

FUTURE PERFECT



RIO+20
United Nations Conference
on Sustainable Development

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Foreword

Sustainable development meets the needs of people and the planet today without compromising the ability of future generations to meet their own needs. Seen as the guiding principle for long-term global development, sustainable development consists of three pillars: economic development, social development and environmental protection.

At the United Nations Conference on Sustainable Development (Rio+20), world leaders, along with thousands of participants from governments, the private sector, non-governmental organizations and other groups, will come together to shape how we can reduce poverty, advance social equity and ensure environmental protection on an ever more crowded planet.

The Conference, which will take place in Brazil from 20-22 June 2012, marks the twentieth anniversary of the 1992 United Nations Conference on Environment and Development in Rio de Janeiro and the tenth anniversary of the 2002 World Summit on Sustainable Development in Johannesburg.

Rio+20 is envisaged as a Conference at the highest possible level, including heads of state and government or other representatives, and will result in a focused political document. It will focus on the two themes of a green economy in the context of sustainable development poverty eradication and the institutional framework for sustainable development. The preparations for Rio+20 have highlighted in particular seven areas that need priority attention: decent jobs, energy, sustainable cities, food security and sustainable agriculture, water, oceans and disaster readiness.

The publication of *Future Perfect* is intended to raise awareness about sustainable development and inspire all stakeholders committed to the success of and follow-up to Rio+20. The stories that comprise the publication come from governments, major groups of society and other stakeholders. The many contributions provide a mosaic of views about the future we want.

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Agricultural sustainability research and development projects

Warren Page, Manager, Communications and Public Affairs,
Australian Centre for International Agricultural Research

The Pacific Islands cast an alluring image of white sands and tranquil sunsets. While tourism remains an important industry, trading on the promise of these images to travellers, the future may be less idyllic.

Apart from tourism, the natural resource base of many Pacific Islands is the main source of income for residents. Fisheries and forests account for the livelihoods of more than 70 per cent of people in the Melanesian countries of the Pacific, who derive their basic needs from subsistence fishing and agriculture. In the Solomon Islands 75 per cent of the population are smallholder farmers and fishers.

In a 1999 census, 50 per cent of women and 91 per cent of men were engaged in fishing activities. Fish is a staple food, with this source accounting for 73 per cent of all expenditure on animal protein. Such a high level of dependence on the natural resource base, particularly the rich fisheries of the region, provides a real challenge for long-term management. Telling fishers that catches must be limited today to ensure their viability tomorrow is difficult, particularly when fish are an important part of diets. The task becomes harder the farther into the future that timeline extends.

Yet sustainable resource management of fisheries is vital to both the current and future blue economies (sustainable economies driven by nature-inspired technologies) of the small islands of the Pacific. Coastal

fisheries are the most important source of fish across several island states and are those under the most stress.

Alleviating these stresses is an important priority for the Australian Government's aid programme. The work of the Australian Centre for International Agricultural Research (ACIAR) is contributing to understanding the factors at play in managing these resources, by encouraging promising opportunities for alternative agricultural livelihoods and strengthening governance arrangements.

Inshore fisheries and marine resources are central to many facets of life in the Solomon Islands, Vanuatu and Kiribati. The fisheries supply daily protein and a potential cash resource. These resources also have cultural value for fishing communities, so sustaining them is central to their life.

Growing populations, the impacts of climate change and the threat of overfishing are combining to threaten the long-term viability of fisheries. The prospect of diminishing returns from inshore fisheries will place greater pressure on food security. This situation has the potential to threaten political stability in individual countries and to reduce the impact of governance structures. Once this cycle has started it is difficult to break. However, with practical solutions the difficulties can be overcome.

ACIAR is focusing on the Solomon Islands as a pilot for linking and aligning the multiple strands involved in managing inshore fisheries to form a cohesive thread running from local communities to national scale interventions, and extending these approaches to other island states.

