Climate Adaptation and Resilience (CARE) for South Asia Project

Agriculture Sector Brief
Bangladesh

Introduction

The rising threat of climate-related hazards is already being witnessed with increasing severity and frequency of disasters occurring in South Asia.

According to the World Bank, between 1990 and 2019, climate-induced disasters in South Asia affected 1.68 billion people, killed approximately 267,000 and caused over US$127 billion in economic losses.

The region's endeavor to achieve sustainable growth and reduce poverty is often hampered due to the impacts of climate change on people's livelihoods, food security and health. A World Bank study has warned that, without climate change adaptation, 800 million (or 44 percent) people in South Asia will be living in moderate or severe climate hotspots by 2050 which will push millions of people below the poverty line.

The negative effects of extreme weather and climate events also undermine productivity in key economic sectors such as agriculture, transport, energy, and manufacturing, with limited adaptive capacity in these countries causing further constraints on their development prospects.

Overview of climate change in Bangladesh

Bangladesh is one of the most vulnerable countries to climate change due to a combination of geographical and socio-economic factors, including its low-lying delta and coastal areas, high population density, levels of poverty, and lack of infrastructure. Rural and coastal communities have been exposed to climate-induced extreme events, such as erratic rainfall, flooding, drought, sea-level rise, cyclones and salinity intrusion. Consequently, disasters have exacerbated migration to cities, resulting in unplanned and rapid urbanization in the country.

In response, the Government of Bangladesh has placed high priority on building the country's capacity to mitigate and adapt to climate change. The Ministry of Environment, Forest, and Climate Change, Bangladesh has identified six thematic areas, including agriculture and food security; human wellbeing; water resources; disaster risk management; and infrastructure, to invest in and mobilize climate services through corresponding programs to function within a 'multi-institutional architecture'.

Yet, institutional challenges to climate change adaptation prevail particularly in developing an integrated approach to transform climate change vulnerabilities into adaptation opportunities and mainstream them into development programs at sub-national levels.

Climate change impact on agriculture sector

The agriculture sector in Bangladesh plays a significant role in both the national food security and domestic economy. It contributes approximately 17.5% to the country's Gross Domestic Product and 48% of inhabitants derive their income from the sector, utilizing 70% of the total land area of the country (FAO; World Bank, 2017). Major crops cultivated in the country's Agroecological Zones are rice, cotton, jute, wheat, tea, pulses, oil-seeds, vegetables, and fruits (BAMIS, 2020).

According to the Global Climate Risk Index, Bangladesh ranked seventh most vulnerable country to climate change in the world (Germanwatch, 2020). Agriculture in Bangladesh is highly susceptible to impacts of climate change, including sea-level rise and saltwater intrusion, mean temperature increases, rainfall variability, and an increase in the frequency and intensity of extreme weather events.

The impact of floods and cyclones on crops and livestock, in particular, will vary with the magnitude of disaster risks. The collective impact of the changing climate is projected to result in 8% and 32% decrease in rice and wheat production respectively by 2050. (World Bank, 2011).

Therefore, adaptation measures are required to sustain agricultural productivity, reduce climate vulnerability and enhance the resilience of the farming system to climate change in Bangladesh.

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The project's overall objective is to contribute to an enabling environment for climate resilience policies and investments in agriculture, transport, water, and policy, planning and finance sectors in South Asia. With a regional outreach, the national-level activities will initially be implemented in Bangladesh, Nepal and Pakistan.

ADPC is implementing the second component of the project which focuses on enhancing policies, standards, and capacities for climate-resilient development in South Asia. It also seeks to promote the transformation of policies, standards and institutional capacities for climate-resilient development across the key sectors.

ADPC will facilitate high-level dialogues, develop climate-resilient guidelines, and promote innovation and adoption of disruptive technology at national and regional levels.

Support to implement climate resilience priorities

CARE for South Asia project establishes linkages with country's existing national and sectoral policies, strategies and plans in Bangladesh, including the national adaptation programme of action (NAPA) 2009 and the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009. These are the two principal national plans to address climate change issues and guide sectoral development in Bangladesh.

