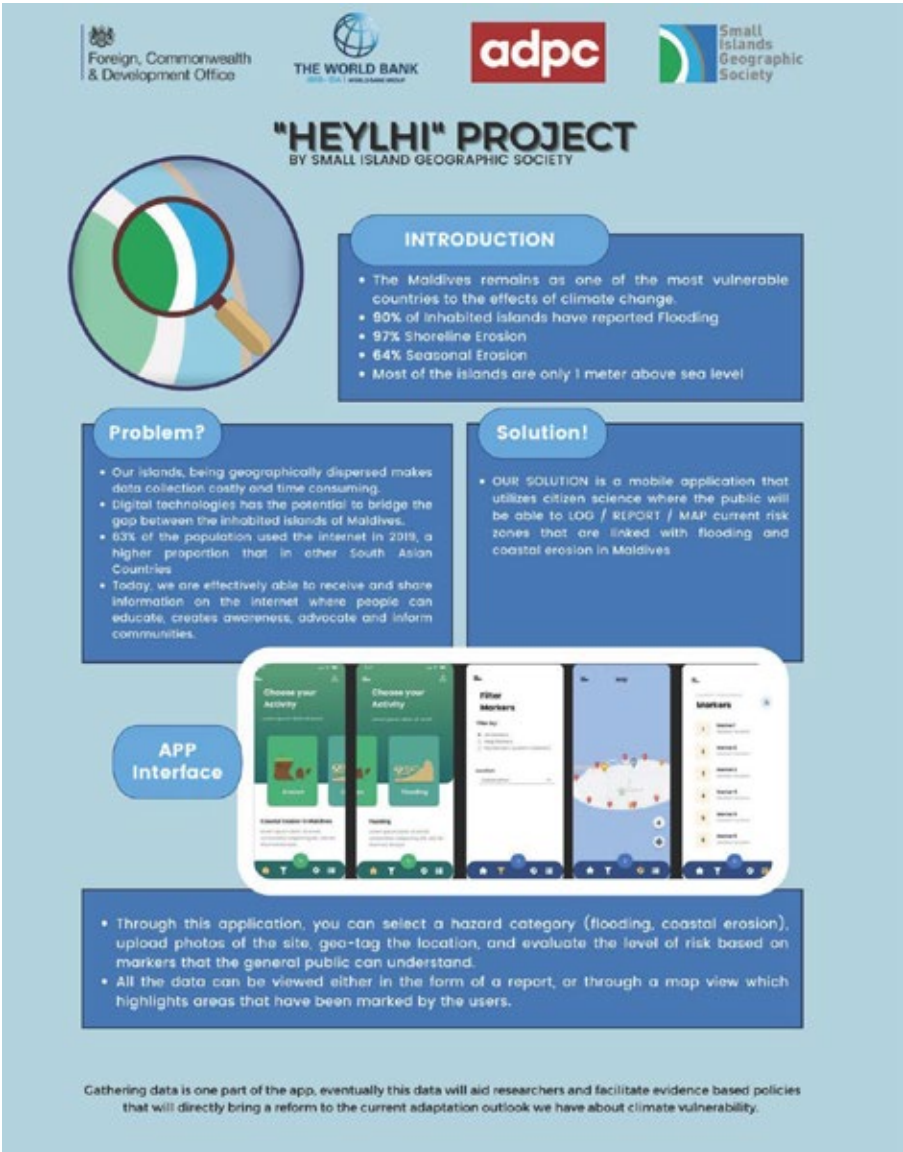


Methodology

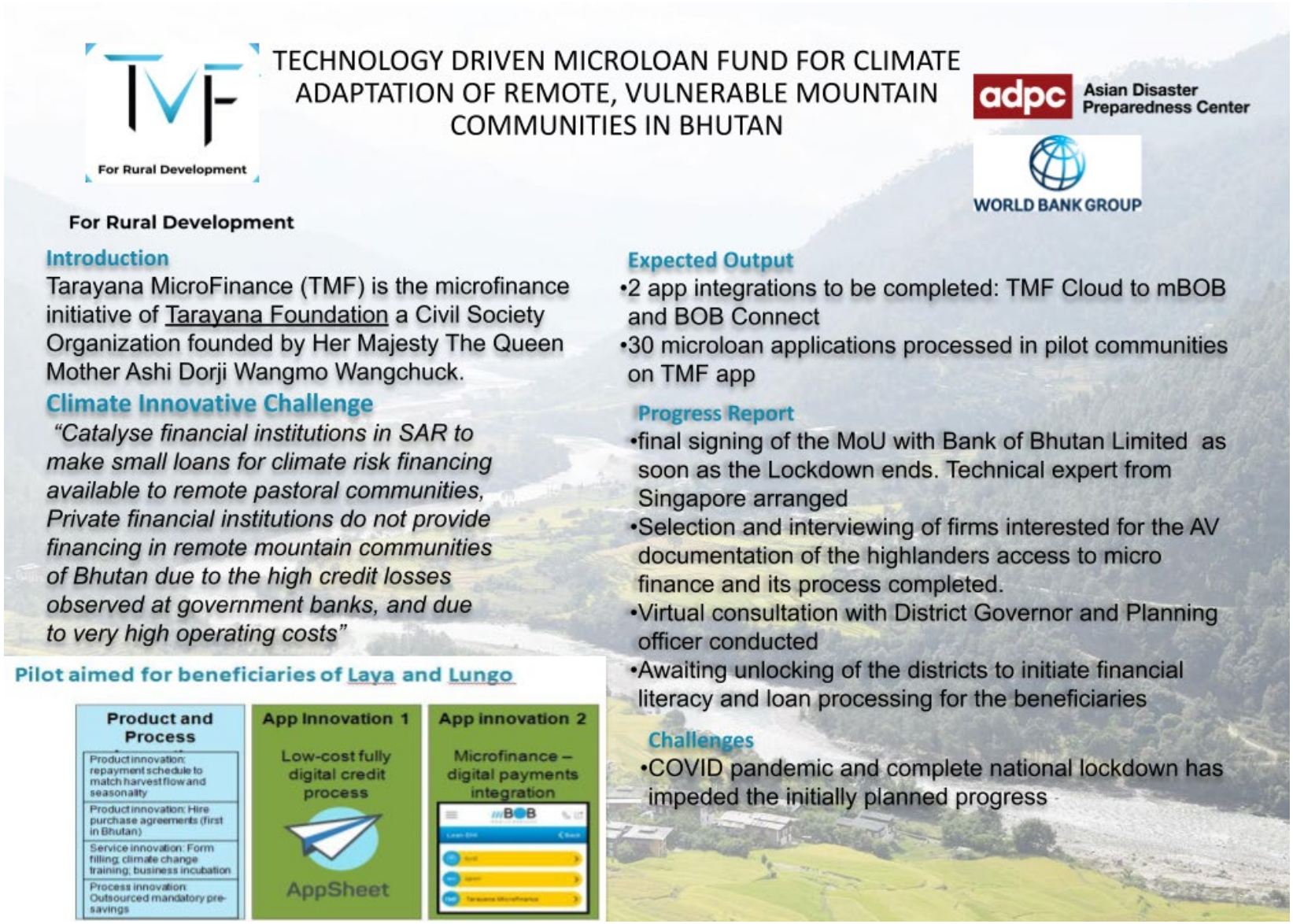
- Kick-Off Meeting
- Selection of Sites/Household
- Selection of crops
- Manufacturing SVFM & Testing
- Regular meetings
- Web Application
- Awareness programmes
- Installation of SVFM
- Regular Inspection
- Data Collection
- Workshops
- Up-scaling

SVFM is perfectly aligning with the newly introduced Sri Lanka government's National Agriculture Policy - 2021

15. Heylhi – An Online Application for Coastal Erosion and Flooding Information Collection in Maldives



16. Technology Driven Microloan Fund for Climate Adaptation of Remote, Vulnerable Mountain Communities in Bhutan



17. Building Food Security through Agro-met Innovative Advisory Services in Nepal

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Building Food Security through Agro-Met Innovative Advisory Services (AMIAS)

