



# Fish and Food Security

## What is food security?

**Food security means that all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and preferences for an active and healthy life (World Food Summit 1996).**

**The right to food security is central to human development and many of the major human rights treaties<sup>1</sup>. It is also implicit in Goal 1 of the Millennium Development Goals – eradicating extreme poverty and hunger.**

## Food security in the Pacific

Food security is under threat in the Pacific. Agricultural production is not keeping pace with population growth and two thirds of Pacific Island countries and territories (PICTs) are now net importers of food. Regrettably, the low nutritional quality of many of these imports has increased the incidence of obesity, diabetes and heart disease.

## Importance of fish

Fish<sup>2</sup> is high in protein and rich in essential fatty acids, vitamins and minerals, such as iodine. The importance of fish in Pacific diets, particularly for children, is widely recognised.

SPC's Public Health Programme advises that up to 50 per cent of the daily protein intake recommended by WHO for good nutrition will need to come from fish for people in the Pacific. This means that, on average, each person in the region should eat about 35 kilograms of fish per year.

Fish consumption in many PICTs already exceeds these recommendations (see Table 1). Fish provides 50–90 per cent of animal protein intake in rural areas, and 40–80 per cent in many urban centres. Most of the fish eaten by rural people comes from subsistence fishing and per capita consumption in rural areas often exceeds 50 kilograms of fish per year.

<sup>1</sup> Including the Universal Declaration of Human Rights, the International Covenant on Economic, Social and Cultural Rights, and the Convention on the Rights of the Child.

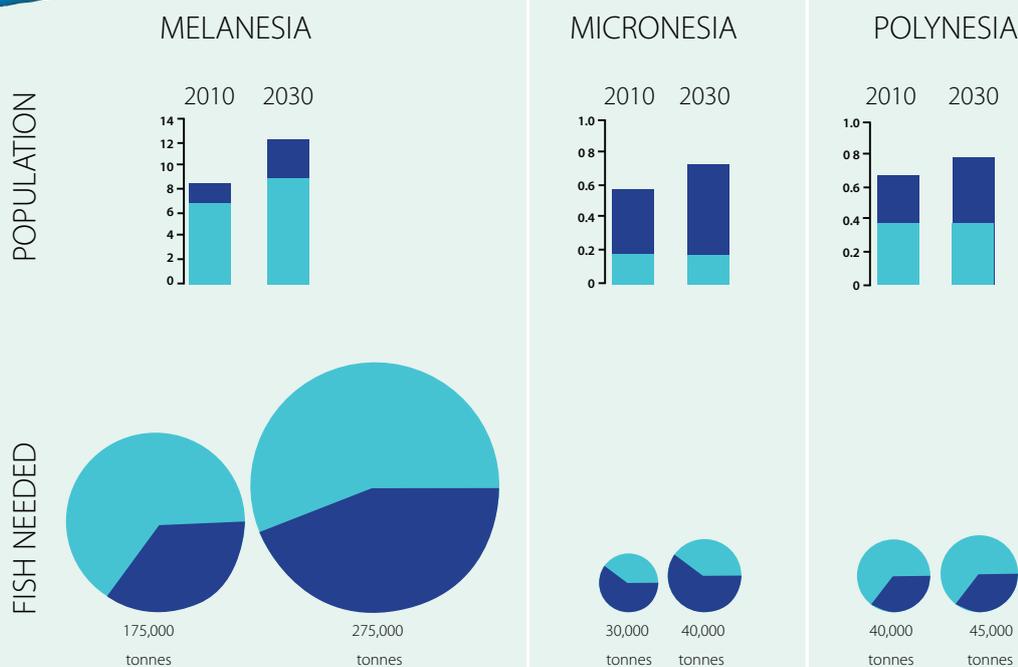
<sup>2</sup> Fish is used here in the broad sense to include fish and invertebrates.

**TABLE 1.** Percentage dietary animal protein derived from fish, percentage of food fish caught by subsistence fishing, and current annual per capita fish consumption in the Pacific. (Information derived mainly from national household income and expenditure surveys between 2001 and 2006; other members of SPC – American Samoa, CNMI, Guam, Marshall Islands, Pitcairn Islands, Tokelau – are not included because comparable data were not available.)

PICT	Animal protein (%)		Subsistence catch (%)		Per capita fish consumption (kg)	
	Rural	Urban	Rural	Urban	Rural	Urban
<b>Melanesia</b>						
Fiji			52	7	25	15
New Caledonia			91	42	55	11
Papua New Guinea			64	n/a	10	28
Solomon Islands	94	83	73	13	31	45
Vanuatu	60	43	60	17	21	19
<b>Micronesia</b>						
FSM	80	83	77	73	77	67
Kiribati	89	80	79	46	58	67
Nauru*	71	71	66	66	56	56
Palau	59	47	60	35	43	28
<b>Polynesia</b>						
Cook Islands	51	27	76	27	61	25
French Polynesia	71	57	78	60	90	52
Niue*			56	56	79	79
Samoa			47	21	98	46
Tonga*			37	37	20	20
Tuvalu	77	41	86	56	147	69
Wallis & Futuna*			86	86	74	74

\* Values are national averages (data not available for urban and rural areas).





**FIGURE 1.** Forecasts of population growth and quantity of fish needed for good nutrition in rural (■) and urban (■) areas of the Pacific.

## Threats to availability of fish for food

**Population growth:** The total number of people in the region is predicted to increase by around 50 per cent by 2030. To provide the recommended amount of fish for good nutrition, or maintain traditional patterns of consumption, access to another 115,000 tonnes of fish must be provided across the Pacific by 2030 (see Figure 1).

