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International Water Management Institute

Project Brief

Building climate resilience and adaptive capacity in Sri Lanka: The bundled insurance solution

In Sri Lanka, smallholder farmers are among the most vulnerable to natural disasters. More than 27 million people have been affected by floods and droughts with economic losses estimated at over USD 2.62 billion since 1966. Climate change-induced factors such as erratic rainfall and severe floods, droughts, tropical cyclones or saline water intrusion are making the situation worse. While climate risks are on the rise, a growing variety of tools aims to reduce the impact on poor and vulnerable people. Among those tools, social protection (e.g., weather index insurance) is a proven set of instruments when it comes to reducing risks in a context of poverty and vulnerability.

Lack of education and technical skills, poverty, risks inherent to agricultural investments, and limited assets and financial capital are major reasons for low investment in enhancing adaptive capacity to climate change. Now, technology could be the key to improving smallholder resilience to natural disasters and their opportunities for resilient recovery.

A farmer family receiving their first insurance payout at a ceremony held in the village of Galenbindunuwewa in the North Central Province of Sri Lanka as part of IWMI's bundled insurance solutions program (*photo:* Samurdhi Ranasinghe/IWMI).

CGIAR RESEARCH PROGRAM ON Climate Change, Agriculture and Food Security CCAFS

CGIAR RESEARCH PROGRAM ON Water, Land and Ecosystems

MAFF Ministry of Agriculture, Forestry and Fisheries 農林水産省

The project

The main objective of the *Scaling climate risk insurance in Sri Lanka: Empowering vulnerable smallholder farmers* project is to provide *Bundled Solutions of Index Insurance with Climate Information and Seed Systems to manage Agricultural Risks* (BICSA). The project will focus on five districts in Sri Lanka – Ampara, Anuradhapura, Kurunegala, Monaragala and Vavuniya (Figure 1).

