

Regional achievements

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ACIAR Board Targets

The ACIAR Board defines target ranges for research expenditure across the regions in which projects operate. The target ranges reflect regional and country research priorities, the overall aims of Australia's aid program, and ability to deliver results through effective projects across the Asia-Pacific region and beyond. The ranges also allow for flexibility in project development and implementation timelines, as well as between regions.

Region	Board target
Papua New Guinea and the Pacific islands	10-20%
Southeast Asia	50-60%
North Asia	10-20%
South Asia	10-20%
Southern Africa	5-10% (from 2003-04 <5%)

Papua New Guinea and the Pacific islands

Financial year	Regional expenditure	Percentage of total bilateral expenditure	Board target as percentage of expenditure
2002–03	\$4 754 635	17.9%	10-20%
2001–02	\$3 126 071	12.8%	10-20%
2000–01	\$3 536 020	14.2%	10-20%

The outlays for Papua New Guinea and the Pacific fell in 2001–02, mainly due to project development timeframes and delays in the Pacific islands, coinciding with the completion of several projects. New partnership models combined with the revision of project development guidelines and a streamlining of internal processes have addressed these issues, as demonstrated by the rise in bilateral expenditure in 2002–03.

Papua New Guinea

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Pacific islands

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Papua New Guinea

Active projects in 2002–03	30
Bilateral country expenditure in 2002–03	\$3 171 113
Bilateral country expenditure in 2001–02	\$2 550 738
Bilateral country expenditure in 2000–01	\$2 459 835

Position

Papua New Guinea (PNG) is one of ACIAR's most important partners. ACIAR's program in PNG has endeavoured to reflect this and over the last two years the portfolio has increased significantly. In addition to projects funded from ACIAR's appropriation, since 1998 ACIAR and AusAID have worked together to develop and fund a small set of projects of mutual interest to tackle some of the formidable challenges to agricultural development. PNG is a net food importer with high population growth rates. Village-based agriculture supports 70–80 per cent of the population and domestically traded food is very important. The main cash crops in order of export value are oil palm, coffee, cocoa and coconuts.

PNG's limited capacity is a constraint in carrying out research and development (R&D) activities and in delivery of extension services. When designing projects ACIAR works to include a training component. ACIAR is also keen to package the results of earlier research in a suitable form for uptake by farmers.

Achievements

Several projects have had **an emphasis on increasing smallholder farmer incomes** through cropping improvements. A survey on peanut production, marketing and consumption practices has been undertaken, and improved germplasm has been introduced, with the aim of re-establishing the once significant peanut production industry. A testing facility for poultry feeds, an important part of smallholder farming operations, has been established near Lae. Testing of the nutritional value of feed ingredients is underway to determine the optimal feed materials.

A non-cash payment system for plantation labour in the oil palm sector has been highly successful in increasing both the supply and demand for labour while increasing production. **The scheme allows holders of a *lus frut* card to harvest and sell fallen fruit**, providing an income source almost equal to that of those in formal employment. Other plantation sectors are interested in examining and trialling the scheme. In the first instance, ACIAR will assist with a new project examining the relevance of the scheme for cocoa.

A project assessing **biological threats to sugar production** in PNG, Indonesia and Australia completed the last of four surveys of the region. The strategic Torres Strait region – important as a potential pathway for pest and disease transmission between PNG and Australia – was examined. Findings including the extent and spread of pests



Collecting soil samples



Bernard Maladina is our PNG Manager



ACIAR Chair Beth Woods inspects a sample of diseased sugarcane at Ramu Sugar's research site



A fishing family in PNG

will be important in informing quarantine issues and interactions with quarantine staff both in the Torres Strait and on Cape York. The first PNG sugarcane pest and disease manual was produced and distributed to National Agriculture and Quarantine Inspection Authority staff at a November workshop, with a similar Torres Strait sugarcane pest and disease manual also produced and distributed to Torres Strait quarantine staff. Biological control agents continue to be released against the major weed of pastures, *Chromolaena odorata*, at sites in PNG, and their effects monitored. Agents have also been supplied to other countries of the South Pacific with *Chromolaena* problems.

Artisanal fisheries are also important in PNG, and are a focal point for some fisheries projects. A field survey of the **sea cucumber resources** of Milne Bay Province has been completed, with a final report providing stock status assessments for all commercial species. A series of management recommendations has been made to local authorities resulting in changes to existing management arrangements. Another project on sea cucumber has seen community-based resource management arrangements established at Obulaku village in the Trobriand Islands, Milne Bay Province. Two possible areas for lagoon reseedling of these species have been identified.