Basanta Gautam[1], Heli Hiltunen[1], Lalmani Wagle[2], Katja Gunia[1] and Nabina Tiwari[2]
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[2]Clean Energy Nepal (CEN), Pragati Path, Talchikhel, Lalitpur, Nepal. Email: wlalmani@gmail.com

Introduction

The weather forecast, information of diseases and pest control are widely available at the central level in Nepal but the access of farmers to such information is extremely limited. The proposed system (ProMS) allows to collect data from different sources and feed into a web-based/mobile app-based system to make them easily accessible to relevant stakeholder. The produced outputs will then support local authorities and farmers in the decision making. The local farmers can better plan and implement their day-to-day agricultural activities. Timely delivery of such information in an easily understandable form enhances the food security. Similarly, the planning and decision-making process of local authorities should be climate sensitive to save the people from climate crisis, make them develop and livelihood climate resilient.

Scope and main objectives

- The purpose of the project is to improve local farmers' livelihood as well as uplift their economic conditions (economic resilient) by helping them to produce climate adaptive quality products from their agricultural farms. Also, it directs the farmers to adopt informed farming practices.
- A web and mobile app-based ProMS platform will be developed to collect data from different sources, like available climate data from different ministries, weather data from meteorological services and in situ information collected through the mobile application by local authorities or farmers, to feed into the system.

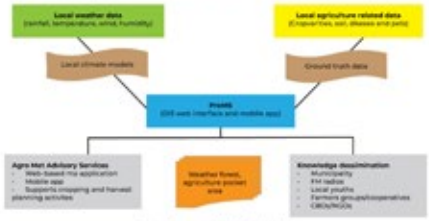
Innovativeness

- Use of the ProMS System, which consists of a GIS web interface and a mobile application, is innovative.
- Other base map layers e.g. OpenStreetMap, satellite data, already existing local land use maps can be added into the System.
- The platform allows to integrate different services on a unique platform, where users are granted different levels of access to the data and functionalities.

Study area

Study area (Belaka Municipality) in Nepalese Province No.1

Approach and methodology



Overall approach and methodology

Project partners/stakeholder

Project partners and key stakeholder

Results framework

Acknowledgement

The Climate Innovation Challenge (CIC) is being managed by the Asian Disaster Preparedness Center (ADPC). The CIC, a sub-component "Innovation for Climate Adaptation and Resilience" is implemented as part of the World Bank's Program for Asia Resilience to Climate Change Multi Donor Trust Fund (PARCC TF Grant) with funding support from the United Kingdom's The Foreign, Commonwealth & Development Office (FCDO).

18. Smart Farm – A Complete Advisory Dissemination System in Nepal and Sri Lanka

Foreign, Commonwealth & Development Office | THE WORLD BANK | adpc

Introduction

By 2050, parts of Asia may see increasing average temperatures, lethal heat waves, extreme precipitation events, severe hurricanes, drought, and changes in water supply. Several Asian societies and economies will be increasingly vulnerable to physical climate risk without adaptation and mitigation. Climate risks can directly affect crop production, by reducing agricultural yields for some crops, increasing production volatility, and destabilising farmers' incomes. Oversupply could result in farmers facing lower prices for their crops, while undersupply could lead to food shortages and price spikes.

AgTech Intervention - Cropin

A primary challenge for farmers in terms of susceptibility to climate change and extreme weather conditions is the lack of access to timely information. Cropin's technology-driven approach takes advantage of the **increased mobile phone penetration to deliver tailored advisory services** to individual farmers at scale.

The Project

Cropin's core service modules of SmartFarm will enable smallholder farmers in **Bangladesh and Sri Lanka** to adopt sustainable best practices, such as the best sowing window, early disease detection, and more. Together, these will help them to 'grow more' and 'grow better'. The platform can also raise awareness of climate change and the need for resilience.

