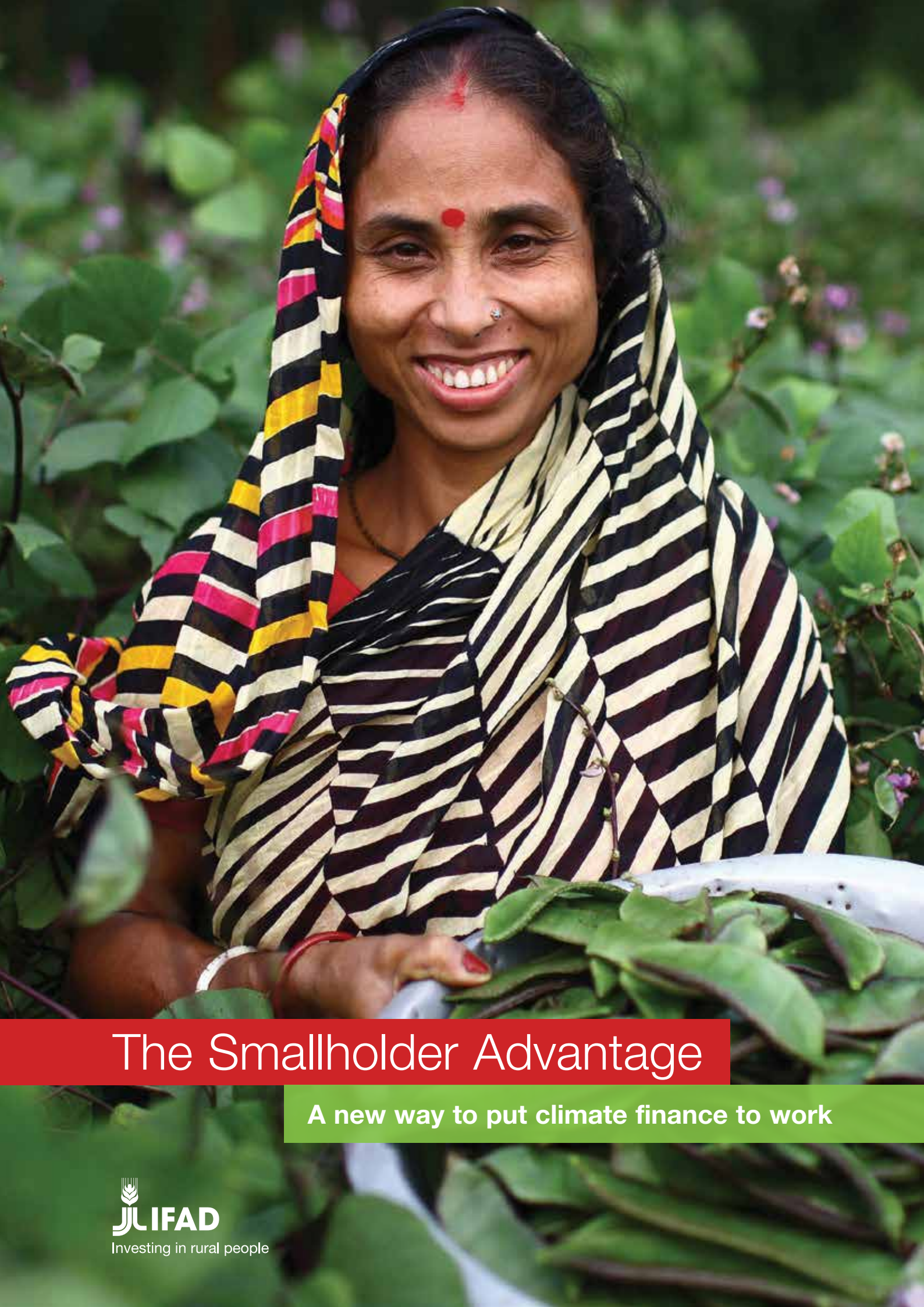

The Smallholder Advantage

A new way to put climate finance to work

IFAD
Investing in rural people

The smallholder advantage:

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Abbreviations and acronyms

ACARN	Advisory Committee on Agricultural Resilience in Nigeria
ACCESOS	Economic Inclusion Programme for Families and Rural Communities in the Territory of the Plurinational State of Bolivia
AMD	Project for Adaption to Climate Change in the Mekong Delta in Ben Tre and Tra Vinh Provinces (Viet Nam)
APR	Asia and the Pacific Division (IFAD)
ASAP	Adaptation for Smallholder Agriculture Programme
CALIP	Climate Adaptation and Livelihood Protection (Bangladesh)
CAP	community action plan
CASP	Climate Change Adaptation and Agribusiness Support Programme (Nigeria)
CCAFS	CGIAR Research Program on Climate Change, Agriculture and Food Security
CDA	community development authority
CEPAGRI	Centre for the Promotion of Agriculture (Mozambique)
DSF	Debt Sustainability Framework
ESA	East and Southern Africa Division (IFAD)
FAO	Food and Agriculture Organization of the United Nations
FFF	farmer field school
GASIP	Ghana Agriculture Sector Investment Programme
GIS	geographic information system
HILIP	Haor Infrastructure and Livelihood Improvement Project (Bangladesh)
IIAM	Agricultural Research Institute of Mozambique
INGC	National Institute of Disaster Management (Mozambique)
IPCC	Intergovernmental Panel on Climate Change
LAC	Latin America and the Caribbean Division (IFAD)
MEFCCA	Ministry of Family, Community, Cooperative and Associative Economy (Nicaragua)
MINAGRI	Ministry of Agriculture and Animal Resources (Rwanda)
NEN	Near East and North Africa Division (IFAD)
NICADAPTA	Adapting to Markets and Climate Change Project (Nicaragua)
PASP	Post-Harvest and Agribusiness Support Project (Rwanda)
PCCVM	participatory climate change vulnerability mapping
PLUP	participatory land-use planning

PRAREV	Programme to Reduce Vulnerability to Climate Change and Poverty of Coastal Rural Communities (Djibouti)
PROSUL	Pro-poor Value Chain Development Project in the Maputo and Limpopo Corridors (Mozambique)
RGP	Rural Growth Programme (Yemen)
SPIU	Single Project Implementation Unit
WCA	West and Central Africa Division (IFAD)
WFP	World Food Programme

Executive summary

Smallholders are part of the solution

In 2013, the Intergovernmental Panel on Climate Change (IPCC) issued a report[1] examining the effects of climate change around the world. "Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased."

The International Fund for Agricultural Development (IFAD) works to help poor rural people manage their natural resources more sustainably, increase their agricultural productivity and reduce their vulnerability to climatic shocks. In recent years these shocks have increased and IFAD's focus on climate change issues has become stronger, with many of its projects today having solid climate change components.

The effects of climate change are increasing the levels of risk in the IFAD investment portfolio. Development gains are being undermined by extreme weather events such as floods, droughts and tropical storms as well as 'creeping' climate stresses like soil erosion, sea level rise and pest infestation. Rural smallholders, who make up IFAD's traditional client base, are experiencing first-hand the impacts of climate change. For many, this includes a growing scarcity of natural resources, rural supply chain disruptions, high and volatile food and agricultural commodity prices, and rising political tensions over resource access. The IPCC assessment[2] highlights approaches to help tackle these risks.

IFAD sees smallholder farmers as more than just victims of climate change: they are a vital part of the solution to the 'wicked'[3] climate change problem. Smallholders and family farmers produce four fifths of the world's food supplies. They live and work on the frontline of climate change, yet they are among the least represented groups in national and global climate policy processes. Smallholders are among the best possible clients for climate finance: investing in better access to weather information, disaster preparedness, social learning and technology transfer will help smallholders be better equipped to feed a growing world population. At the same time, they can restore degraded ecosystems and reduce agriculture's carbon footprint.

ASAP – the world's largest adaptation platform for smallholder farmers

IFAD has embarked on an ambitious programme to scale up its long-standing experience to assist smallholders to improve productivity in the face of climate-related challenges. The IFAD Climate Change Strategy (2010) identified the need

1 Climate Change 2013: The Physical Science Basis. Working Group I contribution to the Fifth Assessment Report of the IPCC. See http://www.ipcc.ch/pdf/presentations/ar5/wg1/WGIAR5_IPCC_Jakarta2.pdf

2 Climate Change 2014: Impacts, Adaptation, and Vulnerability, from Working Group II of the IPCC. See http://ipcc-wg2.gov/AR5/images/uploads/WG2AR5_SPM_FINAL.pdf, p. 27, Table SPM.1

3 'Wicked' problems are problems that have a particular set of characteristics that make them difficult to address. See http://www.cefims.ac.uk/cedepapp/124_web_unit/page_18.htm

for explicit attention to climate-related risks in country programmes, projects, policy design and implementation. It set out an objective that climate change adaptation be mainstreamed throughout IFAD's operations and identified an opportunity for IFAD to develop a financing mechanism to provide climate finance to vulnerable smallholder farming communities.

In 2012, IFAD launched the Adaptation for Smallholder Agriculture Programme (ASAP) as a dedicated financing window that receives climate finance from multiple donors and blends it with core IFAD resources to channel it to smallholder farmers. Through the programme, IFAD is driving a major scaling up of successful 'multiple-benefit' approaches to smallholders to increase their agricultural output, reduce their vulnerability to climate-related risks and diversify their livelihoods.

IFAD's ASAP is the largest global adaptation programme for smallholder farmers, with over US$357 million in pledges and contributions from nine bilateral donors. Through ASAP financing, IFAD is able to increase the capacity of about 8 million smallholder farmers to expand their livelihood options in an uncertain and rapidly changing environment.

What is ASAP doing for smallholders?

ASAP enables smallholders, their institutions and governments to tackle climate-related problems in the context of large-scale agricultural investment programmes.

Funding from ASAP introduces an additional qualitative and climate-resilient dimension into IFAD investment programmes, making use of vulnerability assessments and better climate risk information to adjust the mix of investment activities and the way these are implemented. In many cases, this leads to a rapid and decisive scaling up of sustainable and resilient natural resource management approaches.

ASAP-supported projects are different from 'business as usual' agricultural investment projects in the following ways, as they:

- include a **better analysis** of climate-related risks and vulnerabilities, based on approaches such as participatory mapping, earth observation/GIS analysis or climate scenario modelling
- display **more innovation** to adapting to emerging risks, including access to new knowledge and technology, which do not traditionally feature in agricultural investment programmes (for example, salinity monitoring systems, early warning systems, diversified energy schemes and more robust building codes and designs for rural infrastructure)
- make clear efforts to **scale up** adaptation-relevant agricultural techniques, which have been proved to work by IFAD on sustainable natural resource management. This includes dedicated financial, institutional and policy measures to increase the uptake of efficient land and water management practices (for example, agroforestry, conservation agriculture, sustainable rangeland and watershed management, erosion control, water harvesting and drip irrigation).

As the case studies in this report show, most ASAP-supported projects combine several of these elements into diversified approaches to enhance the adaptive capacity of smallholder farmers.

What new opportunities are being created by IFAD through ASAP?