An 18-month study of the status of **pond aquaculture in PNG** surveyed 313 fish farms, 20 markets, 16 hatcheries and 18 institutions. A workshop held in Goroka brought together all sectors of the industry and other stakeholders to consider the results of the project and to establish priorities to guide the development of a proposal for a follow-on project. A manual has been produced for the ongoing maintenance of the Papua New Guinea National Fish Collection. This valuable collection, now housed at the University of Papua New Guinea, has been partially restored and collated. Following completion of a past ACIAR project the Barramundi Fishery Management Plan was formally approved and has now been gazetted into law under the PNG *Fisheries Management Act*.

In the remote provinces of PNG there is a chronic lack of rural industries to provide cash incomes to communities and households. ACIAR's project work has supported the development of a **small industry in Western Province based on distillation of essential oils**. A new product based on oils from the native *Asteromyrtus* species is now marketed as bottled oil in PNG stores. Another project is analysing the marketing system for fresh produce grown year-round in PNG's temperate highlands. This year-round growth presents an opportunity to capture market share, both within and beyond PNG. Initial activities are identifying internal and external factors that constrain delivery systems, to allow the development of improvements within both sea-borne and air-borne delivery.

A parasitic disease (surra) that causes chronic wasting in animals is a major constraint to livestock production in parts of Southeast Asia, but is yet to enter PNG. **A surra outbreak would devastate the livestock industries in PNG**, particularly pigs, which are commonly kept as stock, and bring the

potential for an outbreak in Australia closer. Molecular techniques using polymerase chain reaction testing have been developed that can detect parasite DNA in very small quantities of animal blood. Differences in parasite genetics are also being studied, revealing that some strains of the disease are more sensitive to potential treatments than others.

Sustainable forestry management, both to utilise potential products and to ensure the continued viability of existing plantation areas, is the aim of two projects, both focusing on **building research capacity**. One is focusing on management techniques, with training conducted to improve planning including in spatial planning systems, inventory methodology, the use of growth models, scheduling of regional timber harvesting and yield regulation. Data collection and analysis, including a review of inventory systems and permanent sample plot re-measurement, have also been conducted. The second project is examining the domestication of indigenous tree species. Substantial work has been done to gather information from relevant trials. Four species have been identified for use in field trials with seed collections for each completed. Trials for an additional 15 species have been established in the Lae Botanic Gardens.

ACIAR is involved in several capacity-building initiatives in PNG, in association with AusAID. A project on improving communication of scientific and technological knowledge for publication, education, and extension purposes has established a sound framework for ongoing cooperation between PNG's five universities. The 2002 pilot group of 19 lecturers from University of Technology (UniTech), University of Papua New Guinea, University of Goroka, Vudal University and Divine Word University were awarded UniTech's new Graduate Certificate in Communication of Science and Technology after completing prescribed coursework through their participation in the project's workshops in 2002. Learning materials to support delivery of two core subjects and five elective subjects were developed using a participative action learning process that also trained the participants to be trainers for new cohorts at their own institutions in 2003.



Oil palm seedlings in PNG



Pacific islands

Active projects in 2002–03	15
Bilateral country expenditure in 2002–03	\$1 583 522
Bilateral country expenditure in 2001–02	\$575 333
Bilateral country expenditure in 2000–01	\$1 076 185

Position

ACIAR's program with the Pacific has grown significantly in the past year, in line with broader Australian official development assistance priorities. A stable and economically viable Pacific is in Australia's interests. There are many factors constraining socioeconomic development of Pacific island countries. The region's small renewable resource subsectors are dominated by subsistence agriculture. Commodity exports are an important income source, as is income gained from fishing resources rents.

Many Pacific island countries have limited capacity to participate effectively in ACIAR's normal mode of bilateral collaborative research partnerships. Their participation in regional or multi-country programs and projects addressing common problems partly helps overcome these constraints. Projects are designed to address risks associated with institutional instability, personal security, high staff turnover and limited depth of national staff resources. ACIAR also supports some collaborations by Pacific island countries with two CGIAR centres, the WorldFish Center and the International Plant Genetic Resources Institute (IPGRI).

