

# 6

## Marshall Islands

Population: 61,200

Land area: 726 km<sup>2</sup>

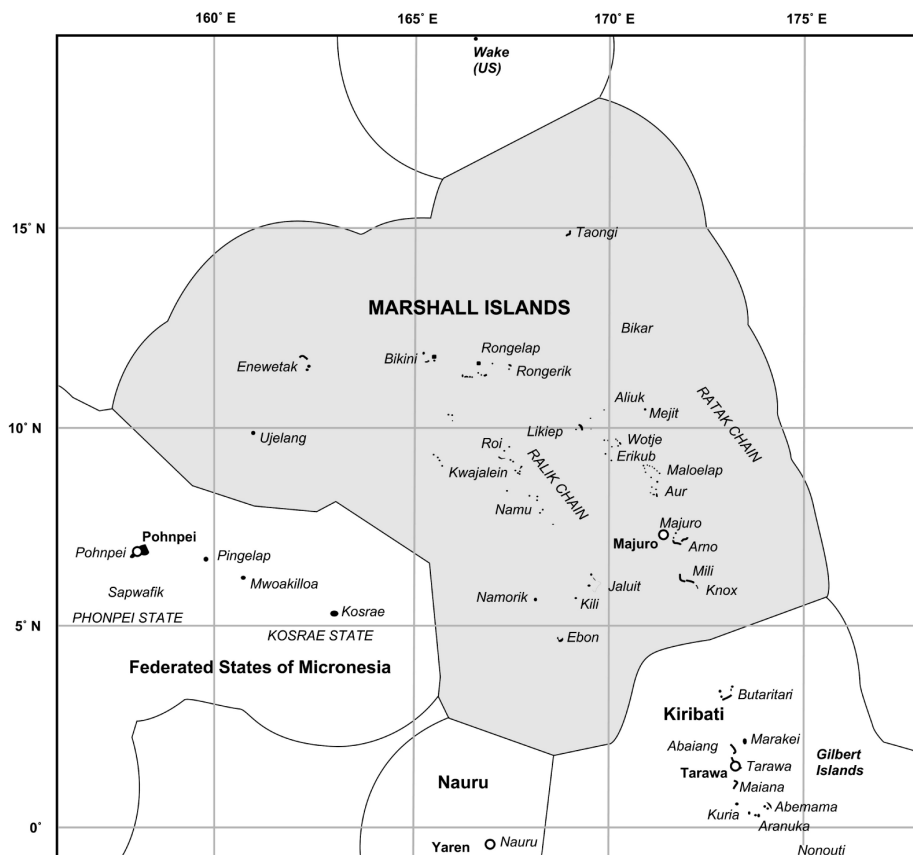
Sea area: 2,131,000 km<sup>2</sup>

The Republic of the Marshall Islands is made up of 29 coral atolls and five single islands from just north of the equator to 15°N latitude (Figure 6.1) (Chapman 2004a). The atoll geomorphology (narrow ribbons of land around lagoons) means there has been a limited range of agriculture possible and there have often been shortages of fresh water for agriculture and domestic use. Most areas rely on lenses of fresh water in the ground of the atolls and any rainwater that can be caught. The marginality of Marshall Islands' land for human habitation means the Marshallese have historically relied considerably on cooperation between islands in the two main groups (Ralik and Ratak) for resources when storms or drought made conditions difficult on particular islands (Spenneman 2005). With most land only a metre or so above sea level, Marshall Islands is one of the Pacific island countries most at threat from global warming.

After sporadic contact with Spanish, British, Russian and American ships from the 1500s, the Marshall Islands were claimed as a German protectorate in 1885. Along with all other German colonial territories north of the equator, Marshall Islands was given to Japan as part of the Treaty of Versailles settlement after World War I. Marshall Islands remained a Japanese territory, with extensive migration from Japan for fisheries, general business and military purposes, until the end of World War II. In 1947, the United Nations gave Marshall Islands to the United States as a Strategic Trust. Until 1954, the United States conducted 67 nuclear tests in, above and around the Bikini and Enewetak Atolls. Most notable was the 'Bravo' bomb. Exploded on the reef of Bikini Atoll in 1954, this bomb caused massive damage to the atoll and irradiated thousands of Marshallese on neighbouring atolls. Unexpected fallout from the detonation—intended to be a secret test—poisoned the crew of *Daigo Fukuru Maru*, a Japanese fishing boat, and created international concern about atmospheric thermonuclear testing.

