Pakistan

A$3.6 million
Budgeted funding

13
Bilateral and regional research projects

Australia has a 70-year development assistance relationship with Pakistan. Our longstanding cooperation has contributed to building Pakistan's long-term economic prosperity, stability and resilience, and investing in people, especially women and girls. Future areas of assistance will focus on consolidating our shared achievements and centre on a small number of areas where Australia can make the most difference in Pakistan. Generating economic growth is the centrepiece of the Pakistan Vision 2025 statement but economic growth continues to be constrained by energy and infrastructure deficits, skills shortages, regional instability and other barriers to trade. In rural areas, Australia works to help Pakistan increase livelihood opportunities for poor men and women by enhancing agricultural productivity and expanding revenue streams for farmers, including through improved water management practices, adding value to raw agricultural products and improved access to markets for those products. Australia's involvement will also contribute to improving Pakistan's food security and nutrition levels, and women's economic empowerment.

An overview of Australia's relationship with Pakistan is available on the DFAT website.

Despite its contribution to GDP halving over the last decades, agriculture is still 18% of Pakistan's GDP and remains key to economic stability. With two-thirds of the population living in rural areas, the agriculture sector engages around 67% women while overall employment is 38% of the national labour force. The sector constitutes 53% of total exports of the country.

Food insecurity remains a major driver of public policy in Pakistan, with over 23% of households suffering from moderate to severe food insecurity. Four out of 10 children under five years of age are stunted, which impacts their cognitive ability. The impacts of malnutrition including on labour, productivity and healthcare expenses were estimated to cost Pakistan US$7.6 billion, or 3% of GDP, every year. Women's empowerment is recognised as crucial for improving nutrition outcomes. Women are often the primary caregivers and can influence children's nutrition directly through child-care practices and indirectly by improving the family nutrition status.

Increasing the focus of all action on gendered approaches to livelihood improvement has been a priority for the Government of Pakistan, emphasising its commitment to the United Nations' Sustainable Development Goal 5 (Achieve gender equality and empower all women and girls). The Government has pledged to increase women's participation in decision-making and will focus on opportunities to enhance development, adoption and growth of best-practice technologies; and support for trialling small-and-medium enterprise development and village community centres for the mobilisation and innovation of rural communities. This will provide an enabling environment and equal opportunities to women for development of their full potential.

The demand for and pressure on surface and groundwater resources is a major and complex problem for Pakistan, requiring effective management from farm to national scales. Agricultural intensification and competing demands for urban and industrial uses is exerting pressure on the availability of surface and groundwater water. Added to this are problems of low agricultural productivity and poor irrigation management practices, increasing waterlogging and salinity. Pakistan has a strong research sector addressing these challenges, with a particular focus on low productivity, lack of diversification in cropping, low adoption of efficient management practices, inefficient use and increased demand for water and, above all, climate change.

The Government of Pakistan aims to boost the agriculture sector by encouraging international investment. There has been significant investment from Saudi Arabia and Malaysia, in addition to China. The first phase of the China–Pakistan Economic Corridor covering infrastructure, energy capacity and economic growth in Pakistan has ended. It entered a second phase where agriculture has been main driver. Phase 2 is focusing on technology transfer, skill development and agricultural cooperation.

Declining subsidies on agricultural inputs as a condition of the ongoing International Monetary Fund reform program means that the cost of production for farmers is expected to increase in the near future. There has also been a significant reduction (60%) in government investment in agriculture in the post-devolution period (since 2010). Recognising the impact of reduced investment on the performance of the agriculture sector, the current government announced an Agriculture Emergency Program with a focus on agricultural production, water conservation and market-driven policy alignment. The program aims to overcome the stagnant growth and inequity that typifies much of Pakistan's agriculture sector. The policy revolves around three pillars:

- building an innovation-based sustainable agriculture sector
- using public investment to improve the profitability of agriculture
- ensuring food security and freedom from hunger.

Currently, ACIAR investments are well-aligned with this policy, through ongoing policy discussions at the national and provincial levels.