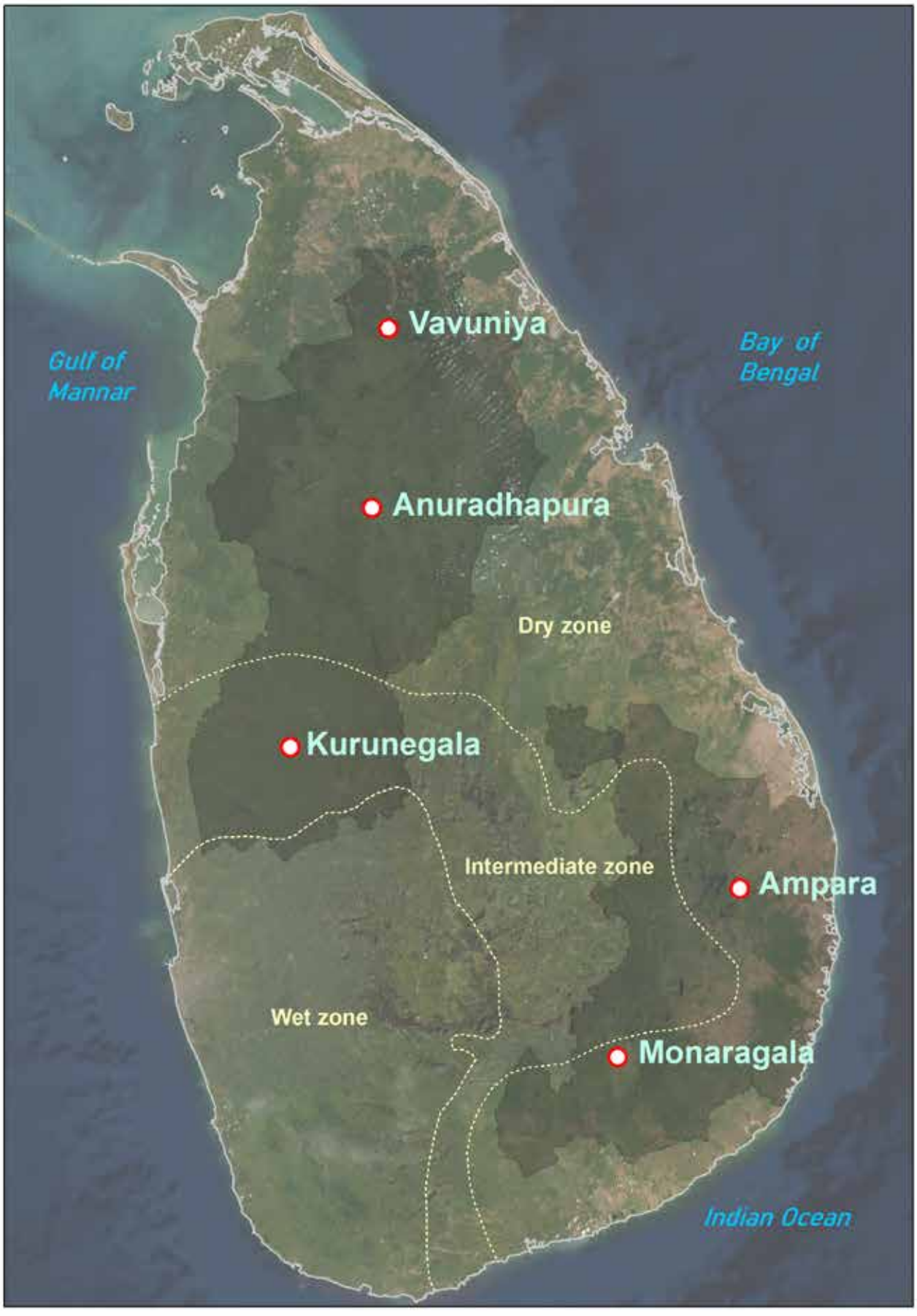

Figure 1. The five districts in Sri Lanka considered for this study.

Key messages

- Sri Lanka's high temperatures, unique and complex hydrological regime, and exposure to extreme weather events make it highly vulnerable to the impacts of climate change.
- Between 1990 and 2019, a total of 76 natural disasters were reported, affecting 19.6 million people and causing economic damage estimated at over USD 2.9 billion. Floods were the large-scale natural disasters experienced during this period.
- Under the highest emissions pathway (Representative Concentration Pathway [RCP] 8.5), temperatures are projected to rise by 2.9–3.5 °C by the 2090s, over the 1986–2005 baseline. In contrast, warming of 0.8–1.2 °C is projected over the same time horizon on the lowest emissions pathway (RCP 2.6).
- It is expected that Sri Lanka's poorest and most marginalized communities will be the hardest hit from the projected impacts of climate change, exacerbating poverty and inequality.

Sources: WBG and ADB 2020; EMDAT 2021.

How can smallholders manage agricultural risks?

In recent years, agricultural technologies such as stress-tolerant seed varieties and index insurance, and climate information are increasingly assisting smallholders adapt to climate change. Seed varieties that better withstand climate risks such as droughts and floods are one such technology. Another is the use of financial instruments such as index insurance to enable speedy compensatory payouts when extreme weather events occur and agricultural production collapses.

However, these technologies cannot work in isolation. While stress-tolerant seed varieties could protect farmers from moderate weather risks, they provide no insurance for extreme weather events. A risk-averse farmer may, therefore, underinvest in such seed varieties unless extreme weather events are covered by crop insurance to cope with the financial losses following such events. This is where climate information services come in. With access to accurate information, farmers can make informed and timely decisions about investing in the most appropriate seed varieties.

Weather index insurance

Weather index-based insurance is an innovative approach to manage weather and climate risks (Figure 2). It is a solution where payouts are made on the basis of a predetermined index such as rainfall or wind speed without the need for detailed damage assessment (Figure 3). Using weather index insurance is advantageous because it provides quick compensation, and is easy to understand, transparent and scalable to any region.

Risk transfer solutions are part of a risk management strategy that involves the shifting of risk from one party to another with the support of an insurance company. So, the insured farmers can mitigate climate risks and benefit from financial payouts. These payouts will reduce their financial burden caused by crop damage, and potentially prevent a poverty trap and/or support the fiscal deficits of public agencies. The risk transfer mechanism could help public agencies and communities to 'build back better', as part of the Sendai Framework for Disaster Risk Reduction 2015–2030.