An increasing desire for independence from the United States culminated in Marshall Islands joining the United Nations. Since 1986, Marshall Islands has been self-governing in free association with the United States (MIVA 2003). Under the Compact of Free Association, the United States provides military defence, guaranteed financial assistance and grant funding, and special immigration provisions to Marshallese citizens in exchange for exclusive military access to Marshall Islands. Of particular strategic importance to the United States is Kwajalein Atoll, operated by the US Army since 1944, now home to the Reagan Anti-Ballistic Missile Testing Facility. Controversies continue to surround the use of the base. Today, in spite of continuing protests from landowners, a number of islands on Kwajalein Atoll are still leased to the United States for about US\$15 million a year.

Map 6.1 Marshall Islands



Source: Youngmi Choi, Secretariat of the Pacific Community, Noumea, New Caledonia.

## Potential of tuna fisheries

Marshall Islands is in the equatorial belt of the Western and Central Pacific Ocean, which is rich in tuna resources, particularly skipjack. Oceanographic effects on water temperatures mean that in some years the pole-and-line and purse-seine surface fisheries of skipjack (including juvenile yellowfin and bigeye) are less rich. Marshall Islands also hosts many longline companies, although due to the warm water temperatures yellowfin and bigeye from Marshall Islands do not fetch the highest prices in the Japanese sashimi market.

The fresh water, power and freight situation in Marshall Islands is more viable for tuna industries than many other geographically similar Pacific island countries. Despite being an atoll, Majuro has a reliable supply of potable water through a catchment and reservoir utilising rainwater from the airport runway. Land is scarce in Majuro, but it could be possible to develop floating facilities within the lagoon. As well as large-scale loining or canning, it could be possible for Marshall Islands to develop small-scale processing—salting, drying or smoking—as has been tried in Fiji, Cook Islands and Kiribati. Another kind of processing that could be established on Majuro is a fish-meal plant utilising fish rejected from other facilities (Gillett 2003). Freight volume is relatively high and competitively priced because of the US military presence. The availability of chilled and other cargo space on vessels returning to the US west coast also presents an opportunity for cost-effective transport of tuna-related products. Regional air connections mean Marshall Islands is convenient for trans-shipping vessels wishing to fly in crews from countries such as Indonesia and China for whom it is difficult to get transit visas for US ports (Ishizaki, pers. comm.).

Since Marshallese have residency and working rights in the United States, and remuneration for public servants is among the highest in the region, wage levels are quite high (Joseph, pers. comm.), meaning Marshallese labour is expensive for tuna industries compared with China and Southeast Asia, which are the main competitors.

## History of development

Fishing has always been a central part of the Marshall Islands' nutritional and social life. Tuna and other pelagic species were originally trolled for from outrigger sailing canoes. From the 1980s, these canoes were replaced with outboard engine-powered fibreglass or aluminium vessels (Chapman 2004a). Industrial commercial fishing has been conducted mainly by distant water fleets. Commercial fishing in the Marshall Islands started with Japanese pole-and-line fishers in the 1920s (Chapman 2004a), which continued until the end of World War II. Japanese longline and pole-and-line fishers returned in the 1960s and dominated the fishery until 1990 when the presence of other distant water fishing nations (DWFNs) increased (Table 6.1).

### Longline

The Japanese fleet dominated the longline fishery in Marshall Islands' Exclusive Economic Zone (EEZ) until 1990. With regular flights to and from Guam and Hawai'i, Majuro has

Table 6.1 Fishing vessels with access to the Marshall Islands' EEZ, 2003

Country/company	Access type	Gear	Number of vessels	Flag
USA	Multilateral, regional, administered by FFA	Purse-seine	26	USA
Japan	Bilateral, government to government, administered by MIMRA	Purse-seine Longline	34 23	Japan Japan
Taiwan	Bilateral, industry to government, administered by MIMRA	Pole-and-line	74	Japan
Korea	Bilateral, industry to government, administered by MIMRA	Purse-seine	42	Taiwan
FSM Arrangement	Multilateral, subregional, administered by FFA	Purse-seine	27	Korea
Fong Seong	Bilateral, industry to government, administered by MIMRA	Purse-seine	23	Variousa
Shandong Fishery	Bilateral, industry to government, administered by MIMRA	Purse-seine	2	Vanuatu
Shanghai Fishery	Bilateral, industry to government, administered by MIMRA	Purse-seine	2	China
MIFV	Bilateral, industry to government, administered by MIMRA	Purse-seine	2	China
New Zealand	Bilateral, industry to government, administered by MIMRA	Longline	30	China, Taiwan
Edgewater Fishery	Bilateral, industry to government, administered by MIMRA	Purse-seine	4	New Zealand
Totals:	Purse-seine: 162 Longline: 58 Pole-and-line: 74	Longline	5	FSM

**Notes:** FSM Arrangement vessels included vessels flagged to Federated States of Micronesia, Republic of Marshall Islands (5), Kiribati, Solomon Islands and Papua New Guinea. The single vessel from Papua New Guinea was operated by Fair Well Fishery. This vessel was Vanuatu flagged but probably Taiwanese owned. The five Vanuatu vessels were operated by a company called Fong Seong.