Apart from increasing the climate resilience of smallholder farmers, ASAP embodies a transformational leap for IFAD in climate mainstreaming. The added value of integrating climate issues more explicitly into IFAD's work can be seen in several areas:

- **Global co-benefits.** While the primary goal of ASAP is to improve the adaptive capacity and resilience of smallholder farmers and their institutions, the programme is managing to generate substantive co-benefits on global public goods, including the restoration of degraded ecosystems and the mitigation of greenhouse gas emissions. *Example: the ASAP-supported projects in Kyrgyzstan and Nigeria contribute to reducing over 16 million tons of CO2e in greenhouse gas emissions.*
- **New strategic partnerships** to exchange knowledge and support international and country dialogues on climate and environment issues. The knowledge partnerships and opportunities for South-South collaboration that are stimulated by ASAP enable IFAD and its partners to deepen and share relevant know-how on climate action. *Example: a knowledge partnership between IFAD and the CGIAR Program on Climate Change, Agriculture and Food Security (CCAFS) provides applied research to ASAP-supported projects, facilitates learning, and enables communication and advocacy efforts on smallholders and agriculture in the climate change debate.*
- **New opportunities to blend traditional knowledge and advances in technology.** While IFAD has long recognized the key role of indigenous peoples and women as custodians of the environment, mainstreaming climate change into IFAD's work has led to new opportunities to draw on this unique knowledge and blend it with modern know-how. *Example: in an ASAP-supported project in the Plurinational State of Bolivia, local communities capture traditional and women's knowledge of climate and natural resource management to integrate it with modern planning tools for landscape and watershed management.*
- **Current and future engagement with global funds.** Through ASAP, IFAD is helping agriculture ministries in its partner countries to understand the complex world of climate finance and 'prime the pump' to work with other financing sources such as the Green Climate Fund (GCF), the Global Environment Facility (GEF) and the Adaptation Fund (AF).
- **Evidence-based policy support.** IFAD, through ASAP, is building a strong evidence base which can inform national and international policy processes and policy positions for greener, more resilient economies. *Examples: see Table below.*

The smallholder advantage

Integrating climate finance with agricultural investment programmes is a critical hurdle for many climate change adaptation programmes. Up-front capital and time investments by smallholder farmers in climate-smart technologies amortize only over longer periods of time and poor households are generally unable to finance these costs. A well-targeted provision of climate finance in an agricultural investment programme can boost incentives for smallholder farmers to adopt and promote climate-resilient technologies.

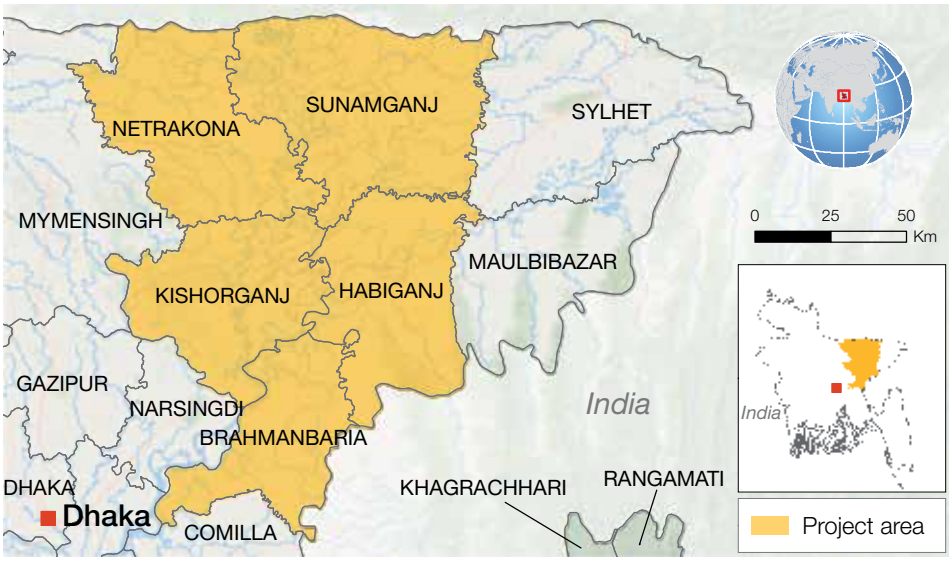
This publication shows how agricultural investment programmes can provide effective platforms for climate action, working with smallholder farmers as agents of change. They show how relatively small amounts of climate finance can go a long way to change the 'business as usual' approaches of many agricultural investment programmes, helping smallholder farmers to become more resilient to climate change.

Examples of policy engagement in ASAP-supported projects

Country	Policy objective	Supporting action
Bangladesh	• Establish climate sensitive pro-poor policy dialogue that strengthens local access and control of natural resources and development of pro-poor adaptation pathways	• Track the number of policy options identified in support of climate adaptation in the Haor area • Initiate policy processes to build community resilience • Create a knowledge management system to enable documentation and dissemination of best practice and evidence-based policy formulation • Prepare workshops, seminars and presentations to policymaking government organizations and institutions, including at the district level • Organize field visits by decision makers to project sites • Arrange an international symposium on climate change impacts in the Haor, engaging relevant institutions
Rwanda	• Mainstream climate change adaptation into policy instruments to promote climate-resilient post-harvest handling and storage (PHHS) business enterprises • Improve the policy framework for smallholders, rural poor and women	• Provide PHHS support to relevant institutions, e.g. Ministry of Agriculture and Animal Resources (MINAGRI) • Engage district governments in planning and monitoring activities to enhance their technical and business capacities for future development and implementation of larger PHHS investments • Lobby district governments and other institutions for a supportive policy framework in favour of smallholders, rural poor and women • Establish a monitoring and evaluation system focused on analysis and learning in support of decision-making and policy dialogue, and connect it with MINAGRI's and Rwanda Agriculture Board's information systems • Ensure that lessons and good practice emerging from the project support decision-making and policy dialogue
Kyrgyzstan	• Influence policy dialogue on climate change adaptation and mitigation, disaster risk reduction and environmental sustainability • Integrate animal health, adaptation and disaster risk reduction activities and policies to increase the resilience of pastoral communities to climate change	• Support the development of a sectoral adaptation plan on pastures and livestock • Produce evidence-based contributions to policy dialogue on the implementation of the pasture law • Codify experience gained from the development of private veterinarians and the community veterinarian service to inform revision of the veterinary law • Support institutions involved in pasture management to build capacity to integrate climate risk management into management plans and policymaking • Prepare thematic papers and policy briefs

BANGLADESH

Climate Adaptation and Livelihood Protection (CALIP) – Scaling Up Best Practice and Testing New Adaptation Interventions in the Haor Infrastructure and Livelihood Improvement Project (HILIP)



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PROJECT SUMMARY

Total cost: US$133.0 million

Approved IFAD loan: US$55.0 million

ASAP grant: US$15.0 million

IFAD grant: US$1.0 million

Cofinancing: Spanish Food Security Cofinancing Facility Trust Fund US$30.0 million

Other contributions: People's Republic of Bangladesh US$32.0 million

Project period: 9 years (2012-2020); ASAP funding: 6 years (2014-2019)

Executing agency: Local Government Engineering Department (Ministry of Local Government Rural Development and Cooperatives)

ASAP beneficiaries: 240,560

Project objectives: To strengthen the community and ecological resilience to climate change in the Haor region.

ISSUES

Bangladesh is one of the world's most vulnerable countries affected by climate change. During the monsoon period, the Haor region of Bangladesh becomes completely inundated with 4-8 metres of water for around 6-7 months of the year.

Flash floods are common, and in some years 80-90 per cent of crops are lost because of extreme weather events. The situation is expected to worsen as a climate change-related shift towards pre-monsoon rainfall is coinciding with the paddy rice pre-harvest period. This severely affects food output in the Haor, which provides up to 16 per cent of national rice production.

The lack of a robust weather and flash flood forecasting system is a major drawback for farmers to assess risk accurately. At best, a three-day advance warning is provided through family networks to downstream inhabitants, which is insufficient for rapid rice harvesting and transport to safe ground.

Large-scale deforestation in the Haor region has stripped away the natural barriers that historically have reduced the impact of waves; today the Haor is affected by waves up to 3 metres high during the flood period. This is set to worsen with climate change and make more areas inaccessible.

ACTIONS

CALIP will be embedded in and enhance the following two components of HILIP:

- **Community infrastructure** including village protection works. CALIP will support the protection of village roads and market infrastructure against damaging wave action in the Haor basin. Engineering models for village protection will be tested and the most effective options will be scaled up by the project. In parallel, reforestation at the landscape level will help recreate natural wave barriers. Vegetative solutions such as vetiver grass will be used as an alternative slope stabilizer. These investments

will also have significant carbon sequestration potential, which is a side benefit of CALIP assistance. Complementary to the village protection works, CALIP will establish emergency flash flood platforms for temporary storage of rice during flood periods. Community organizations such as market management committees will receive weather and flash flood forecasts.

CALIP will diversify income-generating options for vulnerable smallholders. This includes strengthening of small entrepreneurs and working with indigenous vegetative species and pond fisheries in high ground areas. The project will promote improved handicraft manufacture using local materials and non-farm vocational training relevant to the Haor region such as boat-building, engine-repairing and bamboo-curing.

- **Livelihood protection** will introduce new technologies and linkages between smallholder farmers and local/regional markets; provide hands-on training and practical experience in establishing climate-relevant businesses; and build on the demand for village and road protection works to provide lucrative business opportunities for smallholders.

In addition, CALIP is introducing a specific component on knowledge management:

- **Capacity and knowledge for building resilience.** A number of research activities will help public and private institutions to better understand climate change impacts and the implications for livelihoods in the Haor region. Under this component, a flash flood early warning and weather information system will be established to reduce crop losses. With a longer-term perspective in mind, this component will support climate-sensitive pro-poor policy dialogue which helps to strengthen local access to the control and management of natural resources.

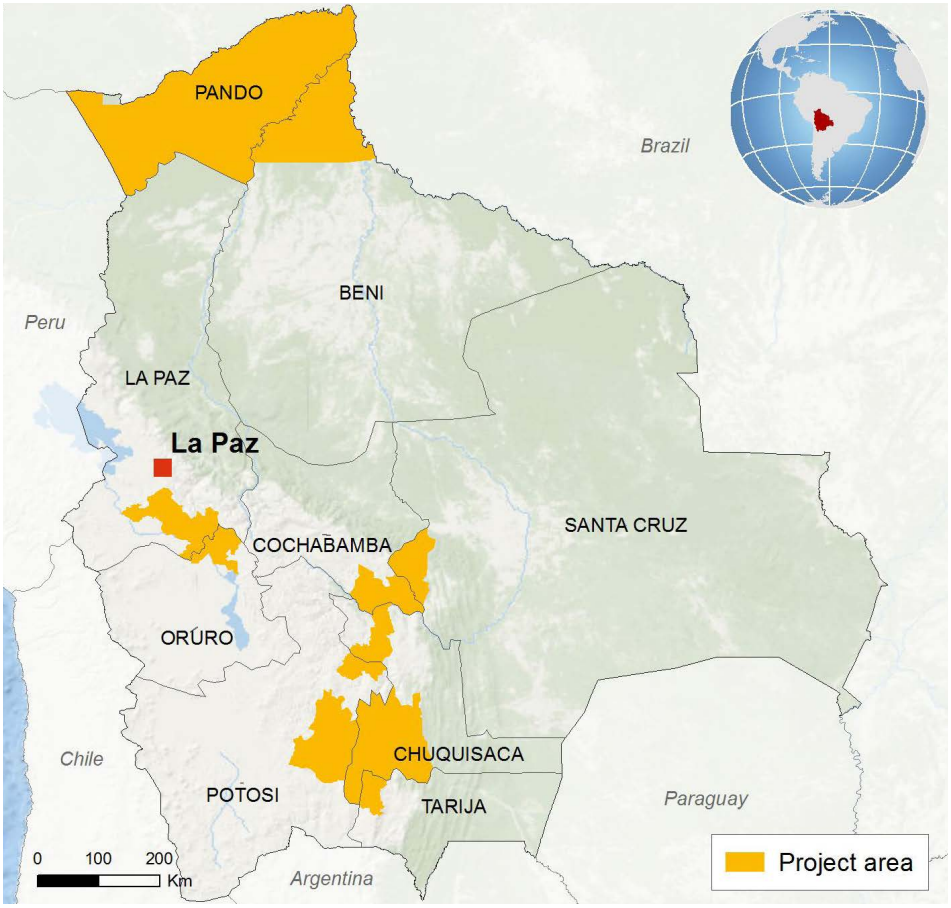
EXPECTED IMPACTS

CALIP will build resilience to climatic hazards in the Haor region and strengthen the natural, physical, social, human and financial capital of over 240,500 smallholder farmers. Working in the same five districts as HILIP, CALIP will achieve the following impacts:

- Participating households are enabled to diversify livelihood and income streams, improve their risk management based on better access to information, enforce land use rights and achieve greater security from avoidable climatic hazards.
- Women in particular benefit from greater food security during flood periods and access to diversified income-generating activities.
- Low-cost, robust village protection systems that can be replicated using local materials protect exposed villages from intensive wave action and:
  - Decrease by 70 per cent the number of houses destroyed by wave action
  - Protect 224 villages against wave action.
- Four pilot model villages for resettling poor families are developed. These model villages are designed with sound engineering principles, such as low-cost slope stabilization, swamp forests, walkways, communal sanitation and potable water. Villages also have renewable energy technologies and storage facilities.
- Canals and *beels* (lake-like wetlands with static water) are excavated to improve navigation and water-carrying capacity. A major challenge will be to keep the excavated earth from washing back during the monsoon season. CALIP will pilot the use of vegetation to retain excavated soil in situ and test the protection of 20 *killas* (raised earthen platforms) built by excavated earth using vetiver grass and local trees.
  - 20 *killas* and 30 *beel* banks protected using vegetative species.
- CALIP introduces vetiver grass to protect the slopes of all-weather roads built by HILIP.
  - 50 kilometres of road slope protected with vetiver grass.
- Climate-resilient value chains are promoted based on an analysis of potential products.
  - Over 120,000 people diversify their income streams
  - Nearly 140,000 people trained in diversified production technologies.
- Action research addresses current gaps and forms the basis of policy briefs to strengthen climate-sensitive policy frameworks, such as the Bangladesh Climate Change Strategy and Action Plan. Capacities for forecasting flash floods and early warning systems are developed with national partners.