The project aligns its activities with the National Agricultural Policy 2010 that identifies climate change as one of the key challenges of the agriculture sector in Bangladesh. One of the objectives of the policy is to develop "self-reliant and sustainable agriculture adaptive to climate change and sensitive to the needs of farmers". This includes policy actions that incorporate climate change issues in research and practice. The policy highlights the need to conduct research related to climate change, including weather and crop forecasting, climate change and disaster management, and drought and saline-tolerant rice crops.

Similarly, the National Livestock Development Policy developed and adopted in 2007 and the National Livestock Extension Policy drafted in 2013 highlight severe climate events as an emerging challenge for the livestock sector in Bangladesh.

Support to implement agriculture sector priorities

The project aims to develop country-specific guiding documents on agro-climatic zoning as well as locally applicable climate-smart agriculture and livestock practices and technologies in Bangladesh.


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The Department of Agriculture Extension (DAE) under the Ministry of Agriculture is the key government agency providing effective and efficient needs-based extension services to all categories of farmers in Bangladesh, enabling them to maximize the use of resources and achieve sustainable agricultural and socio-economic development.

The Department of Livestock Services (DLS) under the Ministry of Fisheries and Livestock supports the planning and implementation of all livestock-related extension activities in the country.

Under the CARE for South Asia project, both DAE and DLS will serve as the focal agencies for the agriculture sector and provide the necessary coordination to accomplish the planned activities.

The Government of Bangladesh has identified agriculture and livestock sectors as key contributors to reducing poverty and achieving food security and inclusive growth. Therefore, at the national level, the project will focus on strengthening the existing climate-smart agriculture policies and strategies including a monitoring framework for livestock services.

Additionally, agricultural policy analysis will be conducted to identify critical policy actions and to make the agriculture sector climate-informed. These activities will help strengthen the policy framework for the Government to implement recently developed Climate Smart Agriculture Investment Plans.

Training and other capacity development initiatives under the project will support the DAE and DLS in sector reforms, policymaking, planning, monitoring, and investment design, utilizing climate and hydrometeorological data.

Moreover, ADPC will develop a training of trainers (ToTs) program and support the Government to formulate actions to benefit small-holder farmers, agri-businesses on climate-smart agriculture and establish a climate-resilient data centre.

Expected outcomes

In Bangladesh, the policy-making and institutional level interventions under the CARE for South Asia project will help strengthen the national policy framework to implement climate-smart agricultural practices. These inputs will also identify critical policy actions

and strategies to make the agriculture sector climate-informed.

The project will help strengthen the existing climate-smart agriculture strategies and develop a monitoring framework focusing on livestock services. Agricultural policy analysis will identify critical approaches and actions which strengthen the national policy framework and facilitate the implementation of recently developed climate-smart agriculture investment plans.

The DAE and the DLS in Bangladesh will be able to enhance their technical capacities and revitalize skills in utilizing climate and hydrometeorological data for sector reforms, policymaking, planning, monitoring, and investment design.

Regional and country-specific guideline documents produced under the project will assist in the upscale and climate-resilient agricultural productivity and provide farmers with sustainable livelihood opportunities.

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Climate Adaptation and Resilience (CARE) for South Asia Project

Agriculture Sector Brief
Nepal

Introduction

The rising threat of climate-related hazards is already being witnessed with increasing severity and frequency of disasters occurring in South Asia.

According to the World Bank, between 1990 and 2019, climate-induced disasters in South Asia affected 1.68 billion people, killed approximately 267,000 and caused over US$127 billion in economic losses.

The region's endeavor to achieve sustainable growth and reduce poverty is often hampered due to the impacts of climate change on people's livelihoods, food security and health. A World Bank study has warned that, without climate change adaptation, 800 million (or 44 percent) people in South Asia will be living in moderate or severe climate hotspots by 2050 which will push millions of people below the poverty line.

The negative effects of extreme weather and climate events also undermine productivity in key economic sectors such as agriculture, transport, energy, and manufacturing, with limited adaptive capacity in these countries causing further constraints on their development prospects.

Overview of climate change in Nepal

Nepal is highly vulnerable to climate change mainly because of its challenging topography and diversity of climate zones, weather-dependent traditional farming practices, fragile socio-economic conditions, and sensitive ecosystems. In addition, poverty and social disparity as well as people's natural resources–based livelihoods have made Nepal more sensitive towards the impacts of climate change (World Bank, 2017).

Being fully aware of the challenging tasks to build a climate resilient society, the Government of Nepal has developed several policies and plans and undertaken actions for addressing climate change and has also been actively participating in global efforts to respond to climate change.

