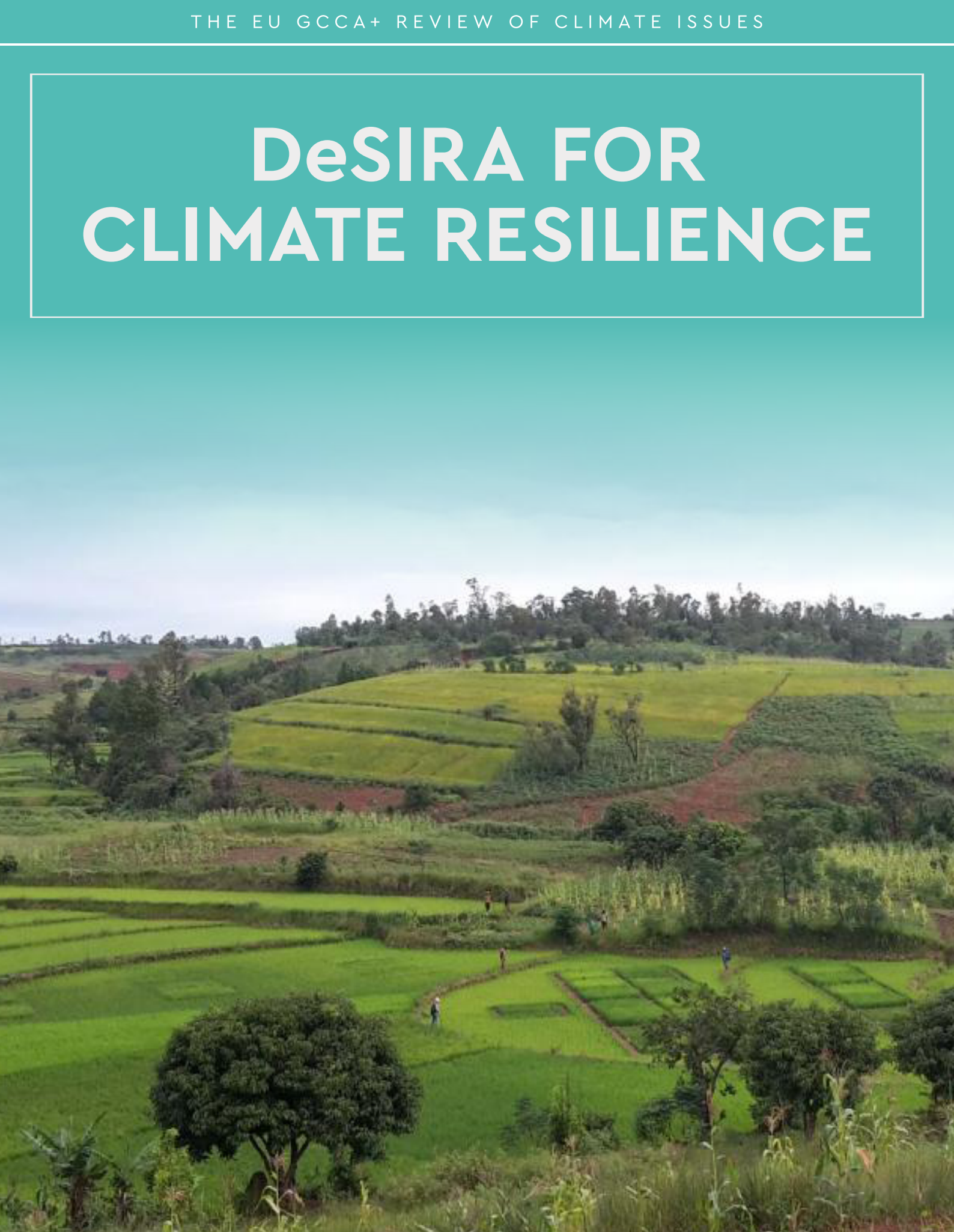
DeSIRA FOR CLIMATE RESILIENCE



GCCA+ THE GLOBAL CLIMATE CHANGE ALLIANCE PLUS INITIATIVE
Funded by the European Union
DeSIRA PARTNERSHIPS FOR INNOVATION

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Editor: Francesca Predazzi

When research and policymaking meet agri-food

Helena Posthumus
DeSIRA LIFT

The DeSIRA projects presented in this issue of EU GCCA+ Review of Climate Issues provide some inspiring examples. Contributing to positive transformative change is not easy, but we cannot afford to stop trying.