Achievements

A project on **Fiji's sugar industry** has helped the Government to re-evaluate restructuring options for the Fiji Sugar Corporation. Institutional reforms to improve the efficiency of production to the milling chain are being considered. Another Fiji-based project has used diaries to collect dietary nutrition information. The methodology will be used in the upcoming national nutrition survey to be funded by AusAID. A low-cost food choice model is being developed for use in training nutritionists and educators and for use in policy analysis around the national survey.

Fisheries research is a key part of ACIAR's Pacific activities. With the Forum Fisheries Agency, a bio-economic model, used in the determination of harvest levels and rents payable for the South Pacific tuna fishery, was updated with biological, catch, price and cost parameters. Two potential charging systems for obtaining access fees from Distant Water Fleet Nations fishing in the exclusive economic zones of the Pacific island nations were examined for feasibility and economic efficiency. The project identified that 'charge-on-effort' schemes should be considered, using a formula based on catch parameters and fishing days.



Coconuts in Fiji

A re-examination of the stocks of coconut crabs in Vanuatu to determine if the management arrangements introduced 10 years ago have been sufficient has shown that significant stocks of crabs still remain. At that time management arrangements were introduced to conserve the remaining stocks that were in danger of being fished out. The study findings, which have been discussed with the relevant Vanuatu Minister, suggest there is reason to be optimistic about the success of the arrangements, but that fine-tuning of management options is still needed. Follow-on research in trochus reseedling has commenced in Vanuatu with a focus on developing a framework for community consultation and participation, stock enhancement on selected reefs, and eventual dissemination of the project results nationally and regionally. The work has been extended to Samoa where it is hoped the establishment of a trochus fishery will provide employment and income-generating opportunities.

In Fiji, following a second introduction of the GIFT *Tilapia* fish (bred in the Philippines by the WorldFish Center and the GIFT Foundation), fingerlings are being provided routinely at no cost to commercial farmers through government-supported hatcheries. Demand has increased significantly for the fry, and new hatcheries have been developed in other regional areas on the two large islands as tilapia aquaculture has expanded.

In 1998, ACIAR funded the transfer of blacklip pearl oyster spat collection techniques from the Solomon Islands to Fiji. These techniques are being used by Fiji Fisheries to collect spat near Savu Savu to supply a 200 000 shell commercial oyster operation. A successful hatchery and culture facilities for these oysters have also been developed in Kiribati. A demonstration pearl farm has become a focal point for training members of the community and for hosting potential investors. A draft Development Plan formulated during the project will provide a continuing framework for the future development of a cultured pearl industry in Kiribati and address both technical and political issues relating to this development.

Working in close cooperation with AusAID's TaroGen project, an ACIAR project has used **genetic fingerprinting to classify the many varieties of taro**. Virus indexing was also conducted to ensure safe movement of germplasm between countries. All viruses of taro in the region have now been identified, and reliable diagnostic tests are available for almost all viruses. Genetic fingerprinting of all varieties is complete, and a regional training workshop was held to transfer relevant molecular techniques to South Pacific scientists. An ACIAR-funded plant genetic resources specialist was assigned to the Secretariat of the Pacific Community to help preserve the valuable plant resources of the region. The specialist is aiding in information dissemination of genetic resources of several important Pacific crops, notably taro and breadfruit. A project on yam nutrition in PNG, Vanuatu and Tonga has seen good progress. Yams are one of the



Pacific islands clam cleaning

most valuable of the Pacific root crops, but are also nutrient-demanding. A database of nutrient deficiency symptoms is being assembled. Tonga has made most progress, demonstrating good response to phosphorus and to mucuna cover crops for yams. Vanuatu is also starting to make progress, with widespread testing during the year.

Modelling and monitoring of the major fresh groundwater resources of Kiribati has demonstrated that a 30 per cent increase in sustainable freshwater extraction is possible in the capital, South Tarawa. This is a significant increase in a country with less than 30L/capita/day of available reticulated freshwater. Analyses of demand and the impact of frequent severe El Niño-related droughts have demonstrated that additional groundwater sources will have to be found for South Tarawa by 2010.

Studies into three zoonotic diseases which can substantially reduce animal productivity are underway in several Pacific island communities. Zoonotic diseases are carried by animals, but are capable of being transferred to humans, with the possibility of transmittal increasing as human and animal populations share the limited land areas often found in the Pacific. Two types of tests to detect the presence of the diseases have been developed and are being refined to allow identification of low-level infections. Information on the prevalence of one of the diseases in trial sites in Fiji has been determined, and the life cycle of the second of the three diseases, including animals involved in passing on the disease, identified.



Sea cucumbers