Identified and equipped **Lead Farmers** will use **SmartFarm app** on their mobile phones to capture farm-level data for each farmer. Based on this information, curated advisories tailored to individual farms will be sent out as SMS to the farmer's registered mobile number. The Advisory Services will include:

- **POP and Good Agricultural Practice-based advisories**
- **Input advisories for the right usage of fertilisers and chemicals**
- **Pest and disease advisory through SMS**
- **Climate-smart advisory (predictive and prescriptive using AI/ML models)**

Advisory Dissemination System

- Cropin's unique model uses various data inputs to provide curated, timely, and automated crop advisories.
- The platform uses a proprietary disease early warning system to predict diseases in crops like tea and rice based on weather conditions.
- By integrating with IBM Weather to obtain hyperlocal weather forecasts, the platform delivers climate-smart advisories for each crop variety and its current growth stage.
- Configurable advisories subject to preset rules are automatically triggered through SMS, helping farmers prevent crop loss due to pests and diseases.
- Cropin's remote sensing capabilities give satellite-imagery based plot-level insights on crop health and yields at a local level.

Implementation and Adaptation: Power of Partnerships

- **Agrithmics and Oxfam,** our local partners in Sri Lanka and Bangladesh, respectively, are already engaging with farmers.They will help identify Lead Farmers at community level to use Cropin's mobile app.
- **Local Agronomy Experts** will help configure locally relevant agronomic advisories and set up weather-based rules for advisory dissemination.

Cropin's Objectives Through This Project

- **Create awareness** among smallholder communities about climate risk and benefits of early warning systems
- **Simplify climate science** into relevant information for local communities
- **Provide robust tech** model to transfer information from local administration to communities
- **Develop a Decision Support System** for local governments through a centralised platform
- **Detect crop health and forecast yield** at the plot level with advanced remote sensing technology
- Analyse on-field data and **trigger automated early warning messages** at a local level.

19. Household Level Risk Assessment Tool - A Digital System for Evidence-based Decision Support to Plan Effective Risk Financing Strategies in Nepal

Piloting of **Household Level Risk Assessment Tool** in **Wards 12 & 13** of **Bheemdatt Municipality**, Kanchanpur, Nepal

For evidence-based decision support in implementing effective risk financing.

Funded by **Climate Innovation Challenge**

Foreign, Commonwealth & Development Office | THE WORLD BANK | adpc Asian Disaster Preparedness Center

Implementing Partners: naxa | DCA

Background



Nepal is at high risk of both natural and man-made hazards. Floods and inundations are often observed in the low land areas of Nepal. The number of households affected by floods increases every year. The cost of hazard impacts is particularly high for low-income households which often tend to rely on ad-hoc relief distribution and assistance. These solutions only seem to be temporary. Hence, investing in delivering disaster response schemes to finance the cost incurred due to disasters seems evidently important. For low-income households and individuals, effective risk financing solutions can be valuable in protecting their livelihoods against disaster risks.

Solution

- A highly customizable and proven digital tool for household vulnerability assessments
- Identification of vulnerable households using a standard set of criteria
- Vulnerability classification of households into three color-coded markers
- Spatial visualization of households with associated attributes
- Support in evidence-based planning to design appropriate risk financing strategies

Start

1. Digitization of Households in GIS Environment and Unique ID Generation (Create Polygon (unique ID) over the satellite image)
2. Household Survey Questionnaire Design (Under Exposure, Sensitivity and Adaptive Capacity Components of Vulnerability)
3. System Development with the capacity of overlaying hazard layers (For eg: Flood Hazard Model with return period 50 yrs, 100 yrs, 500 yrs, Landslide Susceptibility)
4. Field Survey in Digital Environment aided by Unique ID to each HH
5. Cleaning and Standardization of the survey data
6. Assigning of Vulnerability Score (in terms of Exposure, Sensitivity and Adaptive Capacity)

EXPOSURE — Natural Hazard and Climate Variability

How far is the house from nearby river?		Time required to reach the nearest open space
less than 50 metre	5	More than couple of hours, Don't Know 5
50-100 metre	4	more than an hour 4
100-250 metre	3	30 minutes to 1 hour 3
250-500 metre	2	15-30 minutes 2
Greater than 500 metres	1	Walking Distance 1

SENSITIVITY

Household with Senior Citizen of 60 years?		With at least one family member having chronic illness
More than 3	5	More than 3 5
3	4	3 4
2	3	2 3
1	2	1 2
No	1	No 1