**Source:** Marshall Islands Marine Resources Authority (MIMRA), 2005. Fisheries report—Marshall Islands, Paper read at First Meeting of the Scientific Committee WCPFC-SC1, Noumea, New Caledonia.

far better air connections to Japan and the United States than many other Pacific island countries, making it logistically a good location from which to engage in longlining for sashimi tuna. According to a former Japanese longline fishing master, however, the quality of tuna that can be caught around Marshall Islands is not as good as other parts of the Pacific in terms of value for Japanese sashimi markets. Japanese distant water longline fisheries are allocated fishing grounds around the world by a lottery system. Vessels that draw equatorial waters such as those around Marshall Islands consider themselves unlucky compared with vessels that draw cold-water areas, where the higher-value bluefin species as well as yellowfin and bigeye have higher body-fat content and more desirable flesh quality (Ishizaki, pers. comm.).

After the 1990s, the numbers of Japanese vessels reduced to about 30 a year, while numbers of Korean, Taiwanese and Chinese vessels increased (Table 6.2). Locally based

Table 6.2 Longline vessels operating in Marshall Islands' EEZ by flag country, 1978–2003

	China	Federated States of Micronesia	Japan	Korea	Marshall Islands	Taiwan	Total
1978	0	0	3	0	0	0	3
1979	0	0	40	0	0	0	40
1980	0	0	188	1	0	0	189
1981	0	0	177	0	0	0	177
1982	0	0	178	0	0	0	178
1983	0	0	144	0	0	0	144
1984	0	0	145	0	0	0	145
1985	0	0	103	0	0	0	103
1986	0	0	99	0	0	0	99
1987	0	0	88	2	0	0	90
1988	0	0	70	1	0	0	71
1989	0	0	88	13	0	2	103
1990	0	0	83	7	0	5	95
1991	0	0	80	1	0	7	88
1992	0	0	104	7	6	4	121
1993	11	0	83	2	5	1	102
1994	109	1	82	2	0	13	207
1995	138	0	60	2	1	12	213
1996	74	2	40	2	0	37	155
1997	45	1	15	0	0	37	98
1998	28	3	35	1	0	13	80
1999	0	4	46	0	0	3	53
2000	0	7	34	0	0	3	44
2001	3	7	40	0	0	3	53
2002	36	7	21	0	0	10	74
2003	35	4	0	0	0	4	43

**Notes:** Data from 2003 incomplete.

**Source:** Langley, A., 2004. *Marshall Islands National Tuna Fishery Status Report No.5*, Oceanic Fisheries Program, Secretariat of the Pacific Community, Noumea, New Caledonia.

Table 6.3 Japanese pole-and-line vessels operating in Marshall Islands' EEZ, 1979–2002

	Number of vessels	Catch (skipjack) in metric tonnes	Percentage of catch in Western and Central Pacific Ocean
1979	18	145	0.5
1980	171	6,584	12.5
1981	146	10,088	24.6
1982	102	8,881	54.7
1983	97	28,284	68.4
1984	77	6,352	22.4
1985	63	5,141	26.2
1986	47	4,687	9.2
1987	63	10,495	36.0
1988	49	33,977	50.1
1989	51	4,377	15.0
1990	39	2,787	15.7
1991	21	763	4.1
1992	37	7,259	37.3
1993	29	3,095	25.6
1994	31	3,990	24.6
1995	33	3,250	12.5
1996	28	3,177	34.1
1997	36	2,980	45.0
1998	40	17,843	87.1
1999	32	3,916	45.4
2000	38	8,015	64.1
2001	37	16,207	90.8
2002	35	7,312	95.0

Source: Langley, A., 2004. *Marshall Islands National Tuna Fishery Status Report No.5*, Oceanic Fisheries Program, Secretariat of the Pacific Community, Noumea, New Caledonia.