Yet, institutional challenges to climate change adaptation prevail particularly in developing an integrated approach to transform climate change vulnerabilities into adaptation opportunities and mainstream them into development programs at sub-national levels.

Climate change impact on agriculture sector

The agriculture sector in Nepal contributes approximately 35% to the country's Gross Domestic Product and provides employment to 74% of the economically active population in the country. Approximately, 29% of the total land surface of the country is currently in use for the cultivation of agricultural crops (World Bank, 2017).

Topographically, Nepal is divided into three ecological zones, namely: Terai (plain), the hills, and the mountains. The Terai region of Nepal is the major cropland of the country as its fertile soils allow for the cultivation of key crops, such as rice, wheat and maize (FAO. n.d.).

The majority of traditional farming practices in Nepal are heavily dependent on weather conditions and seasonal rainfall. Therefore, changes in precipitation patterns are likely to

affect rainfed agricultural activities, causing significant annual yield variability and higher production risks (CCAFS, n.d.; Thapa et al., 2019). Nepal has recently observed decreasing trends in agricultural production due to increased temperature and rainfall variability which have resulted in shifts in agro-ecological zones, prolonged dry spells, and higher incidences of pests and diseases. (CCAFS, 2017; WFP, n.d.).

Therefore, adaptation measures in the agriculture sector are required to reduce the climate vulnerabilities and sustain agricultural productivity and enhance the resilience of the agricultural system to climate change in Nepal.

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ADPC is implementing the second component of the project which focuses on enhancing policies, standards, and capacities for climate-resilient development in South Asia. It also seeks to promote the transformation of policies, standards and institutional capacities for climate-resilient development across the key sectors.

ADPC will facilitate high-level dialogues, develop climate-resilient guidelines, and promote innovation and adoption of disruptive technology at national and regional levels.

Support to implement climate resilience priorities

CARE for South Asia project will establish linkages with existing national and sectoral policies, strategies and plans in Nepal. Over the last decade, the Government of Nepal has formulated a number of policies, plans and strategies and frameworks related to agriculture and climate change at national and local levels.

These include the National Agriculture Policy 2004; National Agro-Biodiversity Policy 2007; National Seed and Fertilizer Policy 2000 & 2002; National Climate Change Policy 2019; National Land use Policy 2015; national adaptation programme of action (NAPA); the National Framework on Local Adaptation Plans for Action (LAPA); and Disaster Risk Reduction Strategies. In addition, the National Adaptation Plan (NAP) is being developed.

The project will align its activities with the National Agriculture Policy 2004 which set forth the goal of establishing an enabling environment for rural development supported by improved agricultural productivity (MoALD, 2004). ADPC will assist the Ministry of Agriculture and Livestock Development (MoALD), the focal agency for the agriculture sector in Nepal, to strengthen the policy framework to implement climate-smart agriculture to support the preparation and implementation of Nepal's Climate Smart Agriculture Investment Plans (CSAIP). Critical policy actions will be identified for climate-resilient transformation of agriculture sector.

In addition, the Department of Hydrology and Meteorology (DHM) under the Ministry of Energy, Water Resources and Irrigation (MoEWRI) will also be engaged in activities related to the development of the National Framework for Climate Services in Nepal, including stakeholder mapping, national level consultations, identification for climate-resilient transformation of agriculture sector.


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Support to implement agriculture sector priorities

In Nepal, the project aims to develop a country-specific guiding document on climate-smart agriculture (CSA) incorporating: i) agro-climatic zoning at the national level; and ii) locally suitable CSA practices aimed at increasing agricultural productivity and incomes of farmers.

For these activities, a detailed review will be conducted through existing studies related to agro-climatic zones, including reports and maps, and climate-related hazard and risk assessment approaches.

Furthermore, existing and necessary geospatial and climate data for climate-related hazards, exposure, vulnerability, and risk assessment for agro-climatic zoning will be identified and evaluated, including the standardized geospatial databases needed. This information will feed into the Government's Rural Economic and Enterprise Development (REED) Project by supporting the improvement of existing Agriculture Management Information System (AMIS) that provides access to weather and climate information of different timescales.