ADAPTIVE CAPACITY — Socio-Demographic

Dependency Ratio		Land Ownership
less than 0.2	5	More than 5 Ropani 5
0.2 - 0.4	4	3 to 5 Ropani 4
0.4 - 0.6	3	1 to 3 Ropani 3
0.6 - 0.8	2	Less than 1 Ropani 2
> 0.8	1	Land Tenants /Mohi / Landless 1

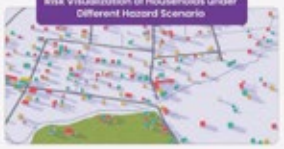
HOUSEHOLD LEVEL VULNERABILITY INDEX

Theme	Main Components	Score (1 to 5)	Value (1 to 5)
Exposure	Natural Hazard and Climate Variability	-	-
Sensitivity	Special Consideration Group	-	-
	Damage and Loss	-	-
	Health	-	-
Adaptive Capacity	Socio-Demographic Profile	-	-
	Livelihood Strategy	-	-
	Knowledge and Capacity	-	-
	Finance	-	-
	Engagement/Access to Services and Infrastructure	-	-

Vulnerability = f (Exposure, Sensitivity, Adaptive Capacity)

Normalization and Categorization of Households
- Red- highly vulnerable
- Yellow - moderately vulnerable
- Green - least vulnerable

