

Nepal

 **A\$1.0** million
Budgeted funding

 **4**
Bilateral and regional
research projects

 **6**
Small projects and
activities

Australia is a longstanding and committed development partner of Nepal. Australia's aid program focuses on areas where our experience and expertise can make a difference to the lives of the poorest, particularly women and girls, marginalised communities and people with disabilities. Underscoring all investments is support for improved governance and public financial management along with gender equality. The bilateral program is complemented by investments through the South Asia regional program in trade, water, energy and connectivity as well as support through global programs for non-government organisation activities and volunteers. A particular focus of the program is to expand economic opportunities for the poor, particularly women, by promoting enterprise and job creation.

An overview of Australia's aid program in Nepal is available on the DFAT website.

Nepal is among the least developed countries in the world, with about one-quarter of its population living below the poverty line. Its overall development has been slow, and its development indicators are among the lowest in South Asia. It ranks 147 out of 189 countries on the Human Development Index 2019.

Nepal has seen much political change in recent decades. In 2008, the country became a republic, ending 240 years of monarchy. In 2015, after a series of short-term governments, Nepal's new constitution established a secular democratic republic with a federal system of three tiers of government: local, provincial and federal.

Natural disasters also frame the recent history of the country. In 2015, a magnitude 7.8 earthquake struck Nepal. This was the deadliest earthquake in 81 years. Hundreds of aftershocks followed, and then a 7.3 earthquake, 17 days after the first one. The process of recovery continues. In 2017, Nepal was hit by devastating floods, causing US\$172 million in losses and damage to the agriculture sector alone.

Agriculture is the largest economic sector of Nepal, supporting the livelihoods of 66% of the population and contributing 36% of national GDP. Farming is largely subsistence in nature and cropping is mostly integrated with livestock production. Agriculture in Nepal is highly diverse due to the wide range of climates and geographies in the country. These characteristics provide both opportunities and challenges for agricultural development in Nepal. The challenges facing agriculture in the lowland Terai rice-wheat farming systems (part of the Eastern Gangetic Plains) are vastly different to those in the mixed crop-livestock-tree farming systems of the hill and mountain areas. Broadly, however, the challenges include:

- » degradation of natural resources
- » underdeveloped agricultural institutions and policies
- » declining availability of labour
- » lack of productive technologies and mechanisation that limit the improvement of farm household livelihoods.

Nepal's Agriculture Development Strategy 2015-2035 outlines a vision for a self-reliant, sustainable, competitive and inclusive agriculture sector that drives economic growth and contributes to improved livelihoods and food and nutrition security. It conceptualises transformation of Nepal from a society primarily based on agriculture to one that derives most of its income from services and industry. The 20-year strategy aims to halve poverty in less than 10 years through an agriculture-led economy achieving improved governance, higher productivity, profitable commercialisation and increased competitiveness.

The Agriculture Development Strategy also guides policies that include women, and states that all agricultural programs will be designed to benefit women. It promotes women's organisations and agroenterprises led by women through specific programs and recommends equal wages for women labourers. The strategy also promotes action to raise awareness of women's rights to land, and builds the capacity of women to manage irrigation, water resources and finances.

Country priorities

ACIAR has supported collaborative research with Nepal since the early 1990s, including projects on small ruminants, wheat and legumes. The focus for ACIAR during 2020–21 continues the engagement of Nepal in a regional program to improve integration of soil, water, crop, livestock and tree components of the farming systems. The SDIP, a regional multiagency program in which ACIAR is a partner (see page 132), has a significant component in Nepal, addressing water and energy integration.

Priorities for ACIAR collaboration are identified through consultations with ACIAR senior research staff and stakeholders in Nepal. Increased farm and forest productivity is a core approach to improved food and nutrition security and enhanced livelihoods. In the Middle Hills districts affected by recent earthquakes and floods, the ACIAR program supports the request of the Nepalese Government to focus primarily on research to support increased timber production from community forests. Another area that requires focus is understanding the implications of new federalism on agriculture in Nepal, as this is one of the important factors in the future development of Nepal.

Given the common agricultural production challenges across the alluvial plains of Nepal, eastern India and Bangladesh, cooperative research linkages with neighbouring countries will be explored further during 2020–21. The focus will be on conservation agriculture, to address key issues such as declining soil health, burning of rice stubble, falling groundwater levels and inequities in access to water.

For Nepal, the [World Food Program](#) highlights that the agriculture sectors that will be most affected by the COVID-19 pandemic are poultry, dairy, vegetables and livestock production.

2020–21 research program

ACIAR supports 10 projects in Nepal, two 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 Nepal. 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.





A farmer discusses crop management with researchers from CIMMYT, as part of a project building capacity to support mechanisation of conservation agriculture-based sustainable intensification. Photo: Conor Ashleigh. ACIAR project: WAC/2018/220.

Crops

The Sustainable and Resilient Farming Systems Intensification project is a large collaborative venture between ACIAR, the International Maize and Wheat Improvement Center (CIMMYT) and more than 20 partners from the research, development and educational sectors. The project aims to reduce poverty in the Eastern Gangetic Plains by making smallholder agriculture more productive, profitable and sustainable, while safeguarding the environment and involving women. Dr Brendan Brown of CIMMYT will lead the project in its final year to consolidate capacity development and credible pathways to scale out and support the widespread adoption of conservation agriculture for sustainable intensification methods, designed and validated by the project over the past six years.¹ This project is part of the SDIP, facilitated in the region by the Australian Government (see page 132).