"Transformation requires innovative thinking, bold choices, and new social contracts."

"Researchers can help to understand what works how, when and for whom."

Over the past three years, it has become ever more apparent that our agri-food systems are fragile. Long-term trends such as climate change, biodiversity loss and the globalisation of production methods and diets have eroded the resilience of agri-food systems, making them vulnerable to sudden shocks such as pandemics and local or international conflicts that cause major disruptions to supply chains. This has caused a sharp increase in the number of people who suffer from food insecurity, particularly in Africa.

Global (and local) crises caused by climate change, biodiversity loss, conflict and pandemics are interrelated, and largely self-inflicted though human activity. The need for change is self-evident; realising the Sustainable Development Goals is a goal shared by many. It is now well recognised that agri-food systems are affecting as well as being affected by many of these crises and should therefore be part of the change.

Many plead for a transformation of agri-food systems, which would foster resilience and diversity. Yet, what needs to change, or whom, when and how is heavily contested. This is to be expected when pushing for disruptive, rather than incremental, change. Transformation requires innovative thinking, bold choices and new social contracts based on a shared understanding of what is collectively valued and prioritised. What then is the role of researchers and policymakers? Where can they join hands to move towards bold decisions and actions without losing sight of evidence and tested options?

Agri-food systems are complex systems where innovation and change typically emerge from disruptive events – think of innovations such as mobile phones, or external shocks such as natural disasters – along with new interactions between stakeholders or paradigm shifts in collective thinking and consumer behaviour. In such complex systems, researchers provide evidence on hypotheses (testing under what conditions different options are most suitable), search for new solutions, analyse trends, and identify trade-offs and synergies between different scenarios. Researchers can help to understand what works how, when and for whom. Policymakers, on the other hand, define direction and set targets for future goals (for example: the European Green Deal, the Comprehensive Africa Agriculture Development Programme), and can influence the rules of the game,

"DeSIRA brings different actors together to co-create new technological and social innovations to solve shared problems."

or manage societal risks through public investments and service provision.

DeSIRA tries to bridge these two worlds. The main entry point is through strengthening so-called Agricultural Innovation Systems, which bring different actors together to co-create new technological and social innovations to solve shared problems and develop an enabling environment to foster such innovations. At the local level, research and innovation projects look for context-specific and socially and environmentally sustainable solutions. In doing so, they also strengthen multi-stakeholder partnerships and influence the enabling environment to achieve better results. At the international level, efforts are being made to strengthen the science-policy interface and governance architecture for Agricultural Research for Development.

DeSIRA-LIFT fosters DeSIRA's impact by embedding reflective learning and knowledge exchange in these efforts, for example by hosting a Community of Practice to facilitate joint learning across projects. In parallel, it feeds evidence into policy dialogues and programming.

The DeSIRA initiative

Pillar 1 – Research and innovation in agricultural and food systems

70+ research and innovation projects are implemented in the Global South by international consortia

Projects are funded in specific fields such as agro-ecological intensification, agroforestry, livestock and pastoralism, natural resource management, etc. DeSIRA projects include a combination of fundamental research, participatory research and action research based on a plausible theory of change. DeSIRA's key feature is the development of a multi-stakeholder approach underpins the combining of scientific and local knowledge and the co-designing of solutions with local actors, which supports innovation at scale. The support always includes capacity strengthening activities.

Pillar 2 – Research infrastructure conducive to Innovation

Organisations in charge of the governance of agricultural research for development at the regional, continental and global levels are being supported

Specific actions to support the global, regional and sub-regional institutional architecture of agricultural research for development through funding to Comprehensive Africa Agriculture Development Programme (CAADP) organisations, the Tropical Agriculture Platform (TAP) and the Global Forum on Agricultural Research (GFAR).

Pillar 3 – Knowledge and evidence to feed policy design

Expertise is mobilised to provide strategic thinking and actions regarding innovation\ and to help draw lessons for better research and innovation policies

Activities aim to increase scientific and local knowledge and evidence as part of the input to public development policies, to mobilise resources and to support investment decisions.

