

PAPUA NEW GUINEA

Key statistics	
GDP per capita (US\$) ^a	1,218
Population (million) ^a	6.9
Funding	\$m
2009–10 actual	4.50
2010–11 budget allocation	4.55
2011–12 budget estimate	4.26

^a data from 2009 & 2010 <<http://unstats.un.org/unsd/demographic/products/socind/>>

Ginger production on steep slopes of Owers Corner, Central Province, Papua New Guinea. Photographer: Laurie Bonnie

MEDIUM-TERM STRATEGY

The Australian Government development strategy for Papua New Guinea (PNG) is to assist the PNG Government to accelerate progress towards the Millennium Development Goals (MDGs), reduce poverty and promote sustainable economic development as expressed in the PNG Government's Medium Term Development Plan 2011–2015. Australian assistance aims to complement, not substitute for, PNG's own investment in priority areas. A key component of Australia's involvement with the agricultural sector in PNG is the ACIAR–AusAID research partnership, in which AusAID co-invests in ACIAR-managed activities and ACIAR works closely with relevant AusAID programs.

PNG is one of Australia's most important development partners, and ACIAR's investment in PNG reflects this. ACIAR's program recognises the many challenges to agricultural development in PNG, including poorly developed infrastructure, weak market signals and services, new pest and disease threats, poor product quality, and pressure on land and renewable resources as a result of population increases and mining development. Future effects of HIV/AIDS and other human diseases on the agriculture sector, including the impact on labour availability, health and productivity, will be taken into account, and gender issues will be mainstreamed into the program.

Rural smallholders make up the bulk of the population and the bulk of the poor in PNG. ACIAR's research in PNG aims to help secure improvements in food supply, food access and rural incomes for smallholders through increased productivity and enhanced access to markets and services. This is in line with the PNG Government's Medium Term Development Plan to promote economic growth in the rural sector (comprising agriculture, forestry and fisheries). The

ACIAR program is based on, and committed to, improved adoption of innovations that respond to real needs and deliver meaningful benefits to PNG.

ACIAR ensures that the research is economically, culturally, socially and environmentally relevant to the smallholder farmers. In particular, ACIAR research in PNG has a focus on the role of women in agriculture from a variety of perspectives, for example marketing access and constraints to uptake of new technologies. There are emphases on plantation crops, root and other horticultural crops, forestry and fisheries. These include exported and domestically traded commodities that generate smallholder income and underpin improved food security and economic development.

Key principles in designing and executing the program include the importance of:

- engagement with the private sector, industry bodies and non-government organisations (NGOs) in partnership with government in both undertaking research and implementing research results
- research that assists the engagement of smallholder farmers in the cash economy
- understanding the social, cultural and economic issues affecting farmer decision-making and management of risk, and factors influencing adoption of new technologies
- where relevant, close linkages among ACIAR-funded programs in PNG and the Pacific island countries.

ACIAR has a formal program of consultation with PNG to establish priorities in research collaboration, as well as annual smaller consultations and industry workshops to finetune these priorities. A record of the most recent set

of formal consultations, held in May 2008, is provided at <aci-ar.gov.au/country/Papua New Guinea/consultations> under 'Partner country priorities / Papua New Guinea'.

Training priorities are mainly addressed through targeted activities within projects, although support for postgraduate degrees in Australia and an in-country scholarship scheme at the University of Technology, Lae, are also significant contributors to capacity development.

Key areas identified as research priorities across the medium term include:

- Addressing social, cultural and policy constraints to the adoption of agricultural technologies:
 - » Interventions to overcome cross-cutting social and cultural constraints to smallholder household profitability/productivity
 - » Analysis of income utilisation, microfinance access, current production and marketing systems impacting on smallholder families, particularly with respect to the equity, role and effectiveness of women
- Enhancement of smallholder income from horticultural crops:
 - » Matching of supply to demand, and marketing of highland and lowland horticultural crops
 - » Identification and development of opportunities and strategies for crop diversification to improve the livelihoods of communities, especially women
- Improving smallholder returns from plantation crop production and marketing:
 - » Social and economic analysis of incentives for uptake of intensified management systems in cocoa, coffee and oil palm
 - » Development and smallholder implementation of integrated and sustainable management systems for cocoa, coffee and oil palm
- Enhanced livelihoods from smallholder fisheries, aquaculture and forestry:
 - » Evaluation and development of livelihood opportunities in small-scale inland aquaculture, mariculture, and recreational and commercial fisheries
 - » Enhanced economic returns from agroforestry and plantation systems and the development of value-adding industries
 - » Sustainable management of forestry and fisheries resources
- Agricultural biosecurity:
 - » Management of invasive and economically damaging species in livestock, crops, fisheries and forestry to reduce economic losses, limit geographic spread and reduce spread via movement across national boundaries.

