



Australian Government
Australian Centre for
International Agricultural Research

ACIAR CLIMATE CHANGE PROGRAM



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The Climate Change Program progresses the science and practice of how to transform food systems and livelihoods.

For 40 years ACIAR has brokered partnerships between researchers from Australia and the developing world to facilitate more effective, efficient, and resilient food systems. This work has been achieved across the breadth of the ACIAR research program portfolio. With the establishment of a dedicated Climate Change Program, ACIAR is expanding the scope of its work on climate change. This shift reflects the mounting imperative to accelerate action on food security, adapt to increasingly severe climate impacts and reduce the associated greenhouse gas emissions from food production.

The Climate Change Program supports countries' efforts to accelerate climate response in food systems. While the global effort to respond to climate

change has already been substantial, much of it has been focused on incremental change to build the resilience of existing food and livelihood systems. These are important steps, but it is becoming increasingly clear that in many areas, they will not be enough, and existing systems of producing food and sustaining livelihoods will need to transform to avoid crisis.

The Climate Change Program is positioned to facilitate such transformation. It aligns world-class Australian agriculture and climate adaptation researchers with partner organisations to create locally-led interventions that profoundly change the way food systems function. These partnerships build capacity in our partner countries, providing resilience to handle risks and opportunities.

Improving water use for dry season agriculture by marginal and tenant farmers in the Eastern Gangetic Plains.
Photo: ACIAR project LWR/2012/079



SYSTEMS TRANSFORMATION

Systems transformation is increasingly a focus for global organisations concerned with sustainable development. It has been defined as a profound change in the way elements of a system interact with each other, resulting in a significant shift in food systems and how livelihoods are sustained. Systems transformation thus includes both the process of system reorganisation as well as the intended end goal. Australia has built research capability in techniques for guiding the process of transformative adaptation. Many of the same techniques have the potential to help unlock more significant mitigation. The Climate Change Program represents a significant opportunity to build on this leading edge of applied research, strengthen its application in international agricultural development and extend it into mitigation.

Supporting ambition

Developing countries increasingly want support to take more ambitious action on both adaptation and mitigation as the scale and nature of the impacts are becoming clearer. They are often the first to experience the more severe impacts of climate change and thus have a direct appreciation of the need to mitigate as well as the urgent need for adaptation. Researchers have been aware for a long time that when impacts are large, systems transformation may be required.

Cross-sectoral and societal change

End goals of systems transformation are often characterised by cross-sectoral changes—things like blending forestry and agriculture, shifting from crops to fish or combined systems like aquaponics, and creating new mechanisms for carbon markets. The transformative processes to reach those end goals are characterised by shifts in governance, decision-making and social networks. These processes must precede the more technical on-ground changes, as it requires many different actors to take actions that work in concert to collectively change a system. The Climate Change Program seeks to advance best practice in systems transformation, by increasing the focus on the enabling social and institutional changes. Innovative technological interventions can provide the context, but at its core, systems transformation is a process of social change.

3 pillars

The Program concentrates on advancing research, partnerships and action under three pillars that support transformation:

- » co-governance of transformation pathways
- » adaptive learning
- » institutional mechanisms for co-benefits

Pillar 1

Co-governance of transformation pathways

Systems transformation requires participatory approaches. For effective participation to take place, social and systems scientists create an environment where governments, communities and businesses work together.

In working together, actors look ahead toward goals but also assess climate risks, develop ideas, evaluate options, and design a transformation agenda that is aligned with local values and aspirations.

Adaptation pathways

Adaptation pathways are currently the most promising of participatory approaches to take action on both current and future climate risks. Adaptation pathways take complex concepts like systems change and collaborative governance and turn them into real actions. Pathways help many actors in the food system—producers, businesses and governments—to design and execute coordinated actions that structure change over time. Adaptation pathways come in a wide variety of forms, and can be tailored to community-led, government-led, and private sector-led circumstances.

Transformation pathways

In the Climate Change Program the principles of adaptation pathways are used to design 'transformation pathways'. Transformation pathways create an environment where wide-ranging stakeholders can shift out of path dependencies and negotiate the complexities of systems transformation.



CASE STUDY

Transformation pathways for Pacific coastal food systems

CLIM/2020/178

The impacts of climate change and population growth are projected to lead to the collapse of coastal livelihoods currently dependent on coral reef-based fish and nearshore fish throughout Pacific island countries. Novel food production systems based on circular economy principles are possible but need to be progressed in ways that are owned by local communities. This project is working with communities in the Solomon Islands and Kiribati to build their capacity to envision and guide their own transformation pathways, including to identify and seize on key leverage points for change. The project also works with government and civil society groups to sustain and scale out the collaborative planning processes needed to create pathways toward new climate-adapted food and livelihood systems.