DeSIRA-LIFT

Leveraging the DeSIRA Initiative for agri-food systems transformation (DeSIRA-LIFT) is a service facility supporting DeSIRA Initiative's implementers under three service areas, which are aligned with the DeSIRA pillars:

1. Support to country-based DeSIRA projects to enhance their impacts by promoting Agricultural Innovation Systems thinking and the use of developmental evaluation approaches.
2. Support to African apex organisations for research on agricultural development (ASARECA, CCARDESA, CORAF and FARA), extension (AFAAS) and higher education (RUFORUM), and add value to global initiatives such as TAP and GFAR.
3. Support to the European Commission's Directorate-General for International Partnerships by feeding knowledge into policy dialogues and programming on agri-food systems in the Global South.

Climate forward

Putting more science into development

"DeSIRA projects address mitigation by improving soil carbon sequestration and adaptation with more resilient farming systems."

The DeSIRA initiative was launched in 2017 at the One Planet Summit with the objective of contributing to a climate-relevant, productive and sustainable transformation of agriculture and food systems in low- and middle-income countries. DeSIRA aims to contribute more scientific evidence to back development initiatives as the solutions to achieve the Sustainable Development Goals are knowledge-intensive and context-specific. Agroecological approaches address the mitigation aspect of climate change by improving soil carbon sequestration and the adaptation aspect through developing more resilient farming systems.

DeSIRA supports research and innovation projects in Africa, Asia, Latin America by strengthening research capacities and research governance involving key actors at national, regional, continental and global levels. DeSIRA launched its first activities in mid-2019. Dialogue with EU Member States and with EU Delegations and building on calls for expressions of interest are key features of DeSIRA's operational approach to research and innovation for development. DeSIRA's research and innovation projects are co-designed and implemented through partnerships between national, European and international research organisations.

DeSIRA is in line with the EU's Green Deal and the international dimension of the EU's Farm to Fork Strategy. It contributes to the EU-AU High Level Policy Dialogue (HLPD) on Food and Nutrition Security and Sustainable Agriculture.

The Commission's Directorate-General for International Partnerships (INTPA) committed EUR 235 million in 2018 and 2019 to 47 projects, of which six aim to strengthen the capacities of regional research organisations in Africa or at the global level (Tropical Agriculture Platform/ FAO, Global Forum on Agriculture Research and Innovation).

In 2020 DeSIRA and EU GCCA+ joined approaches and resources leading to a portfolio of about EUR 100 million in support to 23 projects with 17 of specific interest to EU GCCA+. Additional co-funding from Member States contributed an additional EUR 62 million.

DeSIRA's future activities will take place in Africa. On one hand INTPA will support Regional Centres of Excellence in agroecology to strengthen African research capacities enabling them to support innovation in this field. On the other hand, interventions through DeSIRA+ will provide research support to innovation at scale in agroecology (agrobiodiversity, bio-solutions, digital, innovation support services, access to markets, etc.) with multi-stakeholder approaches driven by non-research actors.

The EU pledge of EUR 270 million made during the One Planet Summit in 2017 will be achieved and even surpassed!

"The EU pledge of EUR 270 million made during the One Planet Summit in 2017 will be achieved and even surpassed."

Guy Faure

Case study

Wild coffee from Ethiopian rain forests

Country:	Ethiopia
Global Climate Risk Index (CRI):	51–100
EU GCCA+ Project:	*Supporting sustainable coffee production and the conservation of forest ecosystems through climate-relevant and integrated landscape management of the Yayu Coffee Forest Biosphere Reserve.*

"Forestry and other forest-related economic activities could create new livelihood options and income diversification opportunities, in particular for women and indigenous people."

"Non-timber products such as coffee, honey, gum, incense and spices are examples of economic diversification"

Ethiopia is the only country that currently has wild *Coffea arabica* growing in mountain rain forests. This species is very vulnerable to the impacts of climate change, deforestation and forest degradation due to agricultural activities. The EU GCCA+ project "Supporting sustainable coffee production and conservation of forest ecosystems through climate-relevant and integrated landscape management of the Yayu Coffee Forest Biosphere Reserve", which started in 2021, aims to increase environmental resilience and food security.