BOLIVIA

Economic Inclusion Programme for Rural Families and Communities in the Territory of the Plurinational State of Bolivia with funding from the Adaptation for Smallholder Agriculture Programme (ACCESOS-ASAP)



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PROGRAMME SUMMARY

Total cost: US$13.4 million

ASAP grant: US$10.0 million

Other contributions: Plurinational State of Bolivia US$1.8 million; local governments (municipalities) US$1.1 million; beneficiaries US$0.4 million. (Note: these figures refer only to the ASAP-supported programme and not the entire ACCESOS.)

Programme period: 4 years (2014-2017)

Executing agency: Ministry of Rural Development and Lands

ASAP beneficiaries: 49,000

Programme objective: Greater resilience of target communities, including greater protection of people and their productive activities from the impacts of climate change.

ISSUES

Rural development and agriculture in the Plurinational State of Bolivia is highly susceptible to the impacts of climate change. A methodology developed by CARE, the Climate Vulnerability and Capacity Analysis (CVCA), was used to understand the vulnerabilities, capacities and needs of rural communities in 20 priority municipalities of ACCESOS. Most of these municipalities have a climate change vulnerability index of high to very high. Community members were concerned with climate variability, drought, frost, hail and floods, which badly affect crops and livestock. However, they were also interested in opportunities generated by the increasing temperatures in the highlands such as growing fruit trees, which have a higher market value than traditional crops.

The poorest and most populated regions of the highlands (*Altiplano*) and valleys are subject to deforestation for firewood, because products such as kerosene and butane are not readily available. This exacerbates the impact on livelihoods, leading to the loss of crops, livestock, infrastructure and increased conflict over scarce resources.

ACTIONS

ASAP resources are complementing the first component (natural resource management, investment in assets and enterprise development) of ACCESOS. Activities will be focusing on 15 municipalities in three departments: 10 municipalities in Chuquisaca, 4 municipalities in Potosí and 1 municipality in Tarija. ASAP activities will be organized in two components:

- **Capacity-building for community adaptation.** This component will strengthen community capacities through increased awareness about climate change issues and the development of adaptive capacity. This will be done through information and communication strategies which raise awareness and disseminate knowledge and experiences about indigenous adaptation practices that have potential for replication.

  Programme experts, in collaboration with the government and universities, will train technicians and researchers of public institutions responsible for climate modelling and weather forecasting.

  Geo-referenced 'talking maps', an effective visual and inclusive form of natural resource mapping that is especially suitable in areas with low literacy, will bring together science and traditional community knowledge to identify key issues and adaptation priorities. These will also encompass proposals to diversify local economies through complementary activities like rural tourism.

  A menu of priority options for financing will be drawn up – this list will have both a thematic focus (e.g. handling frost) and a gender focus, where adaptation options with good potential for women's empowerment will be prioritized.

  The process of involving local experts and community members is designed to help community organizations effectively articulate their adaptation priorities for inclusion into annual municipal budgets. A key benefit of ASAP support is the wider planning scale – this complements ACCESOS, which works mainly at the community level.

  A process of knowledge management will facilitate the sharing of lessons learned during and after the completion of the programme.

- **Climate risk management.** This component will help promote better climate risk management at the community and municipality levels, supported by local government investments in the necessary infrastructure, equipment and services. Investment decisions will draw on the adaptation priorities identified in the first component, and funding will be released through a system of local competitions or *concursos*, which has already been tested in other IFAD-funded projects.

  Concursos have proven a successful mechanism to encourage communities to engage in natural resource management. With support from the programme to ensure the equal participation of community members, communities will be urged to decide their own priorities for funding. ACCESOS-ASAP will build on this mechanism to embed community-driven adaptation priorities in local planning.

EXPECTED IMPACTS

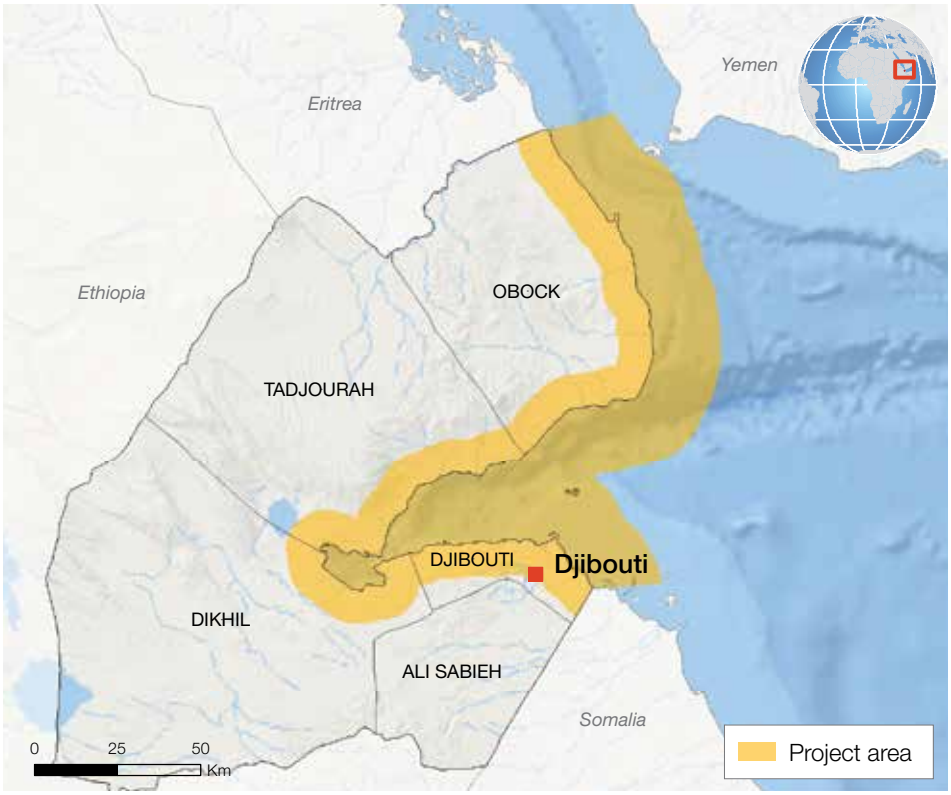
At least 49,000 smallholder farmers will have greater resilience to climate change, with a special emphasis on women, young people and indigenous peoples. The programme will set specific targets for women's participation, giving them a voice in key decision processes, such as the *concursos*.

The ACCESOS-ASAP is expected to achieve the following results:

- Municipal-level investments in climate change adaptation increase by 30 per cent
- At least 15 municipal development plans include climate risk management dimensions
- At least 15 climate services analyses conducted and adaptation practices inventorized
- 74 geo-referenced community 'talking maps' developed that include climate information services
- At least four communications campaigns on climate change implemented
- At least 400 individuals trained in climate risk management
- At least 11,000 families receive technical support through *concursos* to adopt climate-resilient practices and technologies, reduce losses and increase assets
- At least 15 micro-watersheds are protected and strengthened with resilient infrastructure
- 6,000 hectares of land are preserved or restored to increase resilience and reduce climate risk (based on the *concursos* approach).

DJIBOUTI

Programme to Reduce Vulnerability to Climate Change and Poverty of Coastal Rural Communities (PRAREV)



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PROJECT SUMMARY

Total cost: US$13.3 million

Approved IFAD loan: US$4.1 million

ASAP grant: US$6.0 million

Cofinancing: Food and Agriculture Organization of the United Nations (FAO) US$0.1 million; World Food Programme (WFP) US$0.3 million

Other contributions: Republic of Djibouti US$2.6 million; Centre d'Etudes et de Recherches Scientifiques de Djibouti US$0.2 million; Caisses populaires d'épargne et de crédit US$0.08 million; beneficiaries US$0.04 million

Programme period: 6 years (2015-2021)

Executing agency: Ministry of Agriculture, Water, Fisheries and Livestock

Beneficiaries: 107,00 smallholders (ASAP: 88,000)

Programme objectives: increase incomes, enhance food security and reduce vulnerability for smallholder farmers, particularly women and young people.

ISSUES

An ASAP-supported vulnerability assessment carried out in Djibouti used a new methodology for coastal multi-hazard assessment and management, the 'coastal hazard wheel'. Key findings indicate that large stretches of the coastline face significant ecosystem disruption, mainly related to coral reefs and mangroves. Other stretches are exposed to gradual inundation and salt water intrusion.

Climate change is affecting water temperature and ocean currents, which adversely impact fishery resources. The rise in sea temperature is causing fish migration further from the coast. Fishers do not have the equipment and skills to maintain their incomes from this sector. Ecosystems and coastal habitats such as coral reefs and mangroves, which are vital for fish stocks, show considerable degradation. Furthermore, sea level rise and extreme weather events, such as storms and floods, are impacting on coastal infrastructure, including production and post-production equipment. Extreme erosion of the coast is also a challenge.

Climate change is causing long periods of drought and reduced rainfall, as well as increasing temperatures along the coastal region. This affects groundwater recharge, which is the main source of freshwater in the country. The combination between rising sea levels and reduced groundwater recharge is leading to an increase in the intrusion of sea water, again affecting the quality of water resources.

Communities lack infrastructure, equipment and knowledge appropriate to these new conditions and their livelihoods are becoming more precarious.

ACTIONS

The programme will support the design and implementation of participatory management plans for ecosystem conservation to alleviate stresses and increase the resilience of fragile habitats. It will focus on integrating climate change adaptation within national policies and strategies, and enhance knowledge management, education and communication. In addition, PRAREV will help communities diversify their livelihoods options so they can take advantage of opportunities presented by climatic changes.

ASAP support is integrated with the following components of PRAREV:

- **Improving the resilience of coastal habitats and co-management of natural resources.** Participatory natural resource management will engage communities in conservation work. PRAREV will finance the restoration of 200 hectares of mangroves and the preservation of 100 square kilometres of coral reefs, which are vital for fish stocks. The programme will work with WFP to deliver 'food for work' for local communities engaged in the conservation of mangroves. Various technical studies of coastal waters and water resources will be carried out. PRAREV has a provision to cofinance civil works on water supply infrastructure with various donors.
- **Reducing the vulnerability of coastal resources and value chains.** This component will focus on protecting fisheries value chains affected by climate change. PRAREV will invest in renewable energy equipment, ice plants and coolers/insulated containers to improve the conservation of fish products. This is expected to benefit about 1,000 fishers and 500 fish sellers, many of which are women.
- **Enhancing institutional and community adaptive capacities.** Climate change will be integrated into the national policy framework and provide institutional support to the Fisheries Directorate as well as professional organizations.