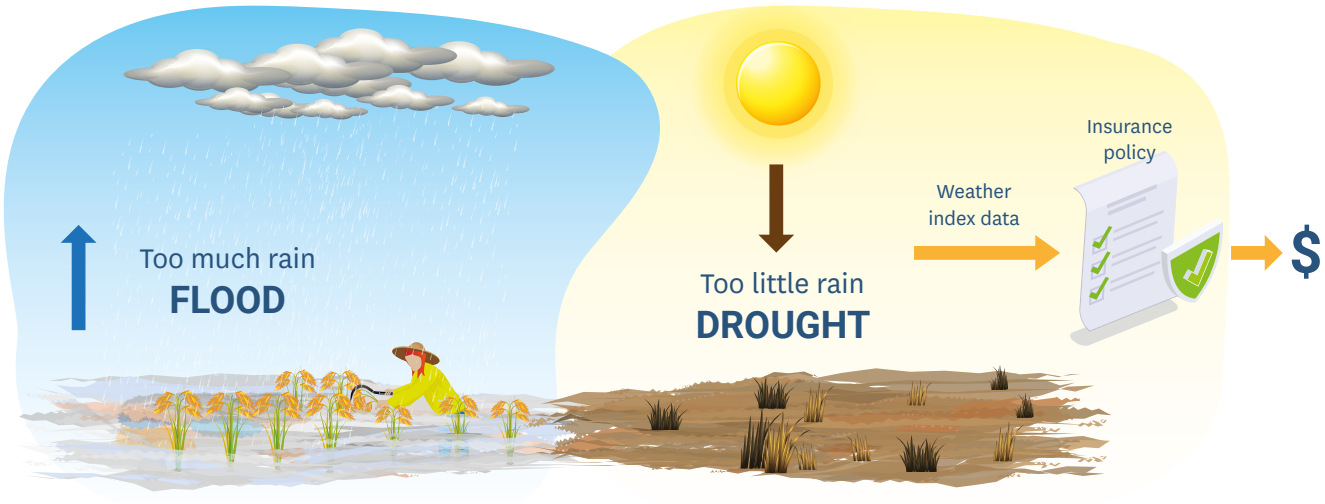

Figure 2. Conceptual illustration of weather index insurance.