In 2010, the Solomon Islands developed a National Strategy for the Management of Fisheries and Marine Resources. The Strategy articulates the steps needed to achieve a series of national goals relating to managing inshore fisheries to 2020.

Community-based co-management of marine resources is central to the successful implementation of the Strategy and in providing a platform for the implementation of sound environmental practices, along with sustainable development of blue economies.

ACIAR's role is to support the development of structures, processes and capacity, to implement and sustain the national programme of community-based marine resource management. This builds on past ACIAR work in developing community-based fisheries management plans.



Image: ACIAR

Supporting blue economies means developing alternative livelihoods in other agricultural fields



Image: ACIAR

Rich forest resources offer job opportunities if sustainably managed

From 2005 to 2008, ACIAR and the WorldFish Center worked with communities in Kia District (Santa Isabel Island and Isabel Province) and Jorio (Vella Lavella Island and Western Province) to establish community-based management plans for the sea cucumber. At community level, the project involved a participatory process of household interviews and focal group discussions to facilitate the development of a management plan. At the request of the community, plans were broadened to cover all marine resources. From the Kia community, the project expanded in 2007 to include all of Kia district and led to the establishment of a marine managed area covering approximately 450 km².

Through a similar participatory process, a management plan covering 170 km² of the Jorio region was implemented in September 2008. Responsibilities for administration, enforcement and penalties now rest with communities through their own governance structures. Community technical teams have been trained in simple methods for conducting reef surveys of benthic invertebrates, such as the sea cucumber.

In mid-2008, representatives from both Kia and Jorio (along with representatives from related projects in other parts of the country) attended the first community workshop for coastal fisheries, held by the Solomon Islands Ministry of Fisheries and Marine Resources. The goal was to tap into community knowledge to ensure better coastal community participation within the Solomon Islands inshore and coastal fisheries management.

Governance of marine resources is central to success beyond the community level. ACIAR's support of the Strategy will also focus on strengthening the capacity of the Ministry of Fisheries and Marine Resources and the development of an impact assessment programme for the Ministry will be central to this work. The framework that is being developed through this research will also be transferred to Vanuatu and Kiribati, using the lessons learned in the Solomon Islands to identify approaches for other island nations.

ACIAR is also supporting other aspects of the blue economies of the Pacific region, by examining returns from sustainable management of deep-sea fisheries. With the Forum Fisheries Agency, a bioeconomic model used in determining 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. The project identified that 'charge-on-effort' schemes should be considered, using a formula based on catch limits and fishing days.

A sustainable management plan for the live reef fish trade in the Solomon Islands was developed, with the plan presented at a final seminar attended by policymakers, local communities, fishery managers and researchers in Honiara. The seminar covered potentially controversial aspects, such as seasonal closures.

A second support component for blue economies is developing aquaculture capacity in the region. Farming freshwater fish and marine species can be a sustainable alternative to fishing, while reducing pressure on wild capture fisheries.

Numerous communities in Papua New Guinea (PNG) are dependent on coastline marine resources for the livelihoods of their families. Whilst coastal waters, reefs and fish stocks are comparatively healthy, communities are failing to capitalize on the potential economic and job opportunities this environment provides.

The development of mariculture in PNG can now be supported by the recently completed National Fisheries Authority Nago Island marine hatchery and training facility. The role of the facility is to develop marine aquaculture opportunities for PNG and to become a training centre for students from the National Fishing Centre. However, for the facility to achieve its goals, there is an immediate need for capacity-building from both technical and mariculture perspectives. This ACIAR project will develop Nago Island's capacity relating to the management of the facility and the husbandry of cultured marine organisms and will involve training facility staff at established research institutions that have similar roles, expectations and support needs. It includes basic production trials using coral and spiny lobsters, which will generate baseline information relating to their potential as food or income sources. Another part of this research is the restocking of depleted fisheries, with particular attention to sea cucumbers, which have been chronically overexploited throughout the Asia-Pacific region.