Risk Visualization of Households under Different Hazard Scenario

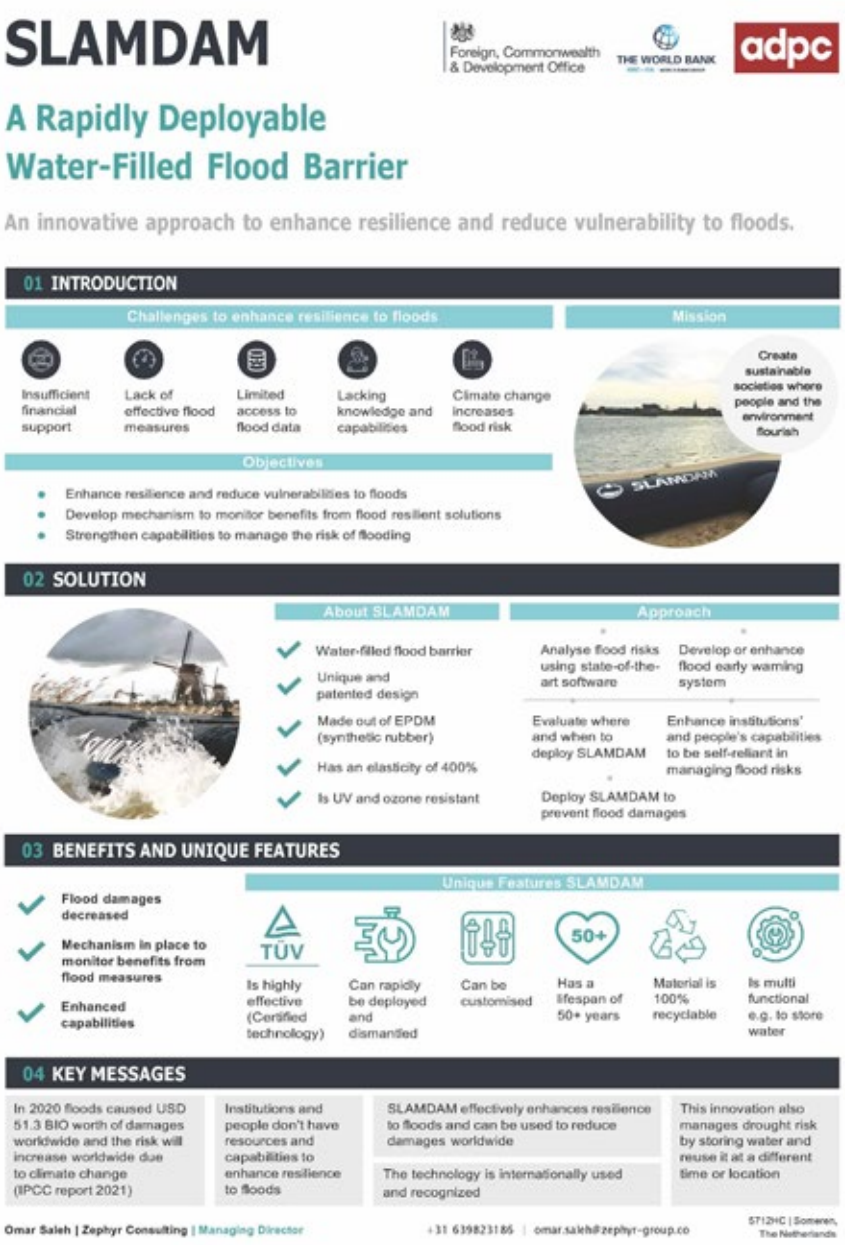


Implementation Area

Implementation Timeline

Month 1	JANUARY	Preparation and Partnerships Development	Completed
Month 2	FEBRUARY	Solution Enhancement, Survey Design and Deployment	Ongoing
Month 3	MARCH	Technical Capacity Development and Cluster Assignment	
Month 4	APRIL	Data Collection, Verification, and Upload	
Month 5	MAY	HH Vulnerability Assessment, Visualization, and Report Generation	
Month 6	JUNE	Result Sharing and Validation	
Month 7	JULY	Risk Financing Programs	

20. SLAMDAM - Water-filled Flood Barrier in Pakistan



21. Climate Resilient Infrastructure for Social Transformation and Adaptation (CRISTA) in Bangladesh and Nepal

Introduction

The Climate Resilient Infrastructure for Social Transformation and Adaptation (CRISTA) provides a solution to one of the pressing gaps in infrastructure resilience addressing various aspects of the risk governance and management of infrastructure risk through resilience building. The CRISTA delivers near-real time monitoring of road and power infrastructure health/status using advanced geospatial datasets with the help of crowdsourcing and artificial intelligence via an android application and associated CRISTA dashboard, advocating social transformation for climate induced hazards.

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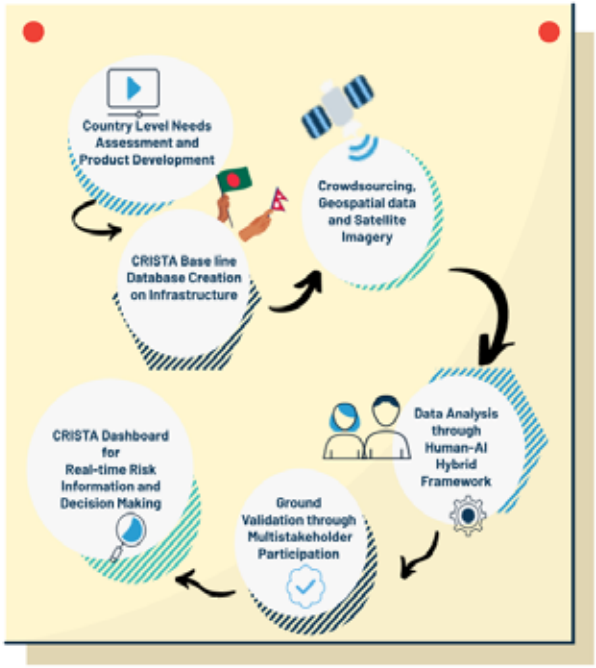
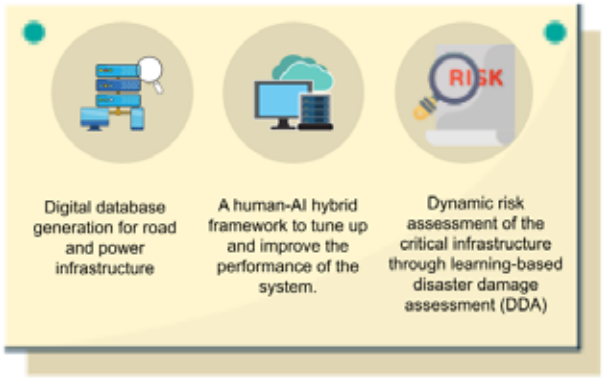
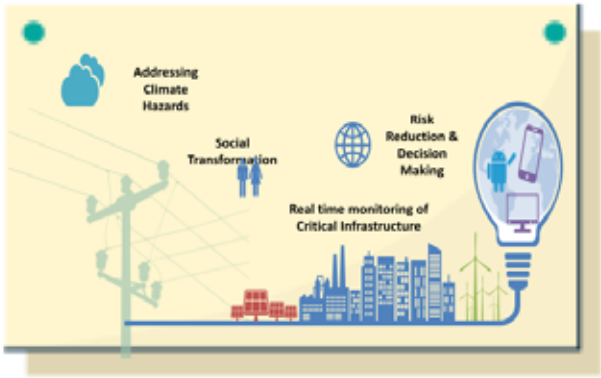