PRAREV will help local communities, which are currently highly dependent on fisheries, to diversify their livelihoods. Long-term changes in sea surface temperatures are bringing about more auspicious conditions for the proliferation of algal blooms. While this is a potentially harmful phenomenon in the case of toxic algal species, the propagation of red and brown algae can have market potential as livestock feed and for the cosmetic market. This represents an uncharted economic opportunity for vulnerable groups, especially women. Despite the economic potential, seaweed farming is not practiced in Djibouti. The programme will pilot this activity and train local people, who will then continue farming to improve their incomes.

EXPECTED IMPACTS

The programme is expected to reduce the vulnerability, poverty and food insecurity of 88,000 people. Specifically, by programme end, PRAREV will have contributed to:

- 50,000 people trained and organized to carry out more climate-resilient activities and natural resource management – at least 1,000 fishers have access to climate-resilient infrastructure.
- 200 hectares of mangroves rehabilitated and 100 square kilometres of coral reefs protected.
- 30,000 cubic metres of freshwater per day mobilized to meet the needs of communities affected by climate change.
- Climate change adaption strategies integrated into three national policy areas (poverty reduction strategy paper, national adaptation programme and fisheries policy).

GHANA

Ghana Agricultural Sector Investment Programme (GASIP)

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PROGRAMME SUMMARY

Total cost: US$113.0 million

Approved IFAD loan: US$71.6 million

ASAP grant: US$10.0 million

Cofinancing: Participating financial institutions US$17.5 million

Other contributions: Republic of Ghana US$7.6 million; districts US$1.7 million; beneficiaries US$4.6 million

Programme period: 6 years

Executing agency: Ministry of Food and Agriculture

ASAP beneficiaries: 67,000

Programme objectives: Enhance the profitability and climate change resilience of smallholder farmers.

ISSUES

Climate change scenarios show that mean temperatures in the Savannah Zones, predominantly in the north, can be expected to increase by approximately 2° C by 2050. Dry season rainfall is expected to increase by 16-20 per cent, with alternating periods of high rainfall being followed by droughts.

Agriculture has driven Ghana's economic growth in recent years and remains the main livelihood of the majority of its population, especially for the rural poor. With approximately 90 per cent of farm holdings of less than 2 hectares, agriculture is still dominated by traditional smallholder farms. These smallholders are being affected by climate-related challenges including:

- water stress for crops as dry spells increase
- degradation and erosion of arable land
- intermittent floods and the resulting damage to critical infrastructure.

The Government approved a climate change policy in 2012, which includes agriculture and food security as one of five policy themes and focus areas, with a particular emphasis on developing climate-resilient agriculture and food systems. Another focus area is disaster preparedness, which prioritizes the building of climate-hardy infrastructure and increasing the resilience of vulnerable communities to climate-related risk.

ACTIONS

ASAP funding will support GASIP to mainstream climate change adaptation and resilience of smallholder farms into the business models and value chain interventions of the wider programme. ASAP funding will mainly focus on the northern regions, which have higher levels of exposure to climate risks and lower adaptive capacity.

ASAP investments will focus on:

- Increasing the availability and efficient use of water in smallholder crop and livestock systems to counter growing water stress. This includes ensuring the availability of water for multiple uses while reducing flood-related disaster risks.
- Mainstreaming proven technologies, such as conservation agriculture, irrigation and integrated soil fertility management, on a commercial basis.
- Climate data collection and management through building the capacity of relevant institutions.
- Deepening smallholder understanding of climatic trends through all training opportunities offered by GASIP, increasing sensitization and outreach.
- Promoting climate-resilient cropping in the two areas that GASIP will directly support.

ASAP-supported activities of GASIP will be integrated with the following three components:

- **Value chain development.** ASAP funds will be used to integrate climate change adaptation actions into selected value chains. The focus will be on three main areas:
  - demonstrating and promoting the uptake of commercial conservation agriculture
  - the efficient use of water in irrigation
  - institutional support for climate change resilience.

  Commercially valid adaptive trials of modern conservation agriculture techniques under rain-fed conditions will help to address the effects of increasing dry spells, drought and land degradation. These interventions will be hosted by leading nucleus farmers, strong farmer organizations and specialist farm service providers, who will adjust conservation farming technologies to local conditions. Such technologies could include zero-tillage cropping, soil moisture conservation, and appropriate crop rotations.

  GASIP will also promote improved techniques to increase water-use efficiency within existing irrigation systems, which presently often fail to deliver a reliable water supply and a reduced value for money due to inefficient water delivery and application methods.

  The programme will support institutional capacity-building and greater public awareness on topics related to climate change resilience. Water users' associations and farmer organizations, among other members of the selected value chains, will benefit from activities such as the dissemination of climate change adaptation toolkits, national and international exchange visits, the dissemination of good practices and training. Technical briefs and technical assistance will be made available to support the development of environmental and climate change management plans.
- **Rural value chain infrastructure.** ASAP will support initial investments in water harvesting and management schemes such as livestock watering points, flood recession schemes and small dams.
- **Knowledge management, policy support and coordination.** The programme will engage with partners to develop a web-based geo-referenced environmental and climate information and risk management system, and build the capacity of the Ministry of Food and Agriculture on climate change issues. Local adaptation measures will be documented as an evidence base for policymaking.

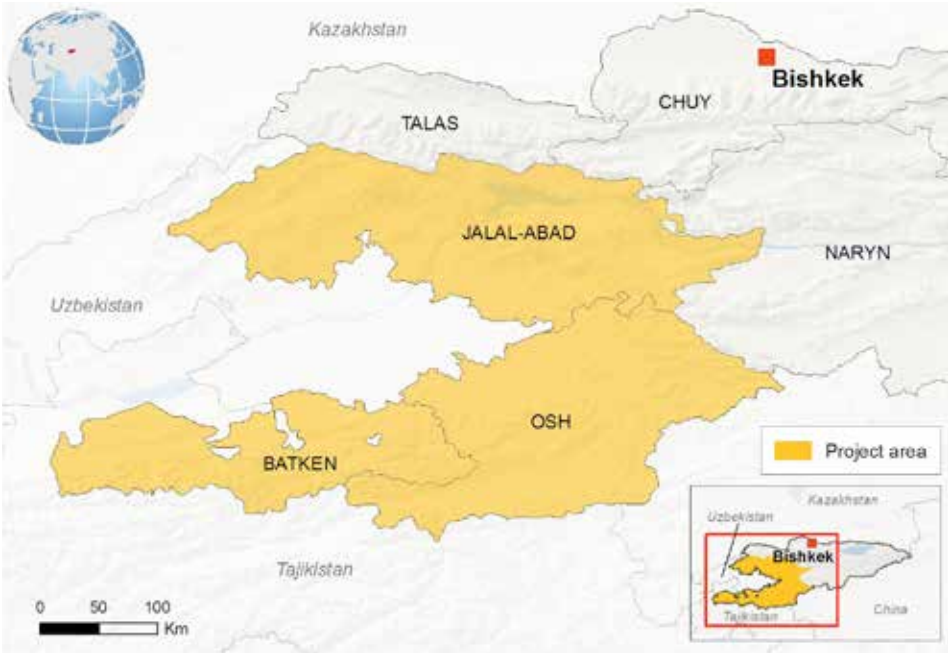
EXPECTED IMPACTS

The programme will increase the climate resilience of 67,000 smallholders, with a special emphasis on women (50 per cent) and young people. Specifically, by programme end, GASIP will have contributed to:

- 4,000 smallholders with improved water management
- 50 functional water users' associations
- 350 hectares with reliable access to water
- An increase in maize yield from 1 to 3 tons per hectare, and in soya yield from 0.7 to 2 tons per hectare
- 15,000 people trained in climate change resilience actions.

KYRGYZ REPUBLIC

Livestock and Market Development Programme II (LMDP II)



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PROGRAMME SUMMARY

Total cost: US$39.5 million

Approved IFAD loan: US$11.0 million

ASAP grant: US$10.0 million

Approved DSF grant: US$11.0 million

Other contributions: Kyrgyz Republic US$0.27 million; Republican Association of Pasture Users' Unions US$0.18 million; beneficiaries US$7.0 million.

Programme period: 5 years (2015-2020)

Executing agency: Ministry of Agriculture and Melioration

ASAP beneficiaries: 648,000

Programme objectives: Improve livestock productivity and enhance climate resilience of pasture communities to increase incomes and equitable returns to livestock farmers.

ISSUES

Kyrgyzstan is a food-deficit and low-income country, with a geographical position and topographical make-up that contribute to making it one of the most vulnerable countries to the impacts of climate change in Central Asia. The country suffers from drought, land and mudslides. Flooding events and river erosion are set to increase in frequency and intensity.

The mountainous nature of the country renders 45 per cent of Kyrgyzstan's land inhospitable. The majority of the population live in valleys and at the foothills of the mountains, where vulnerability to climate-related hazards is highest.

A vulnerability assessment (*Climate Change Impact on Pastures and Livestock Systems in Kyrgyzstan*) was carried out to inform the programme design. Six internationally recognized climate models were applied, downscaled and verified to generate local climate scenarios. Key findings show that maximum and minimum temperatures across Kyrgyzstan are expected to increase gradually over the course of this century. The intensity of rain and snowfall is expected to increase, together with the frequency of heat waves. Recurrent extreme weather events and marked changes in microclimate are already being observed.

These findings were applied to show the effect of climate change on the seasons and on different types of spring, summer and winter pastures. Pasture growing cycles are highly sensitive to climatic events; if these are delayed or come early they often have important implications on the quality and quantity of production.

The vulnerability assessment concluded with a number of recommendations, such as the installation of an early warning system to provide policymakers, technicians, pasture committees and farmers with up-to-date and accurate information on climate hazards. Other recommendations included strengthening the robustness of rural infrastructure, restoring pastures to increase productivity and prevent soil degradation, and developing institutional capacities to build resilience to climate change.

ACTIONS

The second phase of the IFAD-financed Livestock and Market Development Programme (LMDP II) will boost economic growth in pasture communities by improving climate resilience and livestock productivity. The programme will focus on three regions in the south of the country: Batken, Jalal-Abad and Osh. These regions have a combined area of around 80,000 square kilometres and are home to 51 per cent of Kyrgyzstan's cattle population and 47 per cent of the sheep and goat population – yet they include some of the areas most vulnerable to climate-related hazards.

The LMDP II will support livestock producer households, including households headed by women and those classified as vulnerable to climate shocks. Community veterinarians, who play an important role in maintaining livestock health in rural communities, will also be key stakeholders under the programme.

Programme activities will focus on three main components:

- **Community-based pasture management and vulnerability reduction.** This component will support pasture users' unions and pasture committees to develop and implement community-based pasture management plans that integrate climate change and disaster risk management concerns, including animal health issues. Investment support will be provided to communities to improve the resilience and productivity of pastures, and enhance their use and access. Special efforts will be made to encourage women to voice their priorities openly.
- **Livestock health and production services.** Effective private veterinary services will be established to ensure that community vets are able to respond to demand from communities. This will be done through establishing and training community-level animal health subcommittees of pasture committees and building the capacity of community vets. The programme will also strengthen the institutional framework for developing animal health in Kyrgyzstan. It will provide facilities, courses and scholarship incentives to motivate young veterinary students to work with communities in the programme areas.
- **Diversification and market/value addition initiatives.** The programme will nurture new enterprises through which the most vulnerable segments of rural society – mainly women – can become service providers for the community. For example, women's processing groups as well as milk collection and cooling centres will be established. The programme will also support vulnerable groups to diversify their income sources, which helps them buffer income losses related to climate-related events.