Chinese and Taiwanese vessels have operated from Majuro, supplying the Fishbase sashimi-tuna processing and packaging facility. The numbers of vessels operating from the Fishbase peaked at close to 150 vessels in the mid 1990s, when it was operated by Ting Hong (Gillett 2003). The Chinese longline vessels that have been based in Majuro are fairly small and stay relatively close to Majuro, but they are still denoted as distant water fleets, rather than 'locally based foreign' as other Pacific island countries have chosen to denote locally based foreign-owned vessels. The connections between Chinese businesses and the vessels they represent, either through charter or ownership, have not been entirely clear (McCoy and Gillett 2005).

In the early 1990s, the Marshall Islands Development Authority (MIDA) brought in five tuna longline vessels to be operated by local private-sector investors with government loans (Chapman 2004a). The vessels achieved low catch rates, never managed to cover their operating costs (Gillett 2003) and ceased operating by 2004 (Chapman 2004a). According

Table 6.4 Purse-seine vessels operating in the Marshall Islands EEZ by flag country, 1980–2003

	Australia and New Zealand	China	Japan	Korea	Philippines	Soviet Union	Taiwan	USA	Vanuatu	FSM	Total
1980	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	1	0	0	0	0	0	0	0	1
1982	0	0	0	0	1	0	0	0	0	0	1
1983	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	1	0	2	0	0	3
1986	0	0	1	0	0	1	0	1	0	0	3
1987	0	0	0	2	0	0	0	0	0	0	2
1988	0	0	0	0	0	0	1	16	0	0	17
1989	0	0	0	0	0	0	0	10	0	0	10
1990	1	0	0	0	0	0	0	17	0	0	18
1991	0	0	0	0	0	0	1	10	0	0	11
1992	0	0	0	0	0	0	2	43	0	1	46
1993	0	0	2	0	0	0	0	32	0	2	36
1994	0	0	20	0	0	0	5	14	0	1	40
1995	0	0	0	0	0	0	0	33	0	1	34
1996	0	0	0	0	0	0	0	24	0	0	24
1997	0	0	5	4	0	0	7	5	1	0	22
1998	0	0	33	24	0	0	30	7	4	5	103
1999	0	0	35	25	0	0	37	5	7	2	111
2000	0	0	37	24	0	0	35	3	7	8	114
2001	0	0	34	26	0	0	43	12	0	14	129
2002	0	3	34	27	0	0	41	4	0	17	126
2003 <sup>b</sup>	4	0	15	10	0	0	21	10	0	9	69

**Notes:** b Data from 2003 incomplete. FSM Arrangement vessels included vessels flagged to Federated States of Micronesia, Republic of Marshall Islands, Kiribati, Solomon Islands and Papua New Guinea.

**Source:** Langley, A., 2004. *Marshall Islands National Tuna Fishery Status Report No.5*, Oceanic Fisheries Program, Secretariat of the Pacific Community, Noumea, New Caledonia.

to some commentators, there has been considerable interest expressed in establishing another domestic longline fleet, and training in longline techniques has been continuing at the Fisheries and Nautical Training Centre (Sokimi and Chapman 2003; Ishizaki, pers. comm.). Longlining techniques based on the US style were also taught at the centre. In the early 2000s, MIMRA was investigating vessel types for small-scale coastal longline fisheries (Chapman 2004a). This was apparently to be based on the *alia* fishery in Samoa. According to Marshall Islands Marine Resources Authority (MIMRA) director Glen Joseph, local fishers and MIMRA were wary of trying to enter the commercial longline fishery again after the failures of the MIDA project.

In the mid 1990s, Ting Hong, a Taiwanese company, was the dominant presence in the Marshall Islands fishing industry. In 1994, the peak of Chinese longline presence in the Pacific, 457 vessels in Micronesia supplied fish to bases operated by Ting Hong for air trans-shipment to Japan, but business did not go well and Ting Hong departed the Western and Central Pacific Ocean in 1996 (McCoy and Gillett 2005). The influx of the Chinese vessels seems to have been poorly planned. There were insufficient port facilities and other infrastructure to support these vessels in Micronesia. The catches were also poor so the number of Chinese vessels based in Micronesia fell to only 66 in 1999 (McCoy and Gillett 2005).

Ting Hong was replaced in Majuro by the Marshall Islands Fishing Venture (MIFV), owned by Luen Thai Fishing Venture (LTFV), a subsidiary of the Hong Kong-based Luen Thai International Group, which has operations in several other northern Pacific island countries (McCoy and Gillett 2005). MIFV began operations in Majuro in 2001. It took over and refurbished the defunct cold storage, wharf and offloading area known as Fishbase (which had been used by Ting Hong) from the government for a nominal sum on a long-term lease. Base managers who spoke good English were recruited. MIFV expanded the facilities with a small loining plant for fresh sashimi loins.