**Limited productivity of coastal fisheries:** Most of the fish eaten in the Pacific currently comes from coastal stocks. The problem facing many PICTs is that even well-managed coastal fisheries do not have the capacity to provide the extra fish required for future food security (see Table 2). The gap between the coastal fish available and the amount of fish required for food security will be even wider if coastal stocks are not managed well (see Figure 2).

**Climate change:** Increased water temperatures, ocean acidification and wave surge associated with climate change

are expected to damage coral reefs and reduce the number of fish they produce. This will increase the food security gap further.

**Over-exploitation of tuna:** The rich tuna resources of the Pacific can supply much of the dietary protein needed by the region. However, their contribution to food security could be jeopardised by excessive industrial fishing.

## The challenge

The challenge is to ensure that growing rural and urban populations continue to have access to fish for food – there are few alternative sources of protein. In rural areas, fish should be made available in ways that enable households to catch or produce it themselves. In urban centres, it should be supplied at affordable prices.





## Recommended policy actions

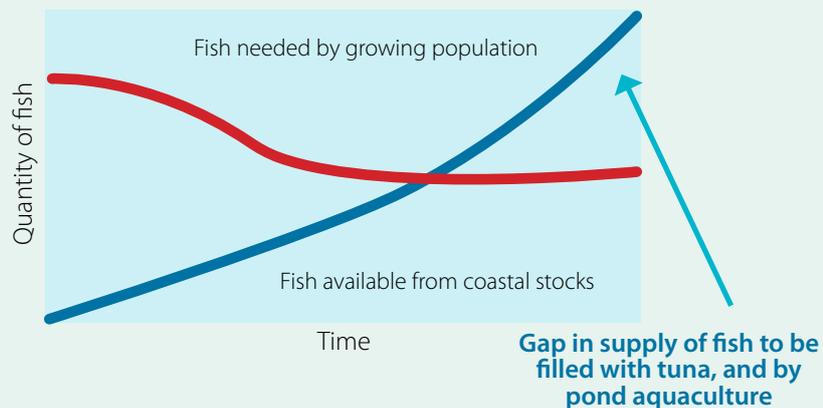
1. Maintain the contribution of coastal fisheries to food security – monitor catches to keep harvests within sustainable limits and ensure coastal developments do not damage fish habitats.
2. Use more of the national tuna catch for food security.
3. Expand the national infrastructure for food security by installing low-cost inshore fish aggregating devices (FADs) to assist rural subsistence fishermen to catch tuna.
4. Introduce regulations for landing ‘discards’ and ‘bycatch’ from commercial tuna vessels at urban centres to provide low-cost fish.
5. Diversify the supply of fish in rural and urban areas by developing sustainable small-pond aquaculture for freshwater fish, such as Nile tilapia.

**TABLE 2.** Expected capacity of sustainable production from coastal fisheries to meet forecast needs for fish in Pacific Island countries and territories, based on predicted population growth and estimated sustainable catches of 3 tonnes per square kilometre of coral reef per year.

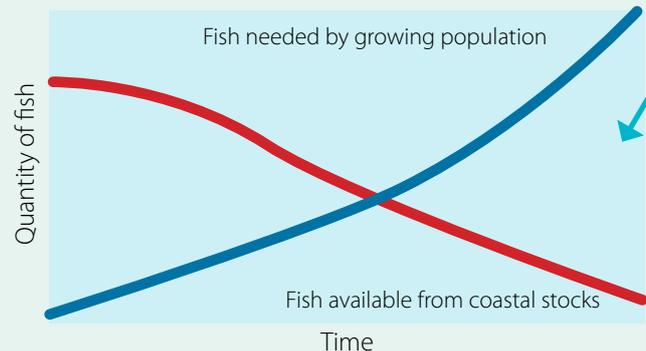
Sustainable production EXPECTED to meet future needs	Sustainable production NOT EXPECTED to meet future needs	Sustainable production ADEQUATE but distribution difficult
✓	✗	?
Cook Islands Marshall Islands New Caledonia Palau Pitcairn Islands Tokelau	American Samoa CNMI Fiji Guam Nauru Niue Papua New Guinea Samoa Solomon Islands Vanuatu Wallis and Futuna	Kiribati FSM French Polynesia Tonga Tuvalu



### Well managed coastal fisheries



### Poorly managed coastal fisheries



**FIGURE 2.** Gap in supply of fish to be filled under well managed and poorly managed coastal fisheries.

## Technical assistance

For assistance with sustainable management of coastal fisheries, installation of FADs and establishment of small-pond aquaculture, contact the SPC Coastal Fisheries Programme ([cfpinfo@spc.int](mailto:cfpinfo@spc.int))



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## Further reading

- ✓ The Future of Pacific Fisheries – planning and managing for economic growth, food security and sustainable livelihoods. 5th SPC Conference Paper no. 4. (2007). Available on request from SPC.
- ✓ Planning the use of fish for food security in the Pacific. Marine Policy, in press ([www.elsevier.com/locate/marpol](http://www.elsevier.com/locate/marpol)).
- ✓ SPC Aquaculture Plan 2007 (<http://www.spc.int/aquaculture/site/home/index.asp>).
- ✓ Diet, nutrition and the prevention of chronic diseases. Report of a joint WHO/FAO Expert Consultation, Geneva, 2003.
- ✓ Fisheries and Food Security. FMSP Policy brief, MRAG/DFID. [www.fmmsp.org.uk/Documents/keylessons/FMSPBrief3\\_Food%20Security.pdf](http://www.fmmsp.org.uk/Documents/keylessons/FMSPBrief3_Food%20Security.pdf)
- ✓ Fish for All. The WorldFish Center (<http://www.fishforall.org/background/importance.asp>).

*For further information, contact Johann Bell at the SPC Strategic Policy and Planning Unit ([johannb@spc.int](mailto:johannb@spc.int)).*

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