Boats used to transfer produce to local markets in Papua New Guinea. Photographer: Tony Bartlett



2011–12 RESEARCH PRIORITIES AND PROJECTS

Social, cultural and policy constraints to the adoption of agricultural technologies

The ACIAR program is based on, and committed to, improved adoption of innovations that respond to needs and deliver meaningful benefits to PNG's smallholder farmers. Emphasis is placed on research that is economically, culturally, socially and environmentally relevant to the smallholder farmers.

ASEM/2005/094 Improving the profitability of village broiler production in Papua New Guinea

This project examines the profitability and feasibility of using alternative locally sourced carbohydrates as energy sources for chicken feed.

ASEM/2008/042 Postgraduate scholarship scheme at the University of Technology, Lae, Papua New Guinea

The value of this joint initiative between the university's Department of Agriculture and ACIAR is recognised throughout PNG as a relevant model for the future development of locally trained research expertise in PNG.

ASEM/2010/052 (*proposed*) Women's business acumen, challenges and opportunities

This project aims to contribute to improving the livelihoods of PNG women in agriculture by developing their business acumen.

Horticulture and root crops

High-value horticultural crops such as floriculture and vegetables provide an opportunity for income diversification and increases in household income. The ACIAR program in PNG aims to capitalise on these opportunities, with a particular emphasis on women's engagement with markets, families and community groups. Root crops are traditional staple foods in PNG, and their vital contribution to food security is well recognised. However, the production of root crops, in particular sweetpotato, is declining as a consequence of shortening fallow periods, soil degradation and other factors such as pests and diseases. ACIAR interventions aim to address these issues and to develop sweetpotato from a traditional subsistence crop, with an emphasis on marketing.

ASEM/2010/053 (*proposed*) Small-scale feed milling for monogastrics in Papua New Guinea and Laos

The proposed work will build on previous research using sweetpotato and sago as alternative feed sources for chickens, upscaling their utility to village level.

HORT/2008/011 Floriculture to improve livelihoods in Indigenous Australian and Pacific island communities

This project aims to develop sustainable floriculture enterprises in remote and peri-urban communities in PNG, Fiji and Solomon Islands to provide opportunities for additional farm income and diversification of that income.

PC/2003/029 Management of potato late blight in Papua New Guinea

Confirmation of the new strain or strains causing potato late blight is being sought by the project team, to identify blight-tolerant varieties. Cost-effective controls using integrated control strategies are also being investigated.

PC/2005/134 The use of pathogen-tested planting materials to improve sustainable sweetpotato production in Solomon Islands and Papua New Guinea

This project will describe and evaluate sweetpotato seed supply systems; introduce and evaluate improved varieties; and introduce, refine and disseminate technologies for improved supply systems of sweetpotato seed for smallholders practising low-input agriculture.

PC/2010/065 (*proposed*) Developing biorational strategies for management of sweetpotato weevil in integrated production of sweetpotato

A number of biologically based tactics are available for reducing the damage caused by sweetpotato weevil; however, their effectiveness and adoptability need to be validated in a specific social, economic and ecological context, and farmers need to be trained in their use.

SMCN/2004/067 Management of soil fertility in sweetpotato-based cropping systems of the Papua New Guinea highlands

The overall aim of this project is to identify promising soil, nutrient and water management practices for more-productive and sustainable sweetpotato-based production systems.