Climate Resilient Infrastructure for Social Transformation and Adaptation

DPMM Disaster Preparedness, Mitigation and Management | ACTION NEPAL | SCIENCE Connect Ltd. Center for Sustainability science

Impacts



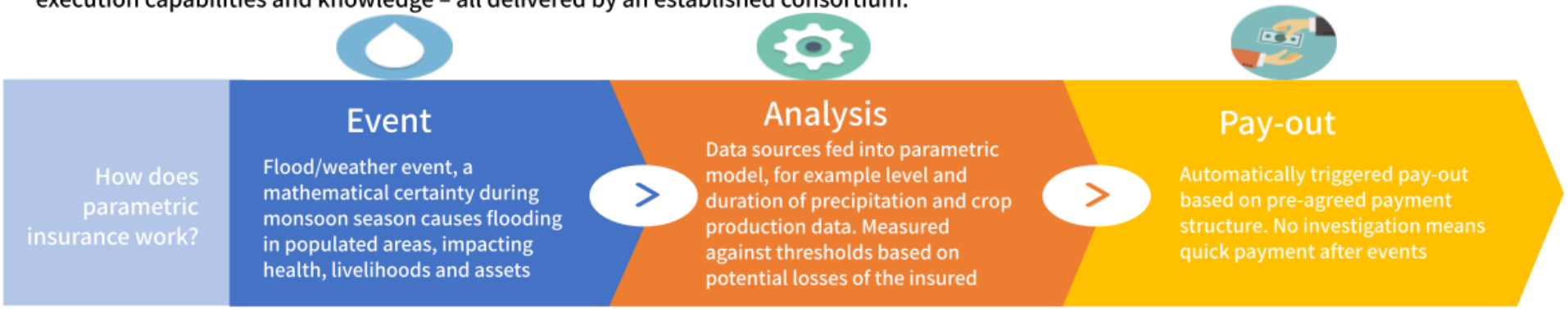
22. Parametric Flood Insurance for Climate Vulnerable Communities in Nepal

Risk Financing Solutions: "Parametric Flood Insurance for climate vulnerable agriculture in Nepal":

Project Solution: Parametric flood insurance - local customization, innovative delivery

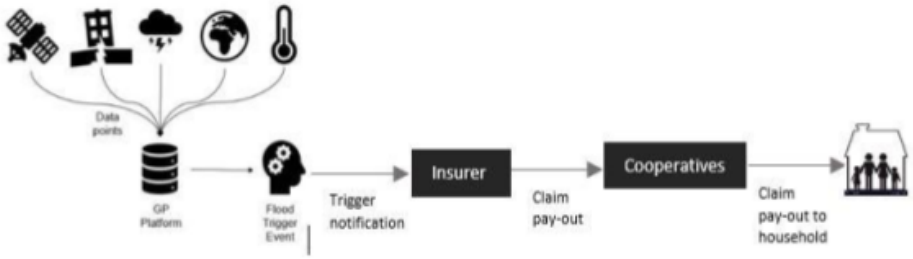
"When it floods, it pays": Parametric flood insurance for smallholder farmers delivered via mobile device by local cooperatives is the lowest-cost, simplest method to serve large numbers of households increasingly vulnerable to climate change

The solution combines new product technologies (parametric), last-mile delivery technologies (mobile/digital) and proven on-the-ground execution capabilities and knowledge – all delivered by an established consortium.