Country priorities

Australia is a key research partner for Pakistan due to its deep expertise in agriculture, livestock production and water management, which is directly relevant to the challenges faced by Pakistan agriculture. ACIAR works closely with the Pakistan Federal Government, provincial departments, NGOs, academia, the Pakistani private sector, DFAT and other donor partners to provide research and development and capacity building. Technical support and carefully targeted research and development interventions, such as those supported by ACIAR, typically underpin larger development programs in Pakistan. Pakistan invests in the research relationship with Australia, with a history of substantial in-kind contributions and aligned projects designed to take research results to scale.

The ACIAR program with Pakistan is based on:

- the recognition that water and food security are critical to Pakistan's long-term stability
- Australia's global expertise in areas that are high priority concerns for Pakistan
- Pakistan's strong network of researchers that can collaborate with Australian researchers on water, food security and rural poverty alleviation
- a platform of a long research collaboration, which is highly valued by both countries.

The ongoing focus of our research collaboration will be water and salinity management and profitable smallholder cropping and livestock systems. This supports the realignment in thinking of the Government of Pakistan towards rural transformation and ensuring food and nutrition security through agriculture. The emphasis is on strengthening the national agriculture research system to support crop diversification (high-value horticulture, pulses), mitigation and adaptation to climate change, and the promotion of livestock, fisheries and small ruminants. Empowering women and focusing on enhancement of farm incomes will cut across all future collaboration.

The dairy sector, including small ruminant development, is a high priority of the Pakistan Government. This is the only sector that can generate daily cash income, serve as a safety net and provide self-employment opportunities for more than 12 million rural families, especially women and youth. Ongoing ACIAR projects are focused on the dairy beef value chain and the small ruminant sector.

Unregulated extraction of underground water is increasing soil salinity in Pakistan, and both national and provincial irrigation agencies have identified this as major threat. ACIAR has recently commissioned a detailed analysis of the current scenario.

Rapid rural transformation has led to a quick decline of poverty in many countries, but success varies between countries, and between regions within countries. The rural transformation of China has been rapid and comes with major benefits and some costs. The Pakistan Government is keen to learn from the Chinese model, facilitated through ACIAR.

During 2020–21, ACIAR plans to engage Chinese research agencies in trilateral collaboration focused on the horticulture sector. Long-term ACIAR support in this sector is now fully integrated with a large horticultural development program in Punjab, with CABI leading both ACIAR-supported research projects and the Punjab development projects. Also in 2020–21, ACIAR and the Pakistan Agriculture Research Council will develop a new partnership arrangement focused on co-investment and joint development of longer-term agricultural research-for-development projects.

2020–21 research program

ACIAR supports 13 projects in Pakistan, eight of which are specific to this country. The remainder are part of regional projects. The projects address our high-level objectives, as outlined in the 10-Year Strategy 2018–2027, as well as specific issues and opportunities identified by ACIAR and partner organisations.

The following sections briefly describe individual ACIAR-supported projects and anticipated outputs in Pakistan. The projects are grouped according to research program. Each project description is referenced in a list at the end of this section, which provides the project title and code.

Agribusiness

The China–Pakistan Economic Corridor will provide Pakistan with preferential access to the world's fastest growing horticulture market. Understanding this market and China's experience in market reform is valuable for increasing growth, employment and productivity in Pakistan's horticultural markets. A project led by Professor Jeffrey LaFrance of Monash University has undertaken a detailed study of horticultural markets in China as part of a broader project to design practical horticulture marketing policy reforms in Pakistan. This will help improve producer and consumer welfare, with attention to gender and poverty dimensions. The study finishes in 2020, and its outputs will support the development of commodity market models and provide an analysis of domestic and export market potential.[1]

The whole-family extension approach is being assessed by researchers as a way to improve on-farm profitability and marketing of dairy products. In the process, practices to improve on-farm efficiency and new value-chain opportunities will also be identified.
Photo: Conor Ashleigh. ACIAR project: LPS/2016/011.