Forestry and other forest-related economic activities could create new livelihood options and income diversification opportunities, in particular for women and indigenous people, while helping communities adapt to the impacts of climate change. Non-timber products such as coffee, honey, gum, incense and spices are examples of economic diversification. The project aims to create sustainable business models for local people's livelihoods, while addressing forest degradation and biodiversity loss, which support climate change adaptation.

Ethiopia is one of the richest countries in terms of biodiversity. A large part of the country covers a major proportion of the two major biodiversity areas: the Eastern Afromontane and the Horn of Africa hotspots. Over 6 000 species of higher plants are estimated to be growing in the hotspots, of which 10 % are endemic. Ethiopia is also the centre of several cultivated crops including *Coffea arabica*. It is the only country that currently hosts populations of wild *Coffea arabica*. Coffee dominates Ethiopia's exported products, accounting for 29.5 % of the country's income from exports.

However, the country's rich biodiversity is threatened due to deforestation and forest degradation. Large-scale agricultural investments, including those made in coffee and tea plantations, irrigated farming, cotton, sugarcane and oil crop production have caused an expansion of agricultural areas, leading to deforestation.

An increasing livestock population combined with overgrazing in forest areas is another driver of forest degradation (especially the degradation of woodland vegetation and a reduced regeneration of forest ecosystems). Therefore, land degradation and deforestation constitute a significant share of greenhouse gas emissions in Ethiopia. All these impacts are coupled with climate change impacts, which are dominated by droughts, floods, seasonal shifts, extreme weather conditions – leading to increased pesticide use and diseases.

In the efforts to adapt to climate change, forest resources are of critical value by mitigating impacts such as water depletion, soil nutrient reduction and flooding. Therefore, protecting and re-establishing the forest ecosystem are critical for climate change adaptation in Ethiopia. Restoring indigenous agroforestry practices, such as home gardening or coffee agroforestry, can be climate change adaptation mechanisms that contribute to carbon sequestration and the mitigation of greenhouse gas (GHG) emissions. By increasing local capacities, promoting policy advocacy and developing sustainable business models for the local inhabitants, the project embraces and engages all local stakeholder groups. It brings them together with some key actors and partners such as Population Health Environment Ethiopia, the Ethiopian Coffee and Tea Authority, the Environment and Coffee Forest Forum and the Hanns R. Neumann Foundation.

Gamze Celikyilmaz

Story

Trees, cows, and bees: a sustainable future for farming and forests in Mongolia

"I believe that the protection of forests and nature is the responsibility of all people and communities."

"The three-year, EU GCCA+/STREAM programme aims to help farmers and herders thrive in the face of climate change."

Urantsetseg Tsend is a busy woman, but as she rushes between milking her cows, checking her beehives and tending her tree nursery she takes time to explain her passion for farming and nature in this remote region of forests, grasslands and mountains in northern Mongolia.

'My biggest goal is to hand down our forest to future generations,' she says. 'I believe that the protection of forests and nature is the responsibility of all people and communities.'

It is a philosophy Urantsetseg shares with her fellow herders and farmers in Binder, a 'soum' (county) more than 400 km from the capital Ulaanbaatar. In addition to looking after her farm, her husband, her children and grandchildren, she somehow finds time to lead the local Delger-Onon forest user group (FUG). The FUG has a large nursery for coniferous and broad-leaved trees, and harvests nearly two tonnes of pine cones every year.

'I've been leader of the FUG for five years. We have 49 active members from 24 households, but it's not always easy organising the members and getting them to participate. As leader, I organise activities and encourage members to take part,' explains Urantsetseg. 'During the spring and autumn droughts, community members conduct daily fire patrols and carry out forest thinning activities over a 15-hectare area. We also keep an eye out for illegal logging. We've worked hard to achieve our goals.'

Since 2021, FUG has been working with the DeSIRA project "Sustainable Resilient Ecosystem and Agriculture Management in Mongolia" (STREAM), which supports local communities with sustainable landscape management and food security. The three-year, EU GCCA+/STREAM programme with EUR 4 550 000 in funding – jointly implemented by the German development agency GIZ and UNFAO – aims to help farmers and herders thrive in the face of climate change.

The UN estimates that around 90 % of Mongolian grassland is vulnerable to desertification, and that three-quarters of pasture land is already degraded. So far, Binder soum has escaped the worst of the impacts. 'As a herder, I haven't noticed any significant desertification,' says Urantsetseg. Forest-friendly activities such as beekeeping are a priority.