ACIAR-funded studies of the sandfish (*Holothuria scabra*) — a high-value sea cucumber harvested easily from inshore habitats — have led to technologies for breeding these in hatcheries and releasing them into the wild. The research concludes a significant, long-term research investment into sandfish culture in the Asia-Pacific. Three large projects have covered the hatchery culture of sandfish, techniques for releasing them into the wild, and aquaculture practices of sea ranching and pond culture. The research results were disseminated in a symposium — supported by the Secretariat of the Pacific Community — on recent advances in hatchery production technology, release strategies, farming techniques, management practices and supply chains, and marketing. The symposium led to informed recommendations being developed for guiding strategic research into sea cucumber aquaculture for the next decade.

Inland aquaculture is an important component of ACIAR's fisheries strategy. Fish demand and supply scenarios indicate that the supply of fish through aquaculture will be essential in supporting future food security and nutritional requirements. For example, in the Solomon Islands — under current scenarios — there is predicted to be a shortfall of between 6,000 tons and 20,000 tons each year, by 2030.

ACIAR-funded research is assessing the feasibility of inland culturing of two further species. Initially, the focus will be on researching the feasibility of milkfish farming, followed by farm trials of husbandry and management systems for milkfish and/or Nile tilapia.

Increased capacity for aquaculture management within households, schools and business enterprises can reduce pressure on inshore fisheries. The research will link to investments that support the sustainable growth of aquaculture and help strengthen Government institutions at both national (Ministry of Fisheries and Marine Resources) and provincial levels.

Lessons will have been widely shared within Pacific nations facing future fish supply shortfalls, with the goal of developing an inland aqua-

culture industry that makes a significant contribution to food and nutritional security in the Solomon Islands.

The final component of supporting the blue economies is to develop alternative livelihoods in other agricultural fields. The rich forest resources of the Pacific, like the fisheries sector, offers job opportunities if sustainably managed.

Vanuatu, which comprises about 80 islands with a population of 220,000, has about 35 per cent of its land area covered by primary forests and another 35 per cent by dense thickets of low trees. Forests provide wood and non-timber products for customary landowners, while forestry activities include small-scale logging, agroforestry and conservation programmes.

ACIAR research is introducing improvements in silvicultural management of whitewood (*Endospermum medulosum*) for plantations in Vanuatu. This helps custom landowners achieve good returns from growing high-quality native timbers. The project has established 15 hectares of trials — located on six sites in East Santo — covering site preparation, fertilization, weeding, spacing, thinning and pruning operations, in both pure whitewood and mixed species plantings.

The silvicultural trials have indicated that there is little or no benefit from using sophisticated site preparation techniques or fertilizer, but that the key issue for seedling survival is good weed control, particularly in relation to controlling the aggressive *Merrimia* vine.

In many Pacific countries, there are large areas of senile coconut palm (*Cocos nucifera*) plantations that are no longer producing commercial returns. While coconut palms have been used to produce furniture and handicrafts in the Pacific, there has not yet been a viable enterprise using this resource on a sustained basis.

Value-added products from coconut stems could assist with clearing of the old plantations, while generating income for landowners. ACIAR's project on improving the value and marketability of coconut wood included research on the most appropriate processing techniques for producing both sawn timber and engineered flooring, suitable for international markets. Coconut palms have higher-density fibre near the outside of the stem, with the lowest density in centre of the stem. The lower sections of senile stems can produce high-quality cocowood which is suitable for either tongue and groove or laminated flooring, if the back-sawn material is carefully graded and appropriately dried. The project determined the physical and mechanical properties of the material and published a best practice manual for producing high-value cocowood flooring products.

Creating sustainable approaches for enhancing management of the natural resource base within the Pacific region is central to ensuring that possibilities in the blue economies of small island states are inclusive and provide opportunities for all, including smallholders who depend on agriculture and the fisheries. ACIAR's research is a modest component of an Australia-wide approach for ensuring a future for the region.



Image: ACIAR

Sustainable fisheries management is vital to blue economies of the Pacific