Supporting the Sustainable and Resilient Farming Systems Intensification project, a small research activity led by Dr Neal Menzies of the University of Queensland, will identify future soil health research needs, focusing on soil acidification in areas where nitrogen fertiliser use has increased, the potential for zinc fertiliser to increase rice yields, changes in soil structure under conservation tillage practice and understanding system sustainability through partial nutrient budgets.²

In South Asia, adoption and adaptation of many farming system innovations are variable and low outside project areas, particularly for conservation agriculture-based sustainable intensification. A project, led by Dr Fay Rola-Rubzen of the University of Western Australia, will complete its research on understanding decision-making behaviour of farm households using a behavioural economics framework. The project will test interventions on agricultural extension, input provision and service delivery, which are designed to encourage smallholder farmers' uptake of innovations. The project, which is also part of SDIP, will also strengthen organisational and institutional capacity to better target interventions in the Eastern Gangetic Plains.³

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

Forestry

The Middle Hills of Nepal are home to 44% of the country's population, where most people gain their livelihoods from a combination of agricultural and forest products. Most forest lands have been handed over to community forest user groups, largely with suboptimal management and very limited timber harvest. Previous work supported by ACIAR demonstrated the effectiveness of a silvicultural management package called Active and Equitable Forest Management to improve livelihoods, social equity and environmental impacts. Dr Ian Nuberg of the University of Adelaide leads a project to facilitate the adoption of the package, in order to improve forest management practices in community forests and on private land in Kahbre Palanchok and Sindhu Palchok districts. The project is working with 15 community forest user groups in each district, focusing on adoption of improved forestry practices; development of community forestry planning, governance and gender equity frameworks; and establishment of pro-poor, small-scale forest enterprises.⁵

Water

A suite of projects with a common theme of optimising the management of natural resources and adopting new practices to increase productivity and sustainability will operate on the Eastern Gangetic Plains in Bangladesh, India and Nepal during 2020–21. These projects ultimately aim to improve the livelihoods of the many and varied communities of the plains, and are part of the SDIP program (see page 132).

The traditional concept of a physiological crop yield gap is considered useful in national food security planning but, across the Indo-Gangetic Plains, socioeconomic constraints often limit production and overexploitation of regional water resources causes environmental problems. A project led by Dr Donald Gaydon of CSIRO Agriculture and Food will determine if there are feasible alternatives to quantify yield gaps in terms of economics and water use sustainability. The project will make a preliminary assessment of the effects of conservation agriculture and sustainable intensification, future climate scenarios and some economic variables on food production capacity.⁶

The benefit of conservation agriculture-based sustainable intensification practices in improving livelihoods in rural areas of the Eastern Gangetic Plains has been demonstrated by considerable work in the region, including projects within SDIP. A small research activity, led by Dr Brendan Brown of CIMMYT, aims to build capacity to support mechanisation of conservation agriculture-based sustainable intensification. The project is studying the institutional landscape to understand the potential for mechanisation at the provincial level, facilitate the development of multi-stakeholder platforms and support the development of a road map to help roll out mechanisation.⁷

There are proven benefits of conservation agriculture-based sustainable intensification systems in the Eastern Gangetic Plains but there are also potential trade-offs. Weed control is one of the biggest challenges when these systems are implemented. A project led by Dr Brendan Brown of CIMMYT has documented farmers' knowledge, attitude and practices around weed management under conservation agriculture and sustainable intensification systems, and will report on the gendered implications for equitable and sustainable intensification in the Eastern Gangetic Plains of South Asia.⁸

A small project was developed to encourage and support a core team of local partners in Bangladesh, India and Nepal to undertake participatory 'foresight for food' exercises in their respective domains using scenario-based approaches and systems thinking. Dr Avinash Kishore of the International Food Policy Research Institute leads the project, which continues to build the capacity of national partner institutions and support young farmers to communicate their aspirations and concerns to policymakers and other stakeholders in the regional food systems.⁹ The project will be extended until the end of the 2020–21 year, to allow time to consider the impact of the COVID-19 pandemic on regional food systems.¹⁰

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See page 209 for contact details

Current and proposed projects

1. Sustainable and resilient farming systems intensification in the Eastern Gangetic Plains (SRFSI) (SDIP) [Bangladesh, India, Nepal] (CSE/2011/077)
2. Identifying soil constraints in the Eastern Gangetic Plains (SDIP) [Bangladesh, India, Nepal] (CROP/2018/210)
3. Enhancing farm-household management decision-making for increased productivity in the Eastern Gangetic Plains (SDIP) [Bangladesh, India, Nepal] (CSE/2012/108)
4. Mitigating the effects of stripe rust on wheat production in South Asia and eastern Africa [Ethiopia, India, Nepal, Pakistan] (CIM/2014/081)
5. Enhancing livelihoods through improved forest management in Nepal (FST/2017/037)
6. Quantifying crop yield gaps across the Indo-Gangetic Plain from new perspectives – production, farmer profit and sustainability of water use (SDIP) [Bangladesh, India, Nepal] (WAC/2018/169)
7. Building provincial capacity for sustainable agricultural mechanisation in Nepal (SDIP) (WAC/2018/220)
8. The implications of sustainable intensification on weed dynamics in the Eastern Gangetic Plains (SDIP) [India, Nepal] (WAC/2018/221)
9. Regional foresight for food systems in the Eastern Gangetic Plains (SDIP) [Bangladesh, India, Nepal] (WAC/2019/136)
10. Food futures for the food systems in the Eastern Gangetic Plains [Bangladesh, India, Nepal] (WAC/2020/158)