In 2002, MIFV was managing 49 longline vessels. In 2004, it operated 28 longliners from the Fishbase (Chapman 2004a). MIFV owned eight of these, while the rest came from China, Taiwan, a Federated States of Micronesia (FSM) company and one from Japan (Gillett 2003). MIFV exported to Japan, Taiwan and the United States: A-grade sashimi to Japan, with B and C-grade tuna loined and sold for tuna steaks to the United States, and frozen tuna and bycatch exported to Taiwan (Chapman 2004a). In 2002, MIFV employed no Marshallese on the fleet, but about 38 were employed onshore (Gillett 2003). MIFV also acted as an agent for trans-shipping purse-seiners (McCoy and Gillett 2005).

Rather than being a fishing company *per se*, MIFV's parent, LTFV, is more a marketing and trading company. LTFV has sales offices in Japan and marketing arrangements with other companies elsewhere (McCoy and Gillett 2005), and it contracts vessels rather than owning them. It sells supplies to the vessels and markets the catch. Sometimes the agent relationship was such that vessels arrived at the fishing grounds owing large amounts to their agent and were tied to them for supplies and marketing. Due to lack of familiarity with the local society, they relied on their agent for 'almost every need', so had little scope for profitability (McCoy and Gillett 2005). Lack of profit for the vessel was not necessarily bad for LTFV's profits.



LFTV learned from some of the mistakes made by Ting Hong. It kept its vessel numbers much lower. LTFV also suffered less resentment as a foreign company than Ting Hong had because in the intervening years failures in the domestic industry showed how difficult it was to run longline businesses successfully. Whereas Ting Hong was seen as taking a business opportunity that locals could have used, LTFV was seen as a business providing locals with an opportunity to try their hand. MIFV was also seen as contributing to Majuro society; it was a major sponsor for the 2004 annual sports-fishing tournament (McCoy and Gillett 2005).

It is important to note that MIFV has not relied on passenger flights for its airfreight. Another subsidiary of the Luen Thai International Group owned Asia Pacific Air, an airfreight company with two Boeing 727s used to run mail contracts and support other Luen Thai businesses. Asia Pacific Air transported MIFV's sashimi out of Marshall Islands to markets in Japan and the United States (Gillett 2003; Chapman 2004a).

A smaller longline company, Edgewater, operated five longliners from a small base next to MIFV but targeted mostly shark.

### Pole-and-line

A Japanese distant water pole-and-line fleet, targeting skipjack for the Japanese market for fresh skipjack and for smoke-dried *katsuobushi* production, has operated continuously in the Marshall Islands EEZ since the 1960s. Although the size of the fleet was much larger in the early 1980s, it has been relatively stable for many years (Table 6.3). Indeed, as indicated by the increasing percentage of the regional catch coming from Marshall Islands' waters, it could be that the fleet is gravitating towards Marshall Islands as a preferred port, perhaps due to its business-friendly environment.

Further research would be needed to confirm the reason for Marshall Islands' increased percentage of the total catch in recent years, and to ascertain whether this fleet is likely to stay active in Marshall Islands in future, considering the overall decline in Japanese distant water tuna fleets. In addition and contrary to overall trends, oceanographic effects that moved the skipjack stocks further west meant the numbers of pole-and-line vessels operating in Marshall Islands waters plummeted from 35 in 2002 to two in 2003 (MIMRA 2004).

### Purse-seine

Until 1998, when purse-seine fishing in Marshall Islands' EEZ was restricted to a small number of US vessels, most purse-seine fishing was of unassociated (free-school) sets, with log sets in some years (Langley 2004). In 1998, fleets from Korea, Japan and Taiwan joined the US fleet (Table 6.4) and catches increased correspondingly (Table 6.5). Numbers of vessels flagged to countries in the FSM Arrangement have also increased. In 1998, when Japanese purse-seiners started to operate in Marshall Islands' waters, they brought with them their preferred method of drifting fish aggregating devices (FADs). Neither the Korean nor Taiwanese purse-seine fleets that also started fishing in Marshall Islands waters in 1998 used drifting FADs; they used mostly unassociated (free-school and bait-fish) sets and log sets (Langley 2004).