Pillar 2

Adaptive learning

Uncertain futures

The Climate Change Program equips people for uncertain futures. While many aspects of climate change are well-known, the detailed impacts are impossible to fully predict. In part this is because the pace and degree of global mitigation efforts are not certain. This uncertainty has wide-ranging implications for agricultural systems which are impacted by climate factors. Long-term variation of precipitation and temperature shift biological processes, stressing agricultural systems. Uncertainty about future climate makes it difficult to predict when current food and livelihood systems may fail.

Managing uncertainty

To enable action despite this uncertainty, the Program supports farmers, businesses and governments to complement transformation pathways with more agile, locally-led adaptive monitoring and learning systems. These systems are a foundation for resilience—the capacity to change—as they support timely adjustments to plans and give advance warning of when changes need to be initiated to avoid crisis. This pillar of the Program ensures that effective actions can be taken now with confidence that as the future unfolds, approaches will be in place to help keep up with the pace of change.

CASE STUDY

Locally-led learning to turn polders into flexible assets for adaptation

CLIM/2021/137

Climate adaptation requires ongoing learning, adjustment and change as climate conditions change. Polders in southwest Bangladesh have the potential to be a tool in this process of ongoing learning and adaptation. They can be managed in a variety of ways to support the different types of agricultural production that may become more or less suitable over time. In this project ACIAR is co-developing targeted processes for local communities to monitor changing conditions, learn when shifts in production may be required, and collectively adapt the management of polders accordingly. Government and non-government water managers and extension providers are key collaborators to support multi-level governance and to scope options to scale locally-led adaptive learning across the polder communities.



Pillar 3

Institutional mechanisms for co-benefits

The Climate Change Program creates institutional mechanisms which promote co-benefits for actors within a food system.

These mechanisms support actions which simultaneously create livelihood, adaptation and mitigation benefits, sometimes referred to as 'climate-resilient development'. Both policies and market mechanisms have been proven to promote effective incremental climate adaptation and mitigation responses in the agricultural sector. Yet they often lack efficacy in creating co-benefits because synergies amongst various organisations and their individual goals are not realised.

The focus of many policies and market mechanisms on a single primary goal can cause missed opportunities to optimise co-benefits, but often arises because different organisations have responsibility for different goals. If a market mechanism is not developed collaboratively across organisations within a system, it can create externalities that impact other sectors. The Program provides support for policies and market mechanisms to achieve balanced co-benefits for food systems, thereby accelerating climate response.

CASE STUDY

Supporting greenhouse gas inventories for targeted mitigation options

CLIM/2020/211



Photo: Connor Ashleigh. ACIAR project CLIM/2020/211

As part of the United Nations Framework Convention on Climate Change, countries are expected to maintain national inventories of their greenhouse gas emissions. Countries then make commitments to reduce emissions and track their progress. ACIAR is supporting Fiji and Vietnam to strengthen their agricultural inventories, but with a focus on co-benefits.

Researchers have worked collaboratively with government partners to identify actions which are most likely to have adaptation and livelihood co-benefits.

Inventory improvement then focuses specifically on these areas of likely co-benefit. This work takes existing institutional mechanisms designed for the single goal of mitigation and modifies the approach to underpin actions that deliver co-benefits.

PARTNERSHIPS

The Climate Change Program invests with partners who have the need for systems transformation.

A focus on systems transformation means that projects need to be place-based, targeting food and livelihood systems in a specific geographic part of the world or a specific value chain. The Program invests in collaborative partnerships focused on cross-disciplinary cooperation and where we can align investments with the work of others to maximise the depth of impact.

The Program seeks to invest in future partnerships across the geographic priorities of ACIAR where:

1. Climate and other impacts are high

Combined impacts are likely to lead to collapse of current food and livelihood systems

2. Partners are interested in systems change

There is government interest in more ambitious action and awareness of the need for different approaches to achieve that

3. Opportunities exist

There are novel opportunities for new food systems and new actions to achieve significant co-benefits

4. A bigger effort is possible

There are other like-minded investors ready to achieve more together

5. Research skills are complementary

Australian expertise is complementary to the expertise in our partner countries and organisations, with strengths in systems science and participatory research

Our
partners



The Program builds on existing relationships and initiatives, including:

- » Multilateral research partnerships through Australia's investment in the [CGIAR](#), and their new strategic focus on systems transformation
- » The ACIAR co-investment partnership with the [International Development Research Centre](#)
- » The [Adaptation Research Alliance](#)
- » [World Resources Institute Food Systems at Risk: Transformative Adaptation for Long-term Food Security](#)
- » [Agricultural Innovation Mission for Climate](#)
- » The [Global Research Alliance](#) on Agricultural Greenhouse Gases (GRA), an international initiative to coordinate research to grow more food without growing GHG emissions

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PC/2008/044, Pacific Agribusiness Research for
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