Pulses, mainly chickpeas, lentils and mungbeans, are well suited to smallholder farming by both men and women and important in the agrifood systems of Pakistan. A project, led by Dr Rajendra Adhikari of the University of Tasmania, is developing socially inclusive and competitive value chains for pulses in Punjab and Sindh, with spillover benefits expected for the Khyber Pakhtunkhwa region. The three regions are characterised by gender inequalities within the industry and in society generally. The project will develop production and market knowledge, increase capacity of farmers and stakeholders and support industry development.[2]

Success in rural transformation is not only measured by income growth of the rural population, but also by the degree of inclusiveness in society. A project in China, Bangladesh, Indonesia and Pakistan, led by Dr Chunlai Chen of the Australian National University, endeavours to understand the nature and drivers of rural transformation in order to provide better policy advice to underpin the success of transformation. In 2020–21, the project will select study regions and collect data to understand the components of success.[3]

Crops

Stripe rust (also called yellow rust) is a common and important disease of wheat worldwide. While fungicides can be used for in-crop control, genetic resistance is more economically and environmentally sound. A project, led by Professor Robert Park of the University of Sydney, has established and equipped a collaborative network of key wheat improvement centres across South Asia and eastern Africa. In its final year, it will consolidate the knowledge base to enable ongoing research and development at the centres. The project has identified markers linked to effective resistance genes, which can be used in pre-emptive breeding and the development of rapid diagnostic tests. The project, set to reduce the vulnerability of wheat to stripe rust in South Asia and eastern Africa, also benefits wheat production across the globe, including Australia.[4]

The demand for pulses in Pakistan has been increasing, while production is decreasing. Despite relatively high prices, pulses, especially chickpea and lentils, have been progressively pushed out to the most marginal lands, with labour shortages being a major production constraint. Reintroducing legumes into existing cropping systems would have nutritional, economic and environmental benefits and has been identified as a priority for agriculture development by the Pakistan Government. A project, led by Dr Ata-ur Rehman of Charles Sturt University, is facilitating farmer-led research and demonstrations of improved varieties, agronomic practices and seed production to increase the production and profitability of pulses.[5]

High labour costs and labour shortages at harvest time constrain mungbean production in Bangladesh, Myanmar and Pakistan. A project led by Dr Ramakrishnan Nair aims to establish and validate a practical and economically viable system for smallholders to mechanically harvest mungbean. During 2020–21, final evaluations of combine harvesters adapted for local conditions and farming systems will occur, as well as final research to understand the current role of women in mungbean harvesting and the likely impacts of mechanical harvesting on their livelihoods.[6]

Horticulture

The horticulture sector in Pakistan is significant, both domestically and for export production. Under the Australia–Pakistan Agriculture Sector Linkages Program, significant progress was made on strengthening the value chains for mango and citrus, and exploring the prospects for developing heat-tolerant varieties of vegetables. A project led by Dr Babar Bajwa of CABI is strengthening selected vegetable value chains in Punjab and Sindh provinces, as part of the Agriculture Value Chain Collaborative Research Program. Focusing on potatoes, chillies, tomatoes and onions, the project has identified opportunities for engagement and entrepreneurship, and small-scale production, post-harvest processing and trading. During 2020–21, the project will be testing and developing technical innovations and scaling out improvements to increase the capacity and incomes of farming families, traders and intermediaries.[7]

Livestock Systems

Despite the good genetic potential of dairy livestock in Pakistan, production is very low due to poor nutrition, management and marketing. Additionally, research efforts and livestock extension support services are fragmented. At the same time, demand and prices for beef are rising strongly, presenting new opportunities for smallholder farmers. Traditionally, beef is a by-product of the dairy sector, using male animals and old cows for meat, so there are trade-offs between increasing milk production and growing cattle and buffaloes for meat. A project in its final year, led by Dr David McGill of the University of Melbourne, will determine the effectiveness of the whole-family extension approach to improving on-farm profitability and marketing. Alongside this, practices to improve on-farm efficiency and new value-chain opportunities will be identified.[8]

Previous research found that poor supply (quantity, quality and consistency) of small ruminants from farms into local markets is the major restriction in many value chains. Further, extension and other services for small-ruminant farmers are very limited. A project, led by Dr Rebecca Doyle of the University of Melbourne, focuses on including women in goat (and sheep) production systems and the value chain in the Pakistani provinces of Punjab and Sindh. During 2020–21, the project will deliver strategies for higher and more sustainable production and value-chain engagement to improve the livelihoods and wellbeing of small-ruminant farming families.[9]