Table 6.5 Marshall Islands: purse-seine catches by year and species, 1980–2003

	Skipjack (metric tonnes)	Yellowfin (metric tonnes)
1980	0	0
1981	5	1
1982	766	475
1983	0	0
1984	0	0
1985	14	3
1986	49	65
1987	0	0
1988	1,381	334
1989	0	0
1990	938	1,882
1991	50	13
1992	8,841	2,203
1993	1,436	412
1994	4,279	432
1995	7,267	1,229
1996	1,181	401
1997	141	196
1998	47,984	22,458
1999	20,288	4,340
2000	21,161	1,522
2001	35,612	4,358
2002	29,733	1,858
2003	2,654	465

**Notes:** Data from 2003 incomplete.

**Source:** Langley, A., 2004. *Marshall Islands National Tuna Fishery Status Report No.5*, Oceanic Fisheries Program, Secretariat of the Pacific Community, Noumea, New Caledonia.

Although more than 100 purse-seine vessels were licensed to fish in Marshall Islands in 2004, on average, each vessel fished in the Marshallese EEZ for only 10–12 days a year. FSM Arrangement vessels had a higher average of 30 days a year, while the US vessels had an average of only two to five days a year (Langley 2004).

Marshall Islands has six registered (Marshall Islands-flagged) purse-seine vessels operating under the Palau Arrangement (MIMRA 2004; Chapman 2004a). In 2002, Koo Fishing operated five purse-seine vessels flagged to Marshall Islands. These vessels had previously been flagged in Vanuatu. The company maintains an office in Majuro and, according to MIMRA, most or all of the catch is trans-shipped in Majuro and counted as Marshall Islands exports (Gillett 2003). The Marshall Islands-flagged purse-seine fleet operates exclusively in the Western and Central Pacific Ocean under the FSM Arrangement (MIMRA 2004).

## Distant water fleets

Historically, access fees have provided a relatively high percentage of gross domestic product (5.12 per cent) for Marshall Islands compared with other countries in the region (Gillett and Lightfoot 2002).<sup>1</sup> Licence fees from distant water fleets constitute a significant source of revenue for Marshall Islands. For the financial year 2002–03, the total fisheries revenue received by Marshall Islands was US\$2,613,217.<sup>2</sup> Because fleets followed the fish away from Marshall Islands in 2003, this was much lower than the previous year's figure of about US\$4 million (MIMRA 2004).

Reforms to fisheries management since the late 1990s have improved the business environment, leading to an increase in fleets wishing to access Marshall Islands' waters when the fishing is good in that zone, so as to be able to trans-ship in Majuro.

Marshall Islands has in the past not been able to make the most of distant water access agreements due to a lack of capacity in independently checking the market prices secured for fish caught in the EEZ. That is, fishing companies seem to have declared a lower than market value for their catch and thus paid less fees, and, due to lack of information, MIMRA was unable to challenge the reported market figures. In addition, the fee system was described as 'administratively onerous' for MIMRA's small staff to handle (FFA 2001).

Distant water fleet access to Marshall Islands is negotiated in a number of ways (Table 6.3). Some countries had a government-to-government 'Head Agreement', but there were also government-to-company negotiations at the time of writing. China did not yet have a Head Agreement in the Pacific so it negotiated fishing access through locally based agents with the relevant Pacific island government authorities (McCoy and Gillett 2005).

The increase in numbers of international vessels using Majuro has led to an increase in certain social problems. Prostitution seems to be one of the thriving service industries for trans-shipping vessels. Unfortunately, there is a lack of awareness of and services for such social and health problems, meaning a high level of sexually transmitted infections (STIs) (*Marshall Islands Journal* 2001).

### Small-scale<sup>3</sup>

It was estimated in 2002 that the small-scale fleet took about 3 metric tonnes of tuna weekly in Majuro, and about 444 metric tonnes of fish annually in Marshall Islands, of which 5–10 per cent was tuna (Gillett 2003). As of 2004, 10 full-time and 25–30 part-time vessels were trolling for tuna and other pelagic species around Majuro, using FADs and bird patches, while an unknown number were trolling around reefs and bird patches in the outer islands (Chapman 2004a). MIMRA was sponsoring a multi-agency working group to develop community-based fisheries management programs (MIMRA 2004).

Small-scale fisheries have been supported by Japanese government aid. The first rural fishing centre, with boats and gear, was established on Arno in 1989. Freezers, an ice plant and other infrastructure were added in the early 1990s. About this time, Japanese aid was

also used to build a MIMRA dock and processing facility for coastal fisheries. MIMRA's Coastal Fisheries Division had an outer-islands fishing project that collected and helped market fish through two markets and seven fish bases. Fish from the outer islands are sold retail and wholesale in Majuro from a market centre (MIMRA 2004). MIMRA has overseen several programs to develop small-scale fisheries catching tuna, among other species, including longline tuna-fishing workshops and trials.