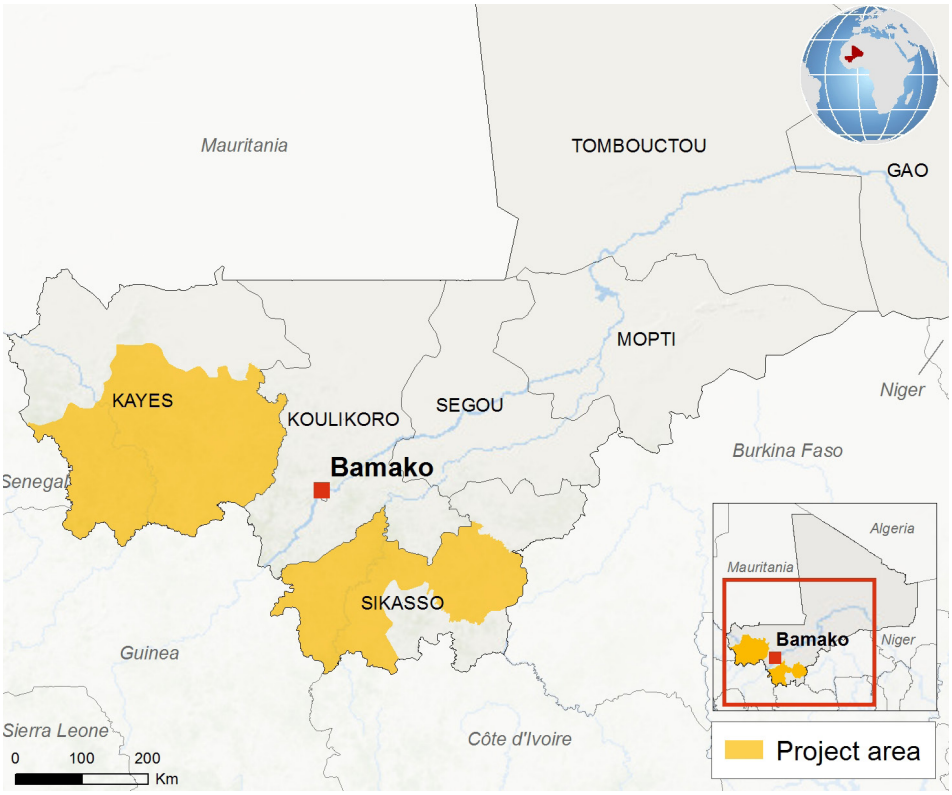
EXPECTED IMPACTS

The LMDP II will improve livestock productivity and enhance climate resilience of pasture communities. This will be reflected in improved and equitable returns to livestock farmers. The programme will achieve the following impacts through its components:

- More productive and resilient pastures and increased supplementary feed available to community livestock:
  - 20 per cent reduction in livestock mortality caused by disasters
  - 90 approved pasture management and animal health plans in the programme area that effectively integrate climate risk mitigation and adaptation measures
  - 48,000 women and men (30 per cent of target population) have access to climate-resilient and environmentally sound infrastructure (water, shelter, storage, roads connecting pastures)
  - 17,000 hectares of pasture rehabilitated through ecosystem restoration approaches.
- Healthier livestock with lower mortality levels:
  - 315 pasture users' unions benefit from a functional early warning system for extreme climate events
  - 80 per cent of livestock farming households experience reduced animal mortality
  - 380 community vets trained; 120 new vets entering veterinary practice; 60 community vets upgrading their skills; 190 animal health subcommittees formed and trained.
- Increased revenue from additional income-generating activities for households and communities vulnerable to climate change:
  - household revenue increases at least 20 per cent from additional income-generating activities
  - 10 milk collection/cooling centres established and 15 women's processing groups operating in the programme area
  - 25 additional economic activities groups established, at least 40 per cent of which are led by women
  - 25 grants to new enterprises for economic diversification, with at least 40 per cent of grants to women's groups.

MALI

Fostering Agricultural Productivity Project – Financing from the Adaptation for Smallholder Agriculture Programme (PAPAM/ASAP)



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PROJECT SUMMARY

Total cost: US$173.4 million

Approved IFAD loan: US$31.7 million

ASAP grant: US$9.9 million

Approved IFAD grant: US$0.30 million

Cofinancing: World Bank/ IDA US$70.0 million; European Union US$19.5 million; Global Environment Facility US$8.1 million

Other contributions: Republic of Mali US$27.7 million; Beneficiaries US$6.2 million

Project period: 6 years (2012-2017); ASAP funding: 4 years (2014-2017)

Executing agency: Ministry of Agriculture

Beneficiaries: 1,710,000 smallholder farmers (ASAP: 65,000)

Project objectives: To improve the climate resilience of smallholders and ecosystems targeted by PAPAM.

ISSUES

Mali is one of the Sahelian countries hardest hit by climate change. Climate trends show an increase in the average temperature across the country, a gradual decrease in mean annual rainfall, and an increase in the frequency and magnitude of extreme weather events such as droughts, floods and strong winds.

More specific impacts on rain-fed farming systems, especially cotton and maize in the Sikasso and Kayes regions, include late rains and shortened growing seasons. Even though average annual rainfall is decreasing overall, episodes of heavier rains following longer dry periods cause floods, soil erosion and destruction of rural infrastructure, including irrigation schemes and roads. Intense droughts in the north intensify migration of people and animals to the south, where human-induced pressure on natural resources then increases. This leads to deforestation, clearing of land for agriculture, overuse of soil and loss of biodiversity. A further consequence of this dynamic are lower yields, a reduced availability of wild food, the disruption of production methods and an overall increase in household poverty and food insecurity. Conflicts for access to natural resources are becoming more common.

ACTIONS

PAPAM focuses on irrigation, water management and sustainable land management at plot level to increase the yield per hectare. However, promoting climate-resilient agriculture requires an ecosystems approach beyond the plot. An approach focused on irrigated plots alone can be ineffective if the deforestation surrounding the

watershed causes soil degradation, siltation and flooding during exceptional rainfall events. These events may also cause the destruction of rural infrastructure and riverbanks, which threaten the irrigated plots and cause inaccessibility in some areas.

ASAP financing complements PAPAM and provides smallholder farmers with complementary adaptation technologies and services. These include:

- access to renewable energy sources to reduce pressure on forest areas
- capacity development of civil society and government institutions to use climate information and planning tools
- an institutional environment at the national level that facilitates access to information on climate change trends and impacts (for example, alignment between the project environmental monitoring system and the national forest information system).

ASAP-funded activities will support three of the project's components:

- **Transfer of technology and producer services.** Innovative renewable energy activities, such as various types of biogas digesters, with or without solar equipment, will be piloted to alleviate pressure on forest cover. Based on results obtained in an 18-month test phase, the best performing activities will be scaled up.
- **Irrigation infrastructure.** Participatory processes at the village level will be undertaken to guide collective investments financed by the project. This will result in community-based climate change adaptation projects, which will reforest degraded watersheds, protect irrigated areas from flooding and regenerate low groundwater tables. Training will be provided to disseminate climate information. The creation and training of land tenure committees and local 'meteorological assistance groups' will be supported.
- **Programme approach and sector monitoring.** To assist government coordination and policy dialogue among various actors in the agriculture and climate change sectors, ASAP financing will support the development and updating of policies and strategies in the area of climate change. Relevant actors and institutions will be trained, and data collection for the monitoring of climate change impacts on agricultural productivity and food security will be facilitated.

EXPECTED IMPACTS

The project will increase the availability of adaptation assets and knowledge, which will enable target households to cope with the changing climate situation. The project will achieve the following impacts:

- The installation of biogas digesters reduces women's workload and pressure on forest resources, with consequent reduction of risk of soil erosion and decline in yields due to increasing rainfall intensity.
  - 90 per cent of women reduce their daily workload.
- At the community level, construction of infrastructure, such as stabilized riverbanks, contour bunding or terracing, reduces the effects of flooding and erosion.
  - At least 2,000 hectares of agro-ecosystems are protected against erosion and 1,500 hectares of rice fields are protected against siltation.
- The project has a significant impact at the community level by helping communities to integrate climate change adaptation into local planning and monitoring.
  - 30 communal adaptation plans are integrated into local development plans and implemented.
  - 30 communal forest monitoring maps are produced annually.
- The project increases the capacity of smallholder farmers to collect, analyse and disseminate climate information, for example through access to seasonal weather forecasts in partnership with Mali Météo.
  - 10,000 farmers have better access to agro-climatic information.
- The project helps smallholder farmers to get involved in decision-making processes at the national and regional levels, specifically in environmental and climate change policies and strategies, such as the National Adaptation Plan. This has the double benefit of improving farmers' access to information and enhancing the quality of policy processes. The systematic involvement of small producers enables policy processes to capitalize on local knowledge and strengthen the evidence base for decision-making.
  - 10 policy documents on adaptation to climate change are prepared in a participatory manner with famers' organizations.

MOZAMBIQUE

Pro-poor Value Chain Development Project in the Maputo and Limpopo Corridors (PROSUL)

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PROJECT SUMMARY

Total cost: US$44.9 million

Approved IFAD loan: US$16.3 million

ASAP grant: US$4.9 million

IFAD grant: US$1.5 million

Spanish Food Security Cofinancing Facility Trust Fund: US$16.3 million

Cofinancing: United Nations Capital Development Fund US$0.14 million

Other contributions: Republic of Mozambique US$2.5 million; beneficiaries US$1.4 million; private investors US$1.9 million

Project period: 7 years (2012-2019)

Executing agency: Centre for the Promotion of Agriculture (CEPAGRI)

ASAP beneficiaries: 60,000

Project objectives: Increase incomes, enhance food security and reduce vulnerability for smallholder farmers, particularly women and young people.

ISSUES

A recent study by the National Institute for Disaster Management (INGC)[1] of Mozambique suggests that within ten years the impact of climate change will be increasingly felt within the Limpopo Corridor. The soil moisture content before the onset of the rains is set to decrease and higher temperatures and droughts are expected to increase in the southern region. A relatively dense network of rivers crossing from west to east provides ample potential for irrigation, but this strategy is still underdeveloped.

Additional adaptation measures are needed to build smallholder resilience to climate variability and change. Major investments are required to improve irrigation and water conservation and promote drought-tolerant seeds. Without such adaptations, farmers won't be able to manage the new and increasing risks that threaten their livelihoods and discourage them from investing in modern inputs and technologies.

ACTIONS

The goal of PROSUL is to improve the livelihoods and climate resilience of smallholder farmers in selected districts of the Maputo and Limpopo Corridors. ASAP investments focus on:

- diversifying cropping systems
- experimenting with drought-resilient crop varieties
- promoting low-cost yet climate-resilient horticultural techniques
- providing efficient water management structures in drought-prone areas
- giving smallholders access to weather forecasting and finance.

The project has five components:

- **Horticulture.** With the support from ASAP, PROSUL is developing and promoting climate-resilient horticultural value chains in eight districts of Gaza and Maputo provinces. This includes the diversification of horticultural crops, the provision of

1 INGC (2009). Synthesis Report. INGC Climate Change Report: Study on the impact of climate change on disaster risk in Mozambique.

low-cost protective housing to encourage year-round crop production, timely and efficient seedlings production, and the establishment of farmer field schools (FFSs). Climate-resilient technologies are demonstrated at the research stations of the Agricultural Research Institute of Mozambique (IIAM). A meteorological facility is being set up in Gaza.