'Forestry and beekeeping are inextricably linked,' she explains. 'We put the hives near flowering plants on the edge of the forest because bees play an important role in pollination to increase biodiversity. Of course, FUG members know the importance of not grazing livestock in areas where natural regeneration is taking place.'

Mongolian herders face tough conditions. Average winter temperatures in Binder regularly plunge to 25 °C, and climate change has led to unpredictable rainfall patterns, droughts and extreme weather. For a community so reliant on farming, the outlook is uncertain.

'Livestock farming is the main source of income for local people. All the members of our FUG are engaged in animal husbandry. We produce 20–30 different local dairy products such as yoghurt, curd butter, sour cream, various creams and dry curds which we sell to increase our household income.'

As Urantsetseg returns to her never-ending round of tasks, she reflects on what climate change might mean for the future. 'I do believe that livestock farming, sustainable forestry and beekeeping will be passed down from our generation to next. I just hope we can avoid disasters emerging from natural hazards.'

Martin Atkin

Story

Could tech and tradition save the farmers of the "Dry Corridor"?

"The AgroInnova project aims to help farmers become more resilient to the devastating impacts of climate change."

Covering six countries and stretching for more than 1600 kilometres, the Central American "Dry Corridor" is one of the world's harshest climate hotspots. The area is home to around 11 million people. Nearly a decade of drought has fuelled not only poverty and hunger but is one of the main drivers of migration northwards to the United States. The World Bank predicts up to four million climate refugees will flee the area by 2050.

Now, an initiative by the EU's DeSIRA programme is bringing hope to more than 3000 small-scale farmers and their families across Panama, Costa Rica, Guatemala, Honduras, El Salvador and Nicaragua. DeSIRA – which stands for "Development Smart Innovation through Research in Agriculture" – has put EUR 6 million into the AgroInnova project which aims to help farmers become more resilient to the devastating impacts of climate change.

The two-year project combines agroforestry with crop diversification to show farmers that a sustainable, more productive future is possible. But this is no theoretical exercise – demonstration plots have been established in all six countries so farmers can see for themselves how to grow drought-resistant varieties. At the same time, nurseries are providing seedlings for future tree planting.

'Agroforestry systems combine trees and crops,' explains Cecilia Guerra, a postgraduate student working for the Costa Rica-based Tropical Agricultural Research and Higher Education Center (CATIE), one of two partners helping to implement the project. 'Today these systems represent a real option for the dry corridor. It's an innovative solution – in the short term we are growing alternative crops to feed ourselves, and in the long term we have the timber. The trees we grow in the nursery act as a kind of money in the bank for the future.'

Guillermo Destlefsen, an agroforestry systems specialist with CATIE said: 'We opened food banks to support the most vulnerable people in need. The food banks are supplied with fresh produce from the demonstration plots. We just adapted the plots to provide the food that was needed.'

AgroInnova's other implementation partner, the Inter-American Institute for Cooperation on Agriculture (IICA), developed an app designed to provide up-to-date information on biosafety measures, protect the health of workers in the farming and food supply chain, and ensure food supplies are kept running.

With the AgroInnova project scheduled to end in 2023, results are already looking promising.