Why use a parametric approach over traditional indemnity products?

- Reduces complexity, such as claim investigation, removing verification costs and increasing affordability
- Increases customer confidence: simple to understand for partners and end beneficiaries
- Tiered thresholds depending on severity of flood
- Efficient and speedy payout increases effectiveness of the insurance
- Substantial impact potential with quick deployment and scalability



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23. MOBILISE 3.0: Digital Toolset for Building Resilient Communities in Sri Lanka

MOBILISE: Digital Toolset for Building Resilient Communities

Terrence Fernando[1], Dulcidio Coelho[1], Ben Monaghan[1], Srimal Samansiri[1], Amila Liyanage[1], Dayan Munashinge[2], Anuruddha Vijekumara[2], Wasantha Senadeera[2], Menake Wijesinghe, Suranjith Rajapaksha[3], Dinuka de Zoysa[3].

[1]University of Salford (UK), [2]National Building Research Organisation (Sri Lanka), [3]Tecxal Systems Ltd (Sri Lanka)

Challenge: At present, important climate and disaster risk data (pre-collected, pre-generated and real-time) is scattered across many agencies from various sectors. As a result, it is difficult for government agencies to compile relevant intelligence necessary for building community resilience and issuing effective early warnings. The project will address challenges such as: Decision Support Systems for local authorities; Access to data and predictive analytics to enable action by local level decision makers and the public; detection and forecasting at local level; last mile connectivity, communication, dissemination and local actions in low resource settings; citizen science and crowd sourcing for climate induced hazard early warning system.

Project Partners

The University of Salford, UK

The National Building Research Organisation, Sri Lanka.

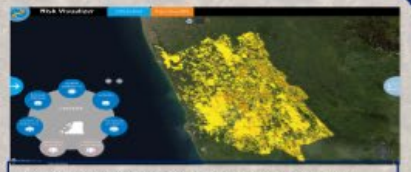
Tecxal Systems Ltd, Sri Lanka

Expected Impacts :

1. *Transform current decision making practices to adopt a data-driven collaboration approach for decision making in building local resilience and issuing early warnings*
2. *Establish communities as important actors in local resilience* building and early warning systems
3. Establish an efficient and effective Early Warning System for the community

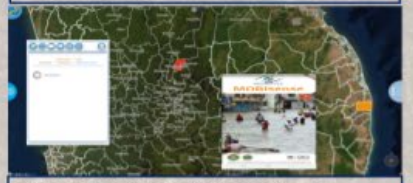
Innovative Technology Solution being Piloted : MOBILISE Platform

MOBILISE: Data Engine for establishing a cloud-based, multi-agency risk information space for stakeholders.



MOBILISE: Risk Visualiser for building a common understanding of climate risks.

MOBILISE: Risk Explorer for understanding the impact of current and future hazards due to climate change



MOBILISE: EWS for implementing an community-based early warning system that can reach communities in both urban and rural areas (digital and non digital)

Pilot Area: The project has chosen Kalutara district as our pilot area since it is subjected to increasing landslide risks, floods and drought due to climate change. Kalutara has a land area of 1,624km² (164,380ha) with a total population of 1,221,948 and 302,371 houses.

Methodology

The Living Lab methodology is being used to provide an "Experimentation and Learning Environment" for local government organisations, third party organisations, technical and scientific experts and communities to co-create solutions that can address their local problems, deploy and validate them in their local settings.

Living Lab User Partners :

Kalutara District Secretariat and local partners, Disaster Management Centre, NBRO, Local community group Representatives.

Asian Disaster Preparedness Center (ADPC) is an autonomous international organization that works to build the resilience of people and institutions to disasters and climate change impacts in Asia and the Pacific. Established in 1986, it provides comprehensive technical services to countries in the region across social and physical sciences to support sustainable solutions for risk reduction and climate resilience. ADPC supports countries and communities in Asia and the Pacific in building their DRR systems, institutional mechanisms and capacities to become resilient to numerous hazards, such as floods, landslides, earthquake, cyclones, droughts, etc.

Asian Disaster Preparedness Center

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