Coastal fishing catches were purchased and transported to Majuro for resale. During the 1990s, six other outer-island fishing centres were established, with associated gear (Chapman 2004a). Japanese fisheries aid was continuing in 2005 through Japan International Cooperation Agency (JICA) and Overseas Fisheries Cooperation Foundation (OFCF) projects (MIMRA 2004).

A sociological report commissioned as part of the Asian Development Bank (ADB) fisheries management review in the late 1990s recommended establishing a trust fund for coastal fisheries community development projects, as these projects were usually of too small a budget to be eligible for international aid. In 2003, MIMRA set aside US\$300,000 for such projects, with applications to be assessed and administered by a team of officials from MIMRA and the Marshall Islands Development Authority (MIMRA 2004). Although all of the Pacific island countries covered by this report included in fisheries planning documents the idea to channel some portion of commercial tuna fishing licence fees to coastal rural communities in this way, Marshall Islands was the only one that had implemented the idea.

Efforts to deploy several FADs in the late 1980s and early 1990s around Arno for small-scale fishing were unsuccessful. Four FADs were deployed around Majuro in the early 2000s, mainly for the benefit of game fishers (Chapman 2004a).

## Game fishing

Game fishing has been very popular in Marshall Islands among locals and tourists. Since 1983, the biggest club has been the Billfish Club ([www.billfishclub.com](http://www.billfishclub.com)). In 2004, there were about 25 charter vessels operating on Majuro, and 10 between Kwajalein and Arno. There were two big annual tournaments around Majuro, as well as monthly Billfish Club tournaments, and a couple of other events around the other islands (Chapman 2004a).

## Bait fishery

Bait fishing was first conducted in the Marshall Islands by Japanese pole-and-line fishers in the 1920s. There was a survey of several atolls in 1977–78 by Japanese interests, some Secretariat of the Pacific Community (SPC) bait-fishing trials in 1978, followed by some further trials in 1983 (Chapman 2004a). As of 2005, there were no bait-fishing trials or businesses operating, although in 2004 MIMRA had been considering a proposal to farm milkfish for the longline sector (Chapman 2004a). If a bait fishery could be developed, this could add to supply business for trans-shipping fleets and domesticate more of the turnover of distant water pole-and-line and longline fleets.

## Trans-shipping service and supply

Acting on technical advice received during a restructuring and reorientation of fisheries management and development in the late 1990s under an ADB loan, the Marshall Islands government developed Majuro as a service and supply centre for trans-shipping. Distant water fleets operating in the region were enticed to trans-ship in Majuro by duty-free fuel, relatively straightforward bureaucratic procedures and the air and sea freight connections available there. This policy has been successful economically, netting millions of dollars worth of revenue each year, as well as reaping the economic benefits of having the trans-shipping vessels staying in port for several days each trip and buying supplies.

Several companies have provided agency services for distant water fleets, including the multinational Ting Hong in the 1990s and local company Robert Reimers Enterprises Inc. Business and revenue generated by visiting fleets became a major source of economic benefits; the expenditure was estimated by MIMRA to be US\$15–20,000 per vessel, or US\$5–6 million for 300 visits a year (Ching Fu Shipbuilding Company c.2003). Numbers of trans-shipments increased steadily once the policy was implemented, from 118 in 1999 to 286 in 2001 (Gillett 2003), then fell in 2002–03 due to changes in oceanographic conditions, before rising again (MIMRA 2005).

Distant water fleets did not use Majuro for their supplies and service needs. Chinese vessels dry-docked and undertook all major refits and repairs in China (McCoy and Gillett 2005). The Japanese Zengyoren longline fleet bought steak and rice in Marshall Islands, and flew in their international crew (mostly Indonesian) to board in Majuro, but sourced virtually nothing else in Majuro and did not trans-ship there (Ishizaki, pers. comm.).<sup>4</sup> Because Japanese vessels use Indonesian crew, many of whom are Muslim, they have had trouble securing transit visas for their crew to pass through US airports since 11 September 2001. For this reason, Japanese vessels that had based themselves at Guam or Hawai'i in the past had looked for alternative bases, and thus started using Majuro more often. They had to use the Air Nauru route for their crews as this was the only flight in to Majuro that did not go through a US airport.