SMCN/2008/008 Increasing vegetable production in Central province, Papua New Guinea, to supply Port Moresby markets

This project aims to develop efficient and effective value chains in Central province that are based on sound use of natural resources to meet growing demand for fresh vegetables in Port Moresby.

Cocoa, coffee and oil palm production and marketing

Cocoa, coffee and oil palm provide major export and farm income generation opportunities for PNG producers. Increased production in these sectors will depend upon smallholder farmers. The ACIAR program is focused on understanding and addressing the social and economic constraints to smallholder production of these crops, and on the implementation of sustainable integrated crop management (ICM) practices.

ASEM/2006/127 Private sector / smallholder partnerships for improving incomes in oil palm and cocoa sectors in Papua New Guinea

The project aims to identify and promote effective strategies for commercial-sector partnerships with smallholders.

ASEM/2008/036 Improving livelihoods of smallholder families through increased productivity of coffee-based farming systems in the highlands of Papua New Guinea

The project aim is to develop new farmer-driven extension models involving partnerships between the public and commercial sectors to improve nutrient management, extension delivery and the mobilisation of labour for coffee production.

ASEM/2010/051 (proposed) Coffee green scale in Papua New Guinea: highland arabica coffee and yield loss.

The project's objectives are to quantify the impact of coffee green scale in terms of yield loss and potential economic consequences on smallholders, and to estimate the overall loss due to scale on total highland smallholder coffee production.



A Papua New Guinean woman shelling galip nuts. Photographer: Tony Bartlett

PC/2007/039 The control of basal stem rot of oil palm caused by Ganoderma in Solomon Islands

This project seeks to identify immediate strategies for managing this highly destructive fungal disease of oil palms, especially during replanting, as well as supporting the longer term breeding effort. Trials have been planted in Solomon Islands but with close involvement of researchers from PNG.

SMCN/2009/013 Sustainable management of soil and water resources for oil palm production systems in Papua New Guinea

This project will develop and implement meaningful, practical environmental sustainability indicators for soil and water resources, underpinning the principles and criteria of the Round Table on Sustainable Palm Oil, in which all PNG palm oil producers participate. The project will contribute to environmental accreditation.

Fisheries, aquaculture and forestry

Through export and trade in domestic markets, fisheries, aquaculture and forestry products generate smallholder income, underpin food security and provide the potential for economic development. The ACIAR program builds on significant competitive advantages in relation to forestry, aquaculture and fisheries, addresses the issues of sustainable development of these resources, evaluates and develops new opportunities within these sectors and enhances the economic returns from production of these commodities.

FIS/2006/138 Developing aquaculture-based livelihoods in the Pacific islands region and tropical Australia

The overall aim of the project is to support economically, socially and environmentally sustainable aquaculture in the Pacific islands region, and to assist indigenous aquaculture in tropical Australia.

FIS/2008/023 Increasing fish production from inland farming systems in Papua New Guinea for food and income security

The overall aim of the project is to develop aquaculture planning systems for management agencies and improve fish husbandry techniques, primarily for small-scale fish farmers in PNG. Focal provinces for the project are Eastern Highlands and Morobe.

FIS/2009/057 (proposed) Pearl industry development in the western Pacific

This project will address bottlenecks and development of opportunities in the fledgling pearl culture industries in Tonga and Fiji, and determine the potential for introducing 'half-pearl' culturing to PNG.

FIS/2010/017 Marine aquaculture feasibility, Kavieng, Papua New Guinea

The project will assist development capacity at the newly established Nago Island mariculture facility (New Ireland) relating to management and husbandry of cultured marine organisms.

FIS/2010/054 (proposed) Mariculture development in Papua New Guinea

Depending upon the outcome of FIS/2010/017, a more significant program of work will undertake mariculture trials with promising marine species.

FIS/2010/055 (proposed) Enhancement of fisheries and aquaculture in Western province, Papua New Guinea

The project will work in conjunction with the Ok Tedi and Fly River Development Fund to develop fisheries and aquaculture livelihoods in Western province.

FST/2006/088 Promoting diverse fuelwood production systems in Papua New Guinea

Short-rotation coppicing fuelwood production systems will be explored, as well as definition of small business opportunities associated with fuelwood markets. Work is focused on sites in Western Highlands and Simbu provinces, and the National Capital district.