- **Cassava.** ASAP funding under PROSUL is promoting the sustainable intensification of cassava and the dissemination of sustainable fertilization and weeding practices. These strengthen the ability of households to participate in the cassava value chain without jeopardizing their food security. ASAP funding enables the efficient use of both surface and underground water to improve the productivity of local cassava processing plants, with due environmental considerations given to waste handling and disposal. For example, the waste processing water is being used to water the cassava nurseries, and if there is enough volume of physical waste, biogas plants can be promoted. Climate-resilient packages are being promoted through FFSs, and IIAM is experimenting with techniques such as sequential planting, harvesting, weeding and intercropping with farmers. The meteorological facility in Inhambane is also being improved.
- **Red meat.** The project is developing and promoting climate-resilient value chains for red meat in seven districts of Gaza and Maputo provinces. Specifically, the ASAP investment is supporting the development of community-based natural resource management plans, the promotion of climate-resilient livestock and grazing technologies, as well as practices to increase fodder production and soil carbon stocks. A private district-based network of veterinary pharmacies at the district level is also being established.
- **Financial services.** PROSUL investment is focusing on the development of financial mechanisms (grants, equities and loans) to enable smallholders to invest in 200 small and low-cost protective shade cloth greenhouses for seedling and year-round production. They will also give access to finance for water supply facilities at 24 cassava hubs and for private operators to seven livestock veterinary stores.

  PROSUL supports the design and building of a slaughterhouse biogas plant. Improved slaughterhouse waste management will reduce public health and environmental hazards, and gas emissions from livestock slaughtering operations. It will also provide an alternative energy source to help power the slaughterhouse meat processing equipment.
- **Institutional support and project management.** ASAP provides institutional and policy support to the Centre for the Promotion of Agriculture (CEPAGRI) to anchor climate change adaptation into the three targeted value chains. This includes:
  - An institutional capacity needs assessment for mainstreaming the Mozambique climate change agenda within CEPAGRI
  - Building the capacities of CEPAGRI staff with regard to the broader national and regional climate change agenda and the national climate change platform
  - Developing linkages with relevant institutions and the Strategic Programme for Climate Resilience (SPCR) cofinanced by the World Bank and African Development Bank.

EXPECTED IMPACTS

ASAP will enable 60,000 smallholder household members to be more resilient to climate change. This will be supported by the following specific results:

- An increase by 4,980 hectares of land managed under climate-smart crop production practices.
- Seven community-based natural resource management plans for climate-smart grazing.
- **Horticulture component.** 3,840 smallholder farmers (of whom 50 per cent are women) increase their incomes from horticulture through the adoption of climate-resilient technologies.
- **Cassava component.** Of the 8,000 farmers in Inhambane and Gaza participating in project activities, 4,800 farmers (50 per cent women) adopt sustainable technologies for cassava production in a changing climate.
- **Red meat component.** Of the 5,600 participating smallholder ruminant producers, 2,800 herders adopt climate-resilient management of grazing areas.
- **Institutional support and project management component.** 10 CEPAGRI and project staff are trained and exposed to issues related to the broader national and regional climate agenda.

NICARAGUA

Adapting to Markets and Climate Change Project (NICADAPTA)

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PROJECT SUMMARY

Total cost: US$37.0 million

Approved IFAD loan: US$8.1 million

ASAP grant: US$8.0 million

IFAD grant: US$8.1 million

Cofinancing: Central American Bank for Economic Integration US$7.0 million

Other contributions: Republic of Nicaragua US$3.4 million; beneficiaries US$2.6 million

Project period: 5 years (2014-2019)

Executing agency: *Ministerio de Economía Familiar, Comunitaria, Cooperativa y Asociativa* (MEFCCA, Ministry of Family, Community, Cooperative and Associative Economy)

ASAP beneficiaries: 100,000

Project objectives: Raise the living standards of rural families by improving access to markets and reducing their vulnerability to climate change.

ISSUES

Nicaragua is the second poorest country in Latin America. The agricultural sector accounts for 20 per cent of gross domestic product and 29.5 per cent of employment, and its performance is highly influenced by the country's vulnerability to climatic events.

Coffee production is the backbone of the rural economy in large parts of the country, with 80 per cent of high-quality beans coming from smallholder farmers. Temperatures are expected to increase on average by 1° C by 2020 and by just over 2° C by 2050, and rainfall is expected to decrease by 70-100 millimetres by 2020 and by 100-130 millimetres by 2050, which would have major impacts on Nicaragua's coffee exports and livelihoods in rural areas.

As coffee grows best in a temperature range of 18° C to 23° C, it will suffer from temperature changes and water stress due to climate change. This will affect smallholder farmers and indigenous communities by reducing the quantity produced, the quality achieved and the final price of coffee. In particular, it is expected that the 66 per cent of land located at 800 metres above sea level presently used for coffee growing will no longer be suitable in a changing climate. Coffee will have to be grown in zones located at around 1,200 metres above sea level. In addition, coffee production is affected by the temperature-sensitive rust disease, which in some years has damaged over 50 per cent of coffee plantations in the IFAD project area.

Cocoa is produced mainly in the tropical lowlands. Its production is also affected by climatic change, in particular by rust disease and excessive rains, but it has proved to adapt much better. Moreover, cocoa has a high economic potential for the country to explore in terms of productivity and price increase, as well as access to international markets.

ACTIONS

NICADAPTA will improve incomes and quality of life for rural families – and reduce their vulnerability to the impact of climate change – by facilitating access to markets for value-added coffee and cocoa. It will introduce water efficiency and crop diversification measures such as coffee-cocoa intercropping in coffee plantations to buffer the effects of rising temperatures. The project will strengthen the availability of weather information through improved dissemination of agro-climatic information. This will be complemented by building the capacities of the relevant producer organizations and public institutions through training and the scaling up of best practices, designing policies and incentives to promote and strengthen the production and distribution of coffee and cocoa, and encouraging private-sector investment.

ASAP-supported activities of NICADAPTA are integrated with the following three components:

- **Sustainable development of coffee and cocoa productivity.** Small producer organizations will be trained to access markets and improve coffee and cocoa quality and yields through better production and business management. Investments in productive infrastructure (i.e. water storage) to improve and standardize the quality of the raw material produced will also be deployed. These activities will be developed together with sustainable water management and environmental management, and the dissemination of best practices to coffee and cocoa producers in climatically sensitive landscapes.
- **Institutional strengthening.** Services to strengthen producer organizations and public institutions will be offered in multiple areas, including production and dissemination of climate-resilient technologies and agro-climatic information with an emphasis on disease control. This will be combined with policy dialogue with the Government and cooperation agencies to promote and strengthen coffee and cocoa production, brokering and facilitating private investments.
- **Project management, planning, and monitoring and evaluation.** This component focuses on strengthening capacities in project management, monitoring and evaluation, and knowledge management within MEFCCA.

EXPECTED IMPACTS

The project will improve the competitiveness of producers' cooperatives and their members through increased productivity and the adoption of practices that adapt to climate change and changing market conditions. This, in turn, will improve revenues and living standards for rural families. It will also decrease, by at least 10 per cent, the prevalence of child malnutrition among beneficiary families. The project is expected to achieve the following impacts:

- The competitiveness of cooperatives is improved by increased productivity, adoption of practices to adapt to climate change and market access.
  - 25,000 hectares of land incorporate diversified agricultural practices to increase adaptation to climate change and reduce climate risks.
  - 20,000 families adopt good management practices and investment decisions that improve crop adaptation to climate change.
  - 20 per cent increase in average productivity of coffee and cocoa among families belonging to cooperatives or associations with investment plans in place for at least two years.
  - 1,000 water points/ponds (individual or communal) constructed to counter water stress.
- Improved institutional environment for the development of coffee and cocoa production, and capacities of producer organizations and public institutions built up.
  - 20,000 producers receive better climate services (agro-climatic and early warning information) with emphasis on pest and disease control.
  - 1,000 cooperative managers will be trained in adaptation to climate change (production and post-harvest technologies).
  - 100,000 beneficiaries will receive technical assistance and training in shade crop management, crop diversification and water management.

NIGERIA

Climate Change Adaptation and Agribusiness Support Programme (CASP) in the Savannah Belt of Nigeria

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ISSUES

The northern part of Nigeria is particularly vulnerable to climate change, which is reducing rural income as a result of decreased agricultural productivity – agricultural yields have declined by 20 per cent over the past 30 years in the north.

The northern states are facing desert encroachment and more intensive and less predictable rainfall, which is leading to longer dry spells, increased erosion and flooding. These rainfall events are contributing significantly to crop failure and the deterioration of rural infrastructure, preventing farmers from accessing markets. Additional consequences include lower soil fertility and soil degradation through overgrazing, deforestation and desertification, as well as increased difficulty in planning crop calendars and transhumance for pastoralists.

Rural households in the northern states are particularly vulnerable to climate-induced hazards, yet they have low adaptive capacity because of underlying poverty and poor infrastructure. A lack of investment in natural resource management has contributed to making farming systems less productive.

ACTIONS

ASAP interventions under CASP will strengthen the capacity of farmers to use climate information for the planning and promotion of climate-resilient farming techniques. It will also implement larger investments to reduce the impact of climate hazards on rural infrastructure, farms and livelihoods.

PROGRAMME SUMMARY

Total cost: US$93.6 million

Approved IFAD loan: US$70.0 million

ASAP grant: US$15.0 million

IFAD grant: US$0.48 million

Other contributions: Federal Republic of Nigeria US$5.8 million; beneficiaries US$1.4 million; US$0.92 million (to be determined)

Programme period: 7 years (2014-2020)

Executing agency: Federal Ministry of Agriculture and Rural Development

Beneficiaries: 1,392,000 smallholder farmers (ASAP 200,000)

Programme objectives: Increase incomes, enhance food security and reduce vulnerability for smallholder farmers, particularly women and young people.

ASAP financing will strengthen the following components of CASP:

- **Productivity enhancement and climate resilience.** ASAP will encourage communities to adopt sustainable land management and erosion control techniques. Seven demonstration sites will help to showcase innovative techniques such as semi-circular and trapezoidal bunds. Eight pilot sites in the states of Borno, Katsina, Kebbi and Yobe will test rangeland management techniques and new species.

  CASP will promote sustainable land management, water harvesting and soil and water conservation techniques over a total of 10,500 hectares in the programme area. These will include establishing on-farm and community woodlots, rehabilitating rangelands and existing animal drinking points, as well as establishing new ones. In addition, existing contour bunds will be rehabilitated and control hedges and stone works will be established to combat gully erosion.

  South-South learning exchanges with countries such as Morocco and Niger, where sustainable land management, cropping and irrigation technologies are supported by IFAD, will further encourage farmers to adopt these techniques.

  This component will also support the development and implementation of community rangeland management plans.

- **Institutional development.** ASAP will strengthen and scale up the participatory land-use planning (PLUP) model developed by a previous IFAD-funded project. The PLUP models will include participatory climate change vulnerability mapping (PCCVM) carried out by NGOs and other qualified service providers. The process will build local capacity in climate risk analysis and management. The PLUP models will help the programme to identify priority areas for targeting climate-related investment, such as the most vulnerable sections of roads across the states. ASAP funding will be used to protect rural roads from the increased risks of flooding and erosion and enable a more effective harvesting of water run-off from road surfaces.

  ASAP will finance the establishment of a geographic information system (GIS) to support the climate proofing of PLUP models. Women and young people will be consulted separately in the PLUP and PCCVM processes, so that they can voice their priorities freely. Training in monitoring climate adaptation will enhance capacity to monitor the impact of investments to increase climate resilience.

  CASP will facilitate the establishment and strengthening of community development associations (CDAs), which are apex bodies of the commodity/producers or enterprise groups. Funds will be made available directly to the CDAs for community infrastructure identified through the community action plan (CAP) process. ASAP will provide incentives within the CAP process to scale up and leverage additional funding for the promotion of climate-resilient agricultural practices.

- **Programme coordination and management.** Programme experience and findings from analytical studies will inform policy dialogue on climate adaptation, through support for activities of the Advisory Committee on Adaptation and Resilience in Nigeria (ACARN).