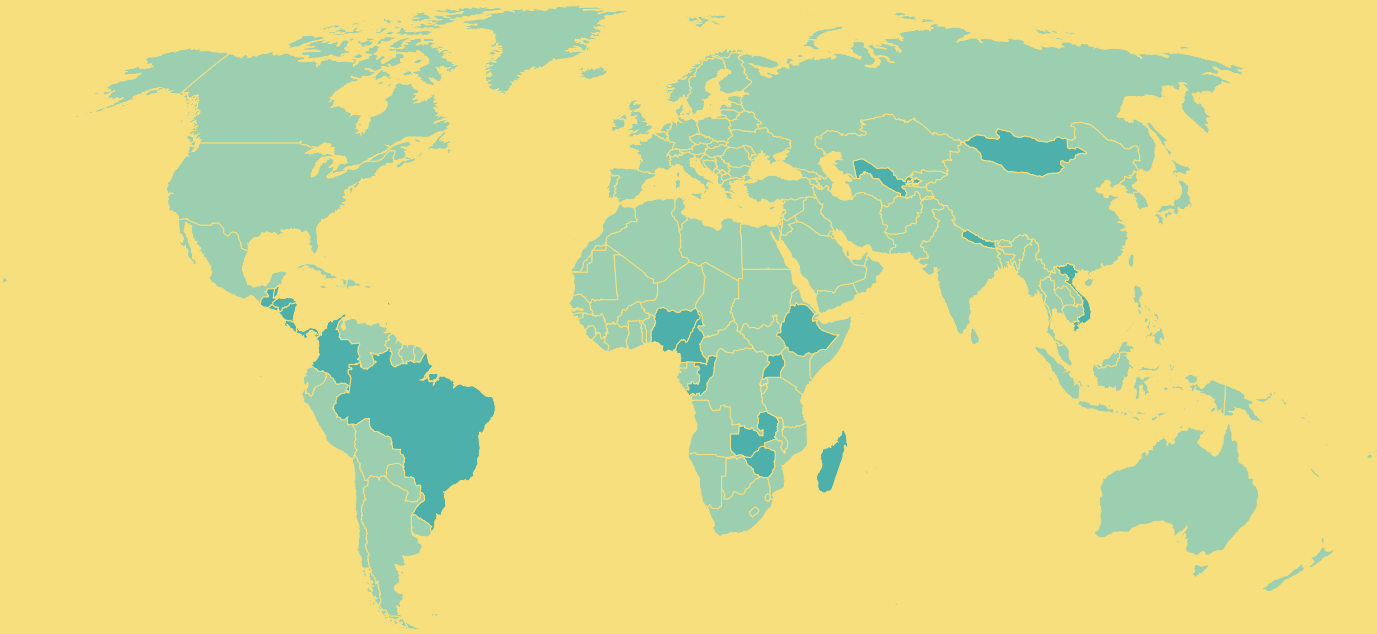
Despite the challenges, AgroInnova has demonstrated the value of innovative tech combined with traditional local know-how. As IICA Director General Manuel Otero points out: 'Without science and technology, it would be very difficult for agriculture to meet the productive, environmental and social challenges it faces. Farming produces food for the world's population, and it requires all the support it can get to incorporate technological advances.'

"Without science and technology, it would be very difficult for agriculture to meet the challenges it faces."

Martin Atkin

THE EU GCCA+ BAROMETER

EU GCCA+ AND DeSIRA



MADAGASCAR, COLOMBIA, NIGERIA, VIETNAM, CENTRAL AMERICA (BELIZE, GUATEMALA, HONDURAS, NICARAGUA, PANAMA, COSTA RICA AND EL SALVADOR), CAMEROON, MONGOLIA, BRAZIL, ETHIOPIA, UZBEKISTAN, COSTA RICA, DR CONGO, NEPAL, UGANDA, ZAMBIA, ZIMBABWE

EU GCCA+ AND DeSIRA

In 2020, DeSIRA and EU GCCA+ joined approaches and resources leading to a portfolio of about EUR 100 million in support of 23 projects with 17 of specific interest to EU GCCA+. Additional co-funding from Member States amounts to EUR 62 million.