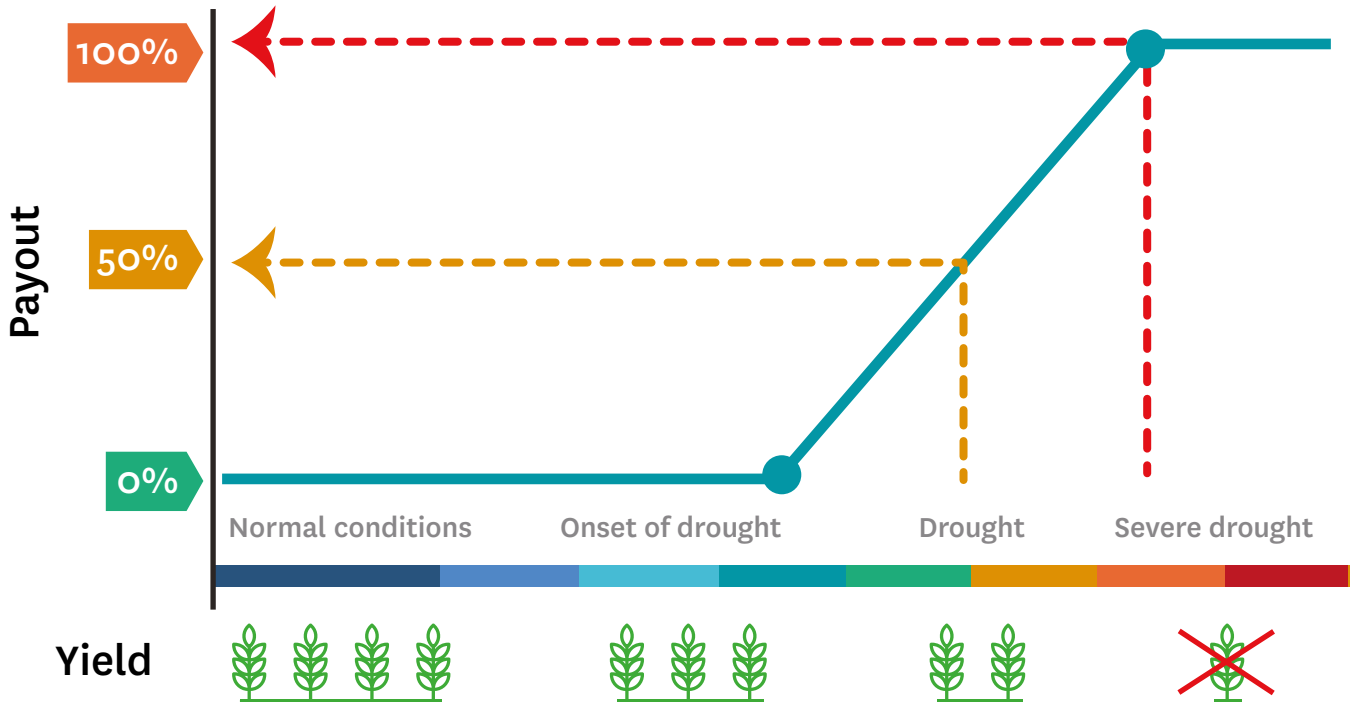

Figure 3. Example of a weather index trigger and payout structure.

BICSA at a glance

An **integrated one-stop shop service delivery model** for smallholder farmers in Sri Lanka

Provides **climate-smart solutions** for gaining access to agricultural inputs, weather data and agronomic advisory services

Digitally enabled through the use of satellite technology and mobile services

Provides **insurance to farmers** and includes them in the agricultural value chain from the provision of seeds to gaining access to markets

Overcome challenges such as access to finance, low purchasing power, low income, price instability and access to markets

Key satellite data innovation in scaling BICSA

Satellites have enormous potential to assist with the scaling of agricultural index insurance across the developing region. The project aims to provide a multi-resolution, multi-sensor source of weather and climate information that will enable the expansion of an agricultural insurance program in Sri Lanka that provides basic weather-risk financial support. In collaboration with project partners, key satellite-derived indicators/indices, including precipitation, soil moisture, evapotranspiration and vegetation, will be used to develop new insurance products that are accessible to farmers across diverse regions and agroecosystems. Potential satellite-derived products such as Climate Hazards group Infrared Precipitation with Stations (CHIRPS), Global Precipitation Measurement (GPM), Soil Moisture and Ocean Salinity (SMOS), Soil Moisture Active Passive (SMAP), Normalized Difference Vegetation Index (NDVI)/Enhanced Vegetation Index (EVI), and high-resolution data from the European Space Agency (ESA) Sentinel-1 and Sentinel-2 and the United States Geological Survey (USGS) Landsat will be used for claim assessment.

How the project works

The bundled insurance solution – Bundled Solutions of Index Insurance with Climate Information and Seed Systems to manage Agricultural Risks (BICSA) – has four major components (Figure 4). Figure 5 shows the steps involved in implementing the BICSA strategy.