The planned activities are expected to complement the upcoming agriculture projects through the development of guidelines (handbook) on climate resilience and climate adaptation for MoALD and its affiliated agencies, reflecting the pathway to support the federalization process. ADPC will support the development of similar guidelines across all relevant sectors.

In addition the project will provide the necessary support to build the capacity of both national and provincial level agriculture departments and cooperatives in Nepal, focusing on skills and expertise related to climate risk assessment and risk mitigation approaches and strategies for local farming communities. Strengthening the capacity of agricultural extension staff to train farmers and implement the climate-smart agriculture and risk mitigation strategies will also be taken into consideration.

At the national level, the project will aim at enhancing the capacity of the ministries on climate-smart agriculture policy making as well as monitoring and evaluation of the implementation progress. This will help the Government design comprehensive climate - smart agriculture investment plans that can be supported by other development partners in the future. This set of activities will contribute to strengthening the capacity of MoALD to advance climate resilience in Agriculture sector through synergies with REED.

Expected outcomes

In Nepal, the project will provide advisory services to MoALD to develop Climate Smart Agriculture Investment Plans which aim to identify key challenges to achieving a productive, resilient and sustainable agriculture sector. Further, the project will aid the process for DHM to institutionalize a systematic planning and development process based on consultations with sectoral stakeholders.

To support this process, the project will formulate a priority framework plan and action plan for DHM by assessing demand from key stakeholders and delivering services tailored to these needs. These plans will have clear goals, targets, and indicators so that key outcomes can be measured and further improved with discussions and user needs assessments at regular intervals.

The project will provide support for the capacity building of agricultural extension officials so that they can train farmers on climate - smart agriculture and climate risk mitigation practices. This will help focal agencies and key stakeholders build their technical capacity and transform themselves into well-resourced service delivery agencies.

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Climate Adaptation and Resilience (CARE) for South Asia Project

Agriculture Sector Brief
Pakistan

Introduction

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The region's endeavor to achieve sustainable growth and reduce poverty is often hampered due to the impacts of climate change on people's livelihoods, food security and health. A World Bank study has warned that, without climate change adaptation, 800 million (or 44 percent) people in South Asia will be living in moderate or severe climate hotspots by 2050 which will push millions of people below the poverty line.

The negative effects of extreme weather and climate events also undermine productivity in key economic sectors such as agriculture, transport, energy, and manufacturing, with limited adaptive capacity in these countries causing further constraints on their development prospects.

Overview of climate change in Pakistan

With its economically and culturally diverse population, as well as varying climate zones, topographies, and ecosystems, Pakistan is especially vulnerable to extreme weather and other effects of climate change, including saltwater intrusion, erratic rainfall, glacial melting, rising temperatures, floods, and drought, etc.

As noted in Pakistan's Initial National Communication on Climate Change, there is a strong need to improve information sharing, education and training, as well as technical and scientific research in order to articulate an effective adaptation plan. In recent years, the country has undertaken several policies and actions for addressing climate change and has also been actively participating in global efforts to respond to climate change.

Yet, institutional challenges to climate change adaptation prevail particularly in developing an integrated approach to transform climate change vulnerabilities into adaptation opportunities and mainstream them into development programs at sub-national and local levels.

Climate change impact on agriculture sector

Being an agrarian economy, the agriculture sector in Pakistan contributes approximately 25% to the national Gross Domestic Product and employs 42% of the labor force. Approximately 47% of the total land surface of Pakistan is currently in use for the cultivation of agricultural crops (World Bank, 2017). Of all provinces, Punjab is the most agriculturally productive province that contributes the largest share to the national production with primary crops such as wheat, rice, cotton and sugarcane.

Pakistan's agriculture sector is extremely vulnerable to climate variability and change. According to the Global Climate Risk Index, Pakistan ranked fifth among the most

climate vulnerable countries in the world (Germanwatch, 2020). Moreover, it is projected to experience rising temperatures, changing precipitation patterns, and greater risk of climate hazards, such as floods, droughts, and cyclones. Climate change is most likely to have wide-ranging impacts on agricultural productivity and water availability.

Therefore, mainstreaming of climate change into national policies and strategies as well as developing adaptation measures in the agriculture sector such as climate-smart agriculture is critical to sustaining agricultural productivity and enhancing the resilience of the agricultural system to climate change in Pakistan.

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ADPC will facilitate high-level dialogues, develop climate-resilient guidelines, and promote innovation and adoption of disruptive technology at national and regional levels.