Country	Project	Timing
MADAGASCAR	DINAAMICC – Démarches INtégrées et Accompagnement pour une Agriculture familiale à Madagascar Innovante et résiliente aux Changements Climatique	2022-2026
COLOMBIA	ABRIGUE – Strengthening territorial capacities to foster innovations in agroecology, artisanal fishing and circular bioeconomies for climate change adaptation and mitigation in Colombia's coastal zones and forest frontiers	2021-2024
NIGERIA	InACC Nigeria – Integrated Approach to Climate Change in Rice Production	2021-2024
VIETNAM	STAR FARM Vietnam – Smart Agro-ecological Transformation of Farming Systems towards Resilience and Sustainability in Middle and Coastal Zones of the Viet Nam Mekong Delta	2022-2026
CENTRAL AMERICA (BELIZE, GUATEMALA, HONDURAS, NICARAGUA, PANAMA, COSTA RICA, AND EL SALVADOR)	5GF – Five Great Forests of Mesoamerica, a regional initiative for climate, biodiversity, and people	2021-2025
CAMEROON	ReSINoC Cameroon	2020-2024
MONGOLIA	STEAM Mongolia – SusTainable Resilient Ecosystem and Agriculture Management in Mongolia	2021-2024
BRAZIL	Sustenta e Inova – Sustainable and innovative agriculture and value chains in the Brazilian Amazon (Brazil)	2021-2025
ETHIOPIA	Yayu Coffee Forest Ethiopia – Supporting sustainable coffee production and conservation of forest ecosystem through climate-relevant and integrated landscape management of the Yayu Coffee Forest Biosphere Reserve	2021-2025
ETHIOPIA	Women, Coffee and Climate: Women empowerment for socio-ecological resilience of coffee value chain against climate change in Ethiopia	2021-2024
UZBEKISTAN	UAKIS Uzbekistan – Supporting an inclusive transition to "green" economy in the Agrifood sector and a "climate-smart" Uzbek Agriculture Knowledge and Innovation System – fostering investments for climate change adaptation and mitigation	2021-2025
COSTA RICA	Climate smart Costa Rica – Climate intelligent agriculture and value chains	2021-2025
DR CONGO	Sankuru Agroforest – Neutralité Climatique, Conservation et Economie Verte à partir d'une filière Hévéa inclusive dans les territoires de Lomela, Kole et Lodja (province du Sankuru, RDC Congo)	2022-2026
NEPAL	GRAPE – Green Resilient Agricultural Productive Ecosystems in Sudurpashchim province and Karnali province, Nepal	2021-2024
UGANDA	ROBUST – Robusta coffee agroforestry to adapt and mitigate climate change in Uganda	2021-2024
ZAMBIA	Z4ABC – Zambia for Agroforestry, Biodiversity and Climate	2021-2025
ZIMBABWE	RAIZ – Resilience Building through Agroecological Intensification in Zimbabwe	2020-2023

The best of Practice

Strengthening the research and development nexus

The DeSIRA initiative is combining several research approaches to strengthen the nexus between research and development: participatory research, action research and farmers' research. The following examples from five ongoing projects, based on their 2022 annual reports, provide insights on how research can serve concrete action to foster innovation in forestry, agriculture and food systems. Such complex and integrated multi-actor actions require a solid preparation and harmonisation of the approach taken between implementing partners.

- The Five Great Forests project (Los 5 Grandes Bosques de Mesoamérica) was born from a co-creation by more than 44 partners at the Mesoamerican level in the first year, including research actors in the region. One of the outcomes of this partnership is the facilitated use of innovative tools such as SMART, a spatial monitoring and reporting tool used to monitor illegal activities in the Mesoamerica's last five great intact forests and to protect its biodiversity. For example, in Belize during the first year of implementation, a total of 143 patrols were conducted using the SMART technology.
- In Mongolia, the STREAM project (SusTainable Resilient Ecosystem and Agriculture Management in Mongolia) benefitted from Mendel University's support (Brno, Czech Republic) for the selection of sustainable forest management demonstration sites to promote sustainable resilient ecosystem and agriculture management.
- In Nepal, the GRAPE (Green Resilient Agricultural Productive Ecosystems) project is conducting research in an action-oriented manner at field level and in close collaboration with farmers and local agricultural universities. For example, three NGOs active in the agricultural sector have been supported to roll out selected proven measures such as drip irrigation, Jhol Mal (a homemade bio-fertiliser and bio-pesticide), mulching and intercropping. The project aims to allow up to 4050 households to make gains from climate-smart agricultural value chains.
- The ABRIGUE project in Colombia aims at strengthening territorial capacities to foster innovations in agroecology, artisanal fishing and circular bioeconomies for climate change adaptation and mitigation in Colombia's coastal zones and forest frontiers.
- Sustenta e Inova in Brazil supports sustainable and innovative agriculture and value chains in the Brazilian Amazon. One of the main challenges reported in the first months of implementation is to make this complex partnership operational and ensure the harmonisation of interventions at local, territorial, and national levels.

"Research can serve concrete action to foster innovation in forestry, agriculture and food systems"

"The DeSIRA initiative combines several research approaches: participatory research, action research and farmers research."

Chloé Lermuzeaux

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The **Global Climate Change Alliance Plus (EU GCCA+)** is a flagship initiative of the European Union helping the most vulnerable countries respond to climate change. It started in 2007 and has become a major climate initiative in over 100 countires in Africa, Asia, the Caribbean and Pacific regions.

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