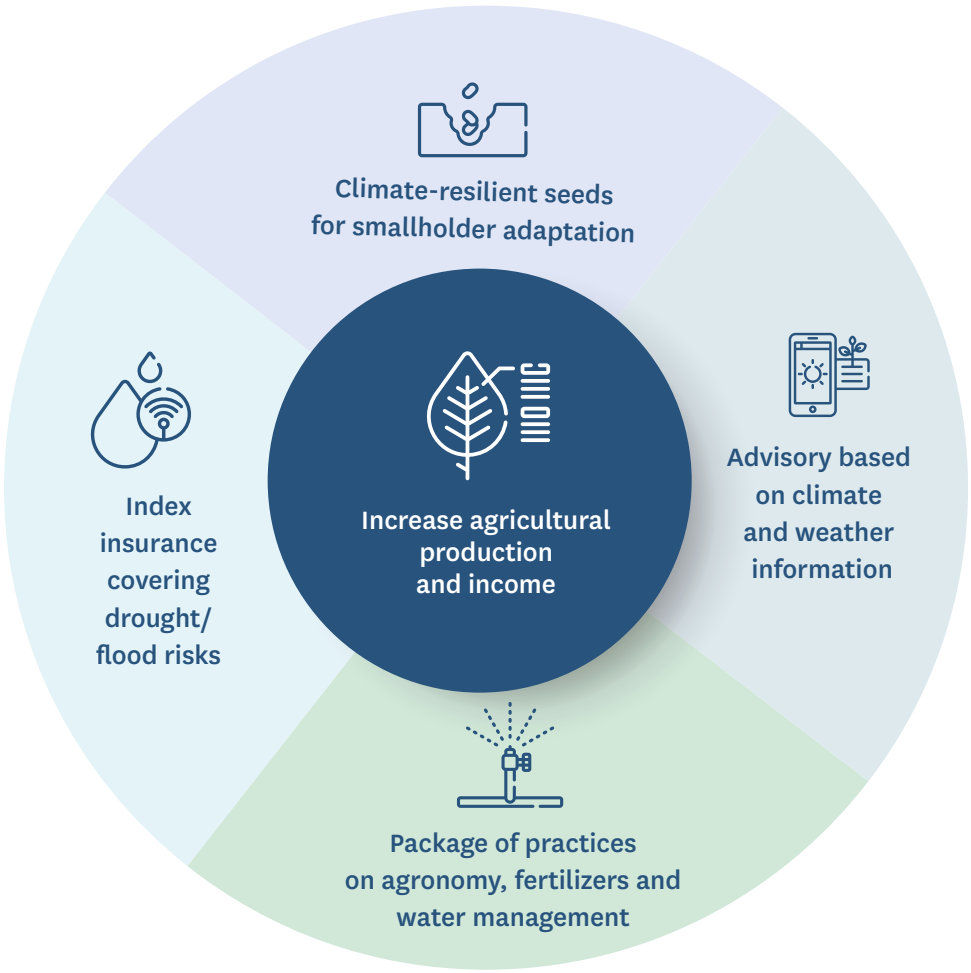

Figure 4. Four major components of the bundled insurance solution.

Figure 5. Step-by-step BICSA implementation strategy.

Key outputs

- Business models and marketing strategies based on public-private partnerships are consolidated to adapt BICSA in the field.
- BICSA is implemented to reduce agricultural risks to farmers in the chronic/severe flood- and drought-affected areas.
- Enhance the capacity of agricultural value chain partners and disseminate knowledge products and tools to increase community awareness, interest and demand for BICSA.
- Monitor the process of BICSA implementation and evaluate the impacts to enable wider upscaling and out-scaling through national/regional-level development programs, development partners and donor agencies.
- Promote the framework and guiding steps to integrate gender in the design of BICSA on farmer's preference for weather index insurance.

Project information

Title	Scaling climate risk insurance in Sri Lanka: Empowering vulnerable smallholder farmers
Objective	To adapt and scale agricultural risk management strategies for vulnerable smallholder farmers through bundled solutions of seed systems, index insurance and climate information
Agroclimatic zones	Intermediate and dry climatic zones
Focus areas	Districts of Ampara, Anuradhapura, Kurunegala, Monaragala and Vavuniya
Implementing partners	International Water Management Institute (IWMI) Sanasa General Insurance Company Limited, Sri Lanka Department of Agrarian Development, Sri Lanka CIC Agri Businesses (Pvt) Ltd., Sri Lanka
Knowledge partners	Ministry of Agriculture, Sri Lanka Disaster Management Centre, Sri Lanka Hayleys Agriculture (Pvt) Ltd., Sri Lanka
Funders	CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) CGIAR Research Program on Water, Land and Ecosystems (WLE) Ministry of Agriculture, Forestry and Fisheries (MAFF), Japan
Timeframe	January 1, 2021 - December 31, 2021

A farmer checking the agroclimatic information sent to his phone in Galenbindunuwewa in the North Central Province of Sri Lanka (*photo:* Samurdhi Ranasinghe/ IWMI).

A farmer drying maize in Galenbindunuwewa in the North Central Province of Sri Lanka (*photo:* Samurdhi Ranasinghe/IWMI).

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The International Water Management Institute (IWMI) is an international, research-for-development organization that works with governments, civil society and the private sector to solve water problems in developing countries and scale up solutions. Through partnership, IWMI combines research on the sustainable use of water and land resources, knowledge services and products with capacity strengthening, dialogue and policy analysis to support implementation of water management solutions for agriculture, ecosystems, climate change and inclusive economic growth. Headquartered in Colombo, Sri Lanka, IWMI is a CGIAR Research Center and leads the CGIAR Research Program on Water, Land and Ecosystems (WLE).

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