Support to implement climate resilience priorities

Pakistan has developed a number of national and provincial policies, acts, strategies and action plans for various sectors, highlighting climate change as a serious threat and incorporating climate change adaptation measures into these sectoral policies (Khan et al., 2016).

CARE for South Asia project will align its proposed activities with the National Climate Change Policy (NCCP), that was prepared by the Government of Pakistan in 2012. The policy aims to mainstream climate resilience in the economically and socially vulnerable sectors and to steer Pakistan towards climate-resilient development. The policy serves as a guiding document for the country on climate change issues, providing a detailed picture of vulnerabilities faced by individual sectors in agro-ecological regions and different socio-economic groups.

The National Food Security Policy (NFSP) developed by the Ministry of National Food Security and Research (MoNFSR) in 2017 aims to provide a mechanism to address food security issues in the country. The NFSP highlights that climate variability and extreme weather events are adversely impacting food availability, accessibility, utilization and stability as well as livelihoods of the farmers and other vulnerable groups in Pakistan.

Additionally, working closely with the Agriculture Department of the Punjab province, the project will align its proposed activities with the province's Climate Change Policy 2017 and Agriculture Policy 2018. These policies suggest that the major challenge in Punjab is seasonal shifts and other weather-related changes, such as the early onset of monsoon season, longer dry spells, erratic rainfall, increasing temperature, and flooding. These events have affected the crop productivity and the impact is likely to increase in years to come (DoA, n.d.).

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In order to address these challenges, Climate-Smart Agriculture (CSA) has been identified as a primary approach to increase productivity in Punjab provience, while protecting farmers against the detrimental impacts of climate change.

Support to implement agriculture sector priorities

In Pakistan, CARE for South Asia project will establish linkages with existing national and sub-national policies to examine the extent to which climate-related issues have been underlined and integrated within the overall adaptation planning of the agriculture sector in order to enhance risk-informed decision support systems within the ministries and departments.

Through engaging the Ministry of Planning, Development and Special Initiatives (MoPDSI), MoNFSR, and the Department of Agriculture, Punjab, as the primary focal agencies, the project will assess needs and issues in climate-informed agricultural planning and activities by applying agro-climatic zone wise impact assessment and developing pilot adaptation measures for Punjab province.

At the sub-national level, an extensive review of existing crop reporting, storage, distribution, and trading systems as well as comparative studies on the current agriculture production system in Punjab province will be carried out. These activities will help lay out policy actions and strategies for a climate-smart competitive paradoxical agricultural production management system and efficient, transparent and accurate system to support value chain actors in the province.

In conjunction with these activities, a Climate Smart Green Plan for Pakistan will be developed, including policy initiatives and best practices for a green economy in the context of poverty eradication and sustainable development.

The capacity building component of the project will support government officials to build on the concept of agro-climatic zoning and its implementation to minimize climate and disaster impacts on the agriculture sector through a zone-specific optimization strategy verified by various assessments and datasets. This will also include assistance in the development of decision support systems to track climate-resilient projects through the incorporation of climate indicators.

To aid the process of integrating gender considerations into climate adaptation, the project will adopt multiple gender-informed approaches by examining existing policies with a focus on women's participation in agro-farming, devising gender-informed policy actions on climate-smart agriculture, and conducting capacity need assessment with reference to women's participation in agriculture in Punjab province.

Expected outcomes

The project will help strengthen the existing climate-smart agriculture strategies and develop the strategic framework with a focus on analysing agro-climatic zoning and identifying gaps in Punjab province.

Agricultural policy analyses will identify critical approaches and actions to be adopted to strengthen the national policy framework and facilitate the implementation of climate - resilient policy actions to reform agriculture sector in Punjab province.

Training and other capacity development initiatives under the project will support the MoPDSI, MoNFSR, and the Department of Agriculture of Punjab to enhance their technical capacities and revitalize skills in utilizing climate and hydrometeorological data for sector reforms, policy-making, planning, monitoring, and investment design. These approaches, which take needs assessment and gender sensitivity into consideration, will ensure the inclusivity and sustainability of the capacity development program in the country.

Both regional and country-specific guidance documents generated under the project will assist in the upscale of climate-resilient agricultural productivity in the country and lay the foundations for an enabling environment towards a climate-resilient South Asia.

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