FST/2006/120 Increasing downstream value-adding in Papua New Guinea's forest and wood products industry

The technical processing properties of PNG timbers will be elucidated in association with capacity development of PNG forest industry researchers to conduct research into value-adding processing. In its final year, much of the work in Morobe province will be on completing trials and communicating project outputs.

FST/2007/078 Germplasm development and delivery to underpin a Papua New Guinea timber industry based on planted forests

The availability of seed and plants of high-value timber species to communities will be enhanced. Work is mainly in Western, Morobe/Madang and East New Britain provinces and will focus on the establishment of demonstration stands of clonal teak trees to assist communities to manage these types of crops.

FST/2009/016 Enhancing incomes from Papua New Guinea's balsa industry

Aspects of the balsa production value chain will be improved, including germplasm, stand management, log supply logistics and processing systems, working with landholder and industry groups in East New Britain province.

FST/2010/013 Developing markets and products for the Pacific island and Papua New Guinea *Canarium* nut industry

This project will research new technologies and markets for galip nut products in PNG, Solomon Islands and Vanuatu. In PNG the work will be in East New Britain province in collaboration with a galip nut development project funded by the European Union (EU).

FST/2010/044 (proposed) Enhancing sustainable value-added timber industries in Papua New Guinea

This project is currently being scoped but is expected to focus on emerging research questions related to sustainable value-added forest industries and forest contributions to the climate-change mitigation and adaptation agenda throughout PNG.

Agricultural biosecurity

The ACIAR program assists in the development of capacity to detect and manage infectious and exotic diseases, pests and weeds in the wider context of reduction of economic losses and improved biosecurity arrangements, in collaboration with other Australian and Pacific island country agencies.

AH/2006/157 Improved biosecurity for animal diseases in Papua New Guinea

The livestock industries of PNG, especially pigs and poultry, are at risk from disease entering the country through remote and poorly regulated entry points. This project, led by the National Agriculture Quarantine and Inspection Authority and James Cook University, is developing new methods and approaches to engage local communities in disease monitoring while improving the productivity of their livestock.

PC/2006/114 (multilateral, CABI) Managing cocoa pod borer in Papua New Guinea through improved risk-incursion management capabilities, integrated pest management strategies and stakeholder participatory training

This project aims to assist PNG to implement systematic and long-term cocoa pod borer (CPB) management through enhancing stakeholder knowledge and awareness, strengthening surveillance and monitoring, and developing integrated pest management (IPM) programs for implementation by growers in East Sepik, West Sepik, New Ireland and West New Britain provinces.

PC/2007/111 (multilateral, CABI) Incursion prevention and management of coffee berry borer in Papua New Guinea and eastern Indonesia (South Sulawesi and Papua)

While attempts to manage this highly destructive pest and reduce its dispersal continue in Indonesian provinces bordering PNG, surveillance and awareness-raising have continued in coffee-growing areas of Sundaun province of PNG, as well as risk assessments for other possible routes of entry to the country.

Principal regional coordinator

Mr Les Baxter

Key program managers

Dr Chris Barlow, Fisheries

Mr Tony Bartlett, Forestry

Mr Les Baxter, Horticulture

Dr Doug Gray, Animal Health

Dr Gamini Keerthisinghe, Soil Management and Crop Nutrition

Dr Caroline Lemerle, Agricultural Systems Management

Dr Richard Markham, Pacific Crops

Country manager

Ms Emily Flowers

KEY PERFORMANCE INDICATORS (2011–12)

- New/adapted integrated production technologies being field-tested under commercial conditions in at least three crops and fisheries projects
- At least three projects designed and initiated to increase agricultural production or investigate diversification in crops, fisheries and poultry
- Social, economic and environmental constraints to industry development by smallholder farmers identified and documented in at least two crops and fisheries projects and a women's business acumen project
- Risk management strategies, management programs or awareness programs relating to exotic pest, disease or weed incursion developed for at least two crop, livestock or across-commodity projects
- At least two John Allwright postgraduate scholarship students, one John Dillon R&D management training scholarship and contributions made towards three Unitech postgraduate degree scholarships