There is an urgent need to consolidate existing evidence and identify gaps in global research to demonstrate the scale of reductions in greenhouse gas emissions that occur with more efficient livestock production systems. Using the expertise and capabilities of Australian and New Zealand climate science, Dr Paul (Long) Chen of the University of Melbourne will lead a new project developing methods and models that apply to livestock development projects to quantify real and potential reductions in emissions and determine the opportunities and trade-offs between productivity gain and economic returns. The results will help determine if greenhouse gas offsets can be captured and linked with nationally determined contributions (NDCs) of partner countries, and if there is potential for voluntary carbon-credit trading to diversify smallholders' income.[10]

Water

Irrigation is critical to food security, poverty reduction and economic development in Pakistan, but the country's irrigation is among the least profitable in the world. Australia is well placed to help Pakistan improve its irrigation, drainage and salinity management in major cropping systems. A project, led by Dr Sandra Heaney-Mustafa of the University of Canberra, has increased the irrigation management skills of farmers and identified successful modes of extension. In the final stages of the project, scale-out models and plans will be developed for extension services for ongoing transfer of the tools and technologies beyond the project area.[11]

Groundwater use is extensive in Pakistan. Some areas are completely reliant on groundwater, while others use groundwater in conjunction with surface water. Greater use of groundwater could potentially reduce large areas of waterlogging in the Sindh province. In its final stages, a project led by Dr Michael Mitchell of Charles Sturt University will test economic and hydrogeological models, developed or customised during the project, to manage groundwater quantity and quality. Institutional arrangements will be identified for post-project adoption of tools and options.[12]

Salinisation and sodification of surface soils and waterlogging threaten agricultural production and livelihoods in the southern Indus Basin, resulting in higher rates of poverty for communities living in areas affected by salinity. A new project led by Dr Michael Mitchell of Charles Sturt University aims to build the adaptive capacity of farming and coastal communities in salinity-affected areas to maintain and improve their livelihoods. The research team will work with a broad network of local partners to develop adaptation options for living with salinity.[13]

Country Manager, Pakistan
Dr Munawar Raza Kazmi

Research Program Managers
Agribusiness: Mr Howard Hall
Crops: Dr Eric Huttner
Horticulture: Ms Irene Kernot
Livestock Systems: Dr Anna Okello
Water: Dr Robyn Johnston

See page 209 for contact details

Current and proposed projects

1. Policy and institutional reforms to improve horticultural markets in Pakistan [China, Pakistan] (ADP/2014/043)
2. Developing competitive and inclusive value chains of pulses in Pakistan (ADP/2017/004)
3. Understanding the drivers of successful and inclusive rural regional transformation: sharing experiences and policy advice in Bangladesh, China, Indonesia and Pakistan (ADP/2017/024)
4. Mitigating the effects of stripe rust on wheat production in South Asia and eastern Africa [Ethiopia, India, Nepal, Pakistan] (CIM/2014/081)
5. Increasing productivity and profitability of pulse production in cereal based cropping systems in Pakistan (CIM/2015/041)
6. Improved mungbean harvesting and seed production systems for Bangladesh, Myanmar and Pakistan (CIM/2016/174)
7. Strengthening vegetable value chains in Pakistan for greater community livelihood benefits (HORT/2016/012)
8. Improving smallholder dairy and beef profitability by enhancing farm production and value chain management in Pakistan (LPS/2016/011)
9. Enhancing small ruminant production to benefit farming families in Sindh and Punjab, Pakistan (LS/2018/105)
10. Value-adding to existing livestock programs to understand and quantify the implications of greenhouse gas emissions, provide options for emissions reduction and inform in-country policy development [Cambodia, Ethiopia, Indonesia, Laos, Myanmar, Pakistan, Tanzania, Timor-Leste, Vanuatu, Vietnam, Zambia] (LS/2019/159)
11. Developing approaches to enhance farmer water management skills in Balochistan, Punjab and Sindh in Pakistan (LWR/2014/074)
12. Improving groundwater management to enhance agriculture and farming livelihoods in Pakistan (LWR/2015/036)
13. Adapting to salinity in the southern Indus Basin [Pakistan] (LWR/2017/027)