EXPECTED IMPACTS

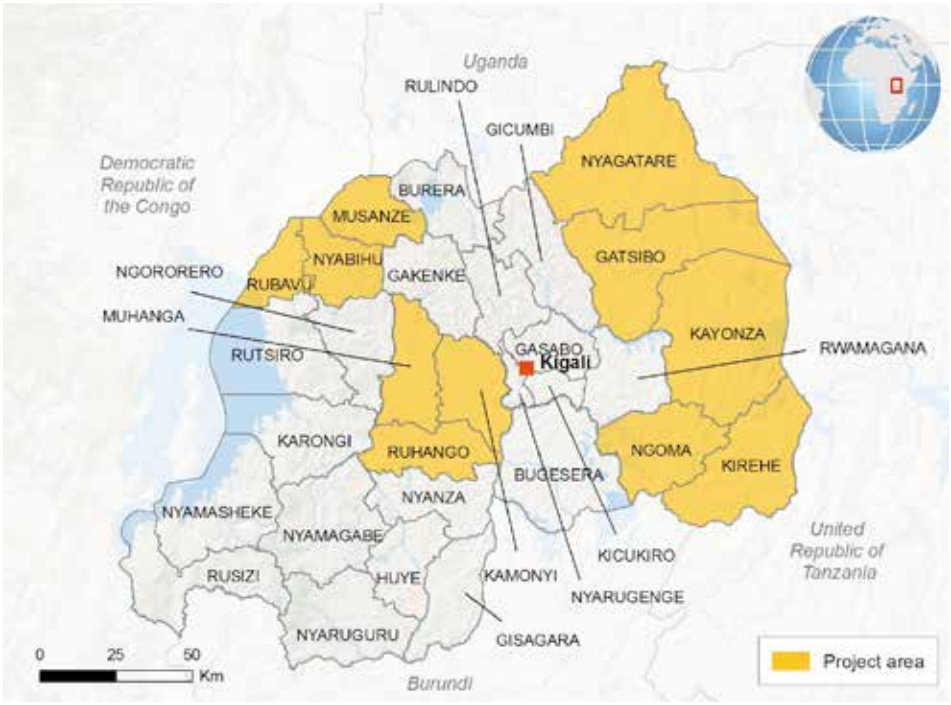
ASAP assistance will enable 200,000 smallholder farmers to adopt climate-resilient agricultural practices on 225,000 hectares of land. Direct benefits from the programme's climate change adaptation approach will include greater food security, reduced soil erosion (increase by 40 per cent the number of farmers with reduced erosion in their fields) and reduced impact of climate hazards on rural infrastructure. Other benefits will include a better understanding of climate-resilient agricultural practices and the integration of these into local planning processes.

The following results will contribute to this impact:

- Seven demonstration sites and eight pilot sites set up in the states of Borno, Katsina, Kebbi and Yobe to showcase and test innovative erosion control and rangeland management techniques.
- 225,000 hectares of land managed under climate-resilient practices, with farmers taking active measures to reverse land degradation, participate in community-based land-use planning, and utilize climate-protected infrastructure.
- Participatory Land Use Planning (PLUP) models for at least 350 CDAs developed and strengthened through participatory climate change vulnerability mapping (PCCVM).

RWANDA

Post-Harvest and Agribusiness Support Project (PASP)



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PROJECT SUMMARY

Total cost: US$83.4 million

Approved IFAD loan: US$13.5 million

ASAP grant: US$6.9 million

Approved DSF grant: US$13.5 million

Project period: 5 years (2014-2018)

Executing agency: Ministry of Agriculture and Animal Resources (MINAGRI) Single Project Implementation Unit (SPIU)

ASAP beneficiaries: 155,000

Project objectives: Increase incomes, enhance food security and reduce vulnerability for smallholder farmers, particularly women and young people.

ISSUES

The agricultural sector in Rwanda has been hit hard by climate change. Agricultural production is increasingly exposed to drought, intense and erratic rainfall, high winds and emerging seasonal and temperature shifts. If not addressed, climate variability will mean significant economic costs – estimated at up to US$300 million annually by 2030.

Post-harvest losses are one of the greatest sources of inefficiency in agricultural production; the National Adaptation Programme of Action and the National Strategy of Rwanda on Climate Change and Low-Carbon Development highlight improved post-harvest management as a key climate change adaptation priority.

With multiple cropping systems promoted by the Government and shifts in the timings of the cropping seasons, harvesting now takes place at wetter times of the year; this means that smallholders can no longer rely on the sun to dry cereals and pulses to safe moisture content levels for storage. Similarly, in dairy value chains, water scarcity influences fodder production, and temperature fluctuations complicate the transport, cooling and safe storage of milk in the supply chain.

ACTIONS

To buffer this growing range of climate-induced stresses, ASAP support will focus on improving post-harvest processing and storage techniques, including developing the financial incentives and policy mechanisms to bring these climate risk management investments to scale. ASAP support will also provide a better understanding of how agro-meteorological conditions influence harvest and post-harvest activities, so as to take appropriate and timely action.

Project activities will focus on three main components:

- **Hub capacity development programme and business coaching.** The Post-Harvest and Agribusiness Support Project (PASP) will focus on strengthening business hubs, which are the first key point where agricultural produce is assembled and processed. It will link these hubs with specialist support agencies for post-harvest activities, which will enable them to provide climate risk management services to their smallholder clients. The project will also demonstrate practices, technologies and innovations that respond to environmental and climatic challenges, such as promoting crop varieties with maturity periods better suited to changing growing seasons,, and piloting the use of solar power supplies and biogas as cost-effective approaches for drying grain.

  The PASP will help to establish an agricultural meteorology function within the Ministry of Agriculture and Animal Resources (MINAGRI). It will work with the Rwanda Meteorological Service and the Rwanda Environment Management Authority to expand their information services to ensure that relevant and timely climate information is shared with smallholders. This will mitigate the impacts of climate variability on harvesting and drying. The Rwanda Development Board, through its focal point for the UN Climate Change Convention, will facilitate access by MINAGRI to the national climate forum and other climate-related initiatives within the Ministry of Environment.

- **Post-harvest climate-resilient agribusiness investment support.** Based on a bottom-up demand analysis by the hubs, this component will facilitate business investments, in improved, climate-resilient and low-carbon post-harvest procedures. These are expected to reduce post-harvest losses and increase the incomes of smallholders and rural labourers.

- **Project management and coordination.** This component will ensure that the project is efficiently and effectively managed to achieve the expected results. Considerations about gender equality and women's empowerment, the involvement of young people, environmental impact, knowledge management and communication will be integrated in all aspects of project management, and activities of the implementing partners. A climate adaptation specialist position will be established within the SPIU.

EXPECTED IMPACTS

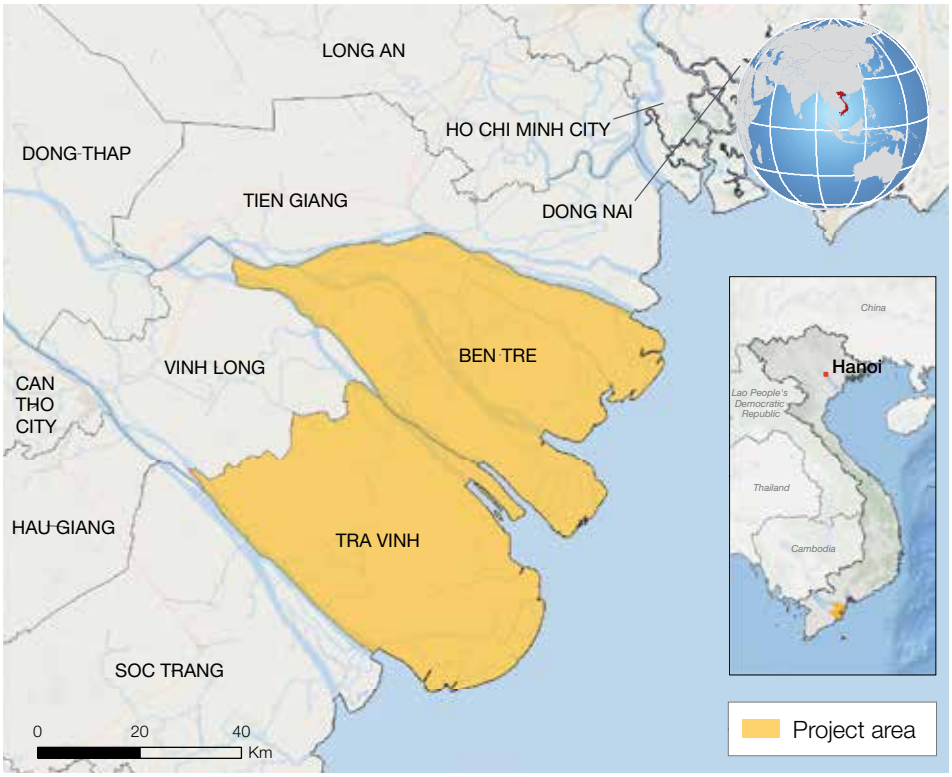
The PASP will increase the climate resilience and food security of at least 155,000 poor smallholders. It will support 25,000 smallholder households that are engaged with participating hubs to access additional harvest and post-harvest technology options to help them reduce climate risk. The project will also achieve the following impacts through its components:

- Participating hubs have the skills and technologies, as well as access to specialized service providers, to create and operate viable businesses capable of delivering larger volumes of improved produce to the market and manage climate risks in post-production processes:
  - 80 per cent of participating hubs will develop the capacity to implement climate risk management strategies with their clients. All hub business plans will incorporate climate change adaptation and food security measures – these will include capacity-building on climate resilient processing, handling and storage techniques.

- Hub investments in climate-resilient and low carbon technologies reduce post-harvest losses and increase smallholder incomes:
  - 80 per cent of participating farmers will adopt best practices for post-harvest, crop drying/milk cooling and storage processes. These will include access to climate information services for timely harvest and drying, low carbon energy sources for drying and cooling, improved storage methods such as hermetically sealed bags, and enough pallets to keep produce off the floor and ventilated. Best practices also include codes and standards to ensure that infrastructure withstands high winds and intense rainfall events.
  - 80 per cent of participating hubs will introduce water-harvesting and management technologies and/or show significantly reduced water usage.

VIET NAM

Project for Adaptation to Climate Change in the Mekong Delta (AMD) in Ben Tre and Tra Vinh Provinces



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PROJECT SUMMARY

Total cost: US$49.3 million

Approved IFAD loan: US$22.0 million

ASAP grant: US$12.0 million

Other contributions: Socialist Republic of Viet Nam US$7.6 million; beneficiaries US$7.8 million

Project period: 6 years (2014-2020)

Executing agency: Provincial People's Committees of Ben Tre and Tra Vinh provinces

ASAP beneficiaries: 124,800

Project objective: To strengthen the adaptive capacity of target communities and institutions to better contend with climate change.

ISSUES

Viet Nam is one of the most disaster-prone countries in the world and among the countries hardest hit by climate change. Rising sea levels (between 75 and 100 centimetres by the end of this century) are expected to affect 20-50 per cent of the low-lying Mekong Delta. Changes in rainfall and temperatures are increasing the risk of floods, typhoons and droughts.

Climate change has serious implications for Viet Nam's socio-economic development, especially in the densely populated and productive Mekong Delta. The Delta is the source of much of the country's rice exports and 60 per cent of national fishery production. Almost 18 per cent of the population live in the rural areas of the Mekong Delta, and depend on the agriculture sector for their livelihoods. The area is facing increasing salinity intrusion, over-extraction of water, excessive use of chemical inputs, reduced soil fertility, mangrove deforestation and disruption of ecosystems through inappropriate infrastructure construction. The combination between climatic and human-made pressures is disrupting the supply of drinking water to thousands of households and increasing soil salinity, which constrains agricultural production for smallholder farmers. As a result, land under rice cultivation has been decreasing.

Communities in the provinces of Ben Tre and Tra Vinh, in the north-east of the Mekong Delta, are especially affected by increasing salinity. Reduced river flow due to upstream water consumption combined with sea level rise and storm surges are leading to salinity reaching deeply inland. This is resulting in losses in aquaculture, perennial crops and livestock production. These effects are forecast to become more severe in a changing climate, constraining the livelihood options of Mekong Delta communities even further.

ACTIONS

The project will build the capacity of smallholder farmers, communities and local institutions to cope with the impacts of climate change and expand into sustainable, profitable enterprises.

AMD will target poor communities, specifically women-headed and ethnic minority households. Thirty communes located along a salinity gradient have been selected in each province to test alternative livelihood models, based on their poverty ranking and vulnerability to climate change.

Specifically, AMD will support the development of climate-resilient agricultural systems, salinity-tolerant fish varieties and off-farm livelihood opportunities. It will support climate-sensitive planning to promote relevant provincial budget allocations and provide financing for resilient small-scale community infrastructure. For example, salinity barriers will be built to safeguard farmers' fields and aquaculture ponds. In addition, the project will promote salinity monitoring and forecasting to help farmers access reliable information on the salinity content of their waterways, and promote improved soil and water management practices to protect shrimp larvae and crops from adverse conditions.

With water stress being a critical challenge in the Mekong Delta, AMD will provide financing to upgrade canal systems, improve water storage, promote rainwater collection and adopt water-saving irrigation techniques.

The ASAP-supported activities of AMD comprise two related components:

- **Building adaptive capacity.** The project will address knowledge gaps in smallholder households and local institutions which currently prevent them from developing viable livelihood options in the face of increasing salinity, temperature and water stress. At the provincial level, it will help to make climate-related issues explicit in planning and resource allocation processes.

  Smallholder capacity will be enhanced by investments in salinity monitoring and forecasting to prevent crop losses. In particular, AMD will finance up to 30 automated salinity monitoring sensors to calculate salinity concentrations at given points along the river system. This will enable farmers to understand how salinity in soils and groundwater evolves over time.

  Investments will also be made in community-based adaptation research to develop a strain of saline-tolerant catfish and scale up sustainable aquaculture farming models. Research will be undertaken on saline-tolerant rice varieties and other saline-tolerant crops which have good market value and are suitable for cultivation.

- **Investing in sustainable livelihoods.** Under AMD, ASAP funding will be provided to finance pro-poor adaptation investments that diversify the economic livelihoods base of poor households. Communities will be supported as they scale up adaptation techniques such as shifting from rice cultivation to shrimp farming, vegetable, coconut and salt production, and sustainable livestock production. The project will also support the design and construction of mostly small-scale public infrastructure, which will be planned and implemented with commercial potential in mind. Investment areas will include rainwater collection and treatment of brackish water, salinity barriers and water management structures, and the improvement of irrigation canal systems.

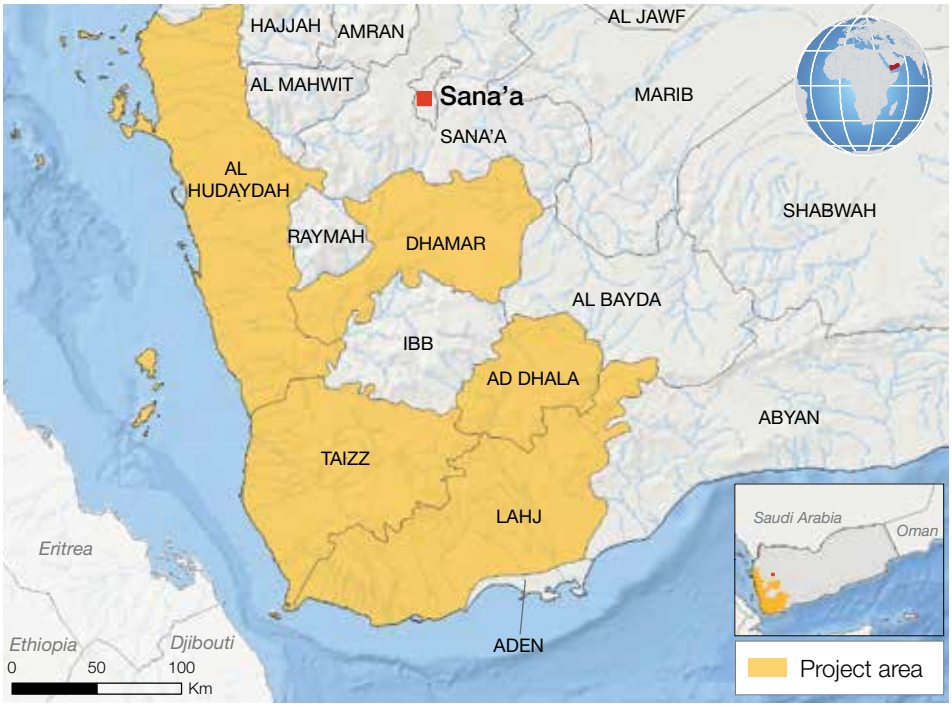
EXPECTED IMPACTS

AMD will strengthen communities and institutions to effectively respond to the impacts of climate change. It will provide increased and more inclusive financing for market-oriented climate-smart agriculture and agribusiness investments, and help communities to diversify into economically viable and climate-resilient farming, aquaculture and other livelihood options.

- At least 124,800 poor rural people in 30,000 households benefit from the project, receiving a combination of capacity-building, climate-informed planning, technology transfer and access to credit, supported by upgraded community infrastructure and cofinancing of investment in their farming operations.
- About 6,000 people benefit from new employment opportunities generated by on- and off-farm investments.
- At least 4,000 people receive vocational training.
- Over 1.5 million rural people in both provinces indirectly receive flow-on benefits from better access to salinity data and forecasts, technology development and promotion, access to credit and institutional strengthening.

YEMEN

Rural Growth Programme (RGP)



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ISSUES

Yemen is the poorest country in the Middle East. Low agricultural productivity, insufficient off-farm economic and employment opportunities and climate change are worsening rural poverty. At just 90 cubic metres per person a year, Yemen's renewable freshwater resources are amongst the lowest in the world, and they are being rapidly depleted. Agriculture accounts for 90 per cent of freshwater use, but much of this precious resource is used inefficiently.

A detailed vulnerability analysis was undertaken by Loughborough University to identify climate risks and vulnerability 'hot spots'. Geographic Information Systems (GISs) were used to evaluate flood and soil erosion risks, opportunities for water harvesting by constructing stone terraces, and potential impacts of climate hazards on crop productivity. The study integrated data from meteorological observations and soil surveys, as well as remotely sensed precipitation indices and topographic information.

The main risks identified include soil erosion, extended droughts and floods. Climate change is causing temperature increases above the global average, and exacerbating the variability and intensity of rainfall. The programme will work in the areas most vulnerable to climate change, which include Al-Dhala, Dhamar, Hodeida, Lahej and Taiz governates.

ACTIONS

The programme will stimulate more sustainable economic growth for women and men in rural communities. This includes increasing their resilience to climate change impacts by helping communities to diversify their livelihoods options and improving the management of natural resources. Investments in climate-resilient infrastructure will also support agricultural development.

RGP will build on a detailed vulnerability assessment to select the best locations for cropping and promote wild varieties of endogenous species that are resistant to drought such as date palms, fig trees and pomegranates. Agroforestry and integrated crop-livestock systems have also been identified as priorities.

PROJECT SUMMARY

Total cost: US$127.4 million

ASAP grant: US$10.0 million

Approved DSF grant: US$15 million

Cofinancing: Islamic Development Bank US$15.4 million; European Union US$16.1 million; Global Environment Facility US$10.0 million; microfinance institutions US$17.7 million; Agriculture and Fisheries Production Promotion Fund US$12.8 million

Other contributions: Republic of Yemen US$9.3 million; beneficiaries US$21.0 million

Programme period: 7 years (2014-2021)

Executing agency: Ministry of Agriculture and Irrigation

Beneficiaries: 1,180,000 smallholder farmers (ASAP: 800,000)

Programme objectives: Reduce poverty and food insecurity in rural areas and increase the climate resilience of small farmers.

The programme will have three interrelated components:

- **Community empowerment and livelihoods diversification.** This component will empower households and communities to manage their own development and engage in income-generating activities. Activities will focus on community institution-building, women's empowerment, and stimulating microfinance and income-generating activities. Community development associations will be established and their management and conflict resolution capacities strengthened.

  Each community will be assisted to undertake a participatory diagnosis of their development priorities and constraints. Investments and activities to address these constraints will be identified through a participatory process and built into community action plans (CAPs). Volunteers within each community will be trained to support this process and ensure that the CAPs include climate risk management measures, with a focus on environmental sustainability, climate change adaptation and disaster risk management.

  Women's literacy and life skills (such as in health care, nutrition, legal rights, and natural resource management) will be supported to ensure they are fully involved in the development of their communities.

  The programme will build on savings and credit groups and associations to support livelihoods diversification initiatives. These initiatives will mainly target young people and women-managed farm and off-farm small businesses and microenterprises. Based on a systematic analysis of business opportunities, the main forms of support will include the provision of technical and management training, matching grants and market access support. Renewable energy grants will support the development of small businesses and microenterprises in villages that are not connected to the national grid. This will not only reduce dependency on fossil fuel sources, but also contribute to a reduction of greenhouse gas emissions.

- **Natural resources management and resilient infrastructure.** This programme component is focused on improving natural resource management in degraded areas and enhancing the climate resilience of rural infrastructure. Investments will centre on integrated water management and soil conservation, rangeland rehabilitation, water harvesting, the reseeding of indigenous cereal species and adaptive engineering of rural roads to harvest excess water run-off, prevent flood damage and reduce surface erosion.

  Other activities will include the rehabilitation of terraces, the protection of wadi banks and reforestation to increase slope stability and reduce soil erosion. Rock terraces are especially important as they protect soil from erosion and retain moisture to support rainfed agriculture. The CAPs and a preliminary analysis by the Department of Forestry and Rangelands to assess the status of rangelands will inform programme investments.

- **Agriculture development.** This component will support the adoption of improved and climate-resilient agricultural practices and technologies in vulnerable communities. Investments will focus on extension support and the provision of farming inputs, improvements in irrigation efficiency, the diversification of agricultural production and applied research to promote long-term vulnerability reduction. Women and men will be trained as village agriculture technicians to support their own communities – their training will also cover climate risk and environmental issues.

EXPECTED IMPACTS

The programme will enhance agricultural production and increase the climate change resilience of about 800,000 smallholders by stimulating strong and sustainable rural economic growth. The programme will achieve the following impacts through its components.

- Households and communities empowered to manage their own development and engage in income-generating activities:
  - 550 community development associations formed, strengthened and legally registered, and 30 per cent of leadership positions held by women.
  - At least 50,000 people (of whom at least 50 per cent will be women) establish or expand an additional income-generating activity to strengthen their resilience.
- Natural resource management improved and focusing on climate resilience:
  - The construction of 275 water-harvesting structures and the restoration of 1,150 hectares of abandoned terraces improve access to water, helping to reduce the time spent on collecting water from 4 hours to 1 hour a day.
  - At least 244 kilometres of rural roads are 'climate-proofed'.
  - 1,220 hectares of agricultural land rehabilitated to resume production.
- Improved, climate-resilient agricultural practices and technologies adopted:
  - At least 70 per cent of smallholders in each target community adopt more resilient agricultural practices or technologies by programme end.
  - CAPs in each of the 550 village units integrate climate adaptation priorities.

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ASAP Donors and Partners

IFAD's Adaptation for Smallholder Agriculture Programme (ASAP) is a multi-donor programme that helps smallholder farmers cope with the impacts of climate change so they can increase their resilience.

As of 1st of February 2015, the total commitments from 8 donor countries (Belgium, Canada, Finland, France, Netherlands, Norway, Sweden, Switzerland, and United Kingdom) amounts to $US359 900 780.

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