## Processing

In 1985, the first tuna-processing facilities were established on Majuro under a JICA project, called Fishbase. This was for processing and packing tuna from longline vessels bound for sashimi markets. The facility included wharves, freezers, cold stores, an ice-making machine, office space and two processing rooms. MIDA managed the plant for several years, until it was leased to a Hawaiian-based longline company in the early 1990s. This company upgraded the facilities somewhat and used it until the mid 1990s, when Ting Hong took over the facility. Ting Hong had a 20-year lease arrangement with MIMRA, but in 1998 MIMRA cancelled the contract because the facility was not being maintained properly. Around 2001, Fishbase was leased to MIFV.

As well as Fishbase, there were three other fresh-fish processing facilities on Majuro in 2004 (Chapman 2004a). One was a small sashimi-packing house owned by Edgewater.

There was also the MIMRA dock facility, which was used for coastal fisheries, collecting fish from outer-islands fisheries centres.

The third was the PM&O loining plant, built in 1999, which produced cooked tuna loins (for canning). This plant froze the loins and exported them to Starkist in Pago Pago, American Samoa. The plant operated under a Hazard Analysis Critical Control Point (HACCP) plan to conform to US Food and Drug Administration (FDA) standards (although in 2004 an SPC report highlighted that the plan had not been revised for several years). It employed about 500 local people in 2004, about 80 per cent of whom were women. PM&O was supplied with purse-seine-caught product by Starkist and had its own 2,000mt-capacity freezer storage area (Gillett 2003; Chapman 2004a).

In 2005, the facility had closed down, apparently due to persistent quality and financial problems after a change in management (Echigo, pers. comm.). The PM&O loining plant was successful for several years and appears to have failed for a fairly straightforward reason, so it could possibly be revived if suitable management could be found. In 2006, a Chinese purse-seine fishing company Shanghai Deep Sea Fisheries was considering reopening loining operations at the plant (Rodwell, pers. comm.).

## Determinants of success

### Fluctuations in tuna stocks

Catch statistics for Marshall Islands' EEZ, especially for skipjack surface fisheries, fluctuate due to oceanographic effects related to the El Niño/Southern Oscillation Index, sea temperatures and the depth of the thermocline (Langley 2004). This has consequences for the economic benefits possible from tuna resources. The purse-seine catch dropped significantly from 31,631mt in 2002 to just 3,500mt in 2003 (MIMRA 2004). This meant that distant water vessels moved away from the EEZ and did not use Majuro's port facilities. The number of purse-seiners trans-shipping through Majuro dropped by half, and the number of Japanese pole-and-line vessels dropped from 35 in 2002 to only two in 2003 (MIMRA 2004). Marshall Islands' policy of domesticating wealth from tuna fisheries through service and supply industries instead of domesticating fisheries *per se* meant that the country had a relatively low proportion of the catch in the EEZ caught by vessels flagged to Marshall Islands. The 2003 domestic industry development report raised this as a concern for Marshall Islands' future tuna aspirations, in that this could mean Marshall Islands recorded a low catch history. Depending on how allocation is worked out in the Western and Central Pacific Fisheries Commission (WCPFC), this could have negative consequences for Marshall Islands' allocation of the total allowable catch (TAC) (Gillett 2003).

Because there has not been substantial purse-seine fishing in Marshall Islands' waters for very long, there is insufficient data for scientists in the SPC to meaningfully correlate catch rates with oceanographic effects. Nevertheless, changing sea-surface temperatures and thermocline depths do seem to be significant (Langley 2004).

Scientific assessments of oceanographic affects on stocks available in the Marshall Islands' EEZ, including the effects of climate change, need to be taken into account when developing policy, especially regarding the purse-seine fleet.

## Freight

The substantial US military presence on Kwajalein has meant that Marshall Islands has had a relatively high volume of sea freight. Ships regularly bring in supplies and leave relatively empty, meaning there is reliable, frequent and reasonably priced freight for frozen or canned fish exports. The PM&O loining business apparently made use of this freight advantage.

## Human resources

During the 1990s, employment for Marshallese in tuna-related industries was insignificant: about 120 jobs, or 0.09 per cent of all formal jobs in Marshall Islands (Gillett 2003). This increased when several hundred people were employed in the loining factory, but in 2005, after the closure of the factory, the local employment level shrank back to levels similar to those in the 1990s. Productivity rates were not competitive because minimum-wage rates were pushed high by US work rights. Because Marshallese have the right to live and work in the United States under the Compact of Free Association, unemployment was not as pressing an issue in Marshall Islands as in some of the other Pacific island countries covered by this study. Thus, the willingness of Marshallese to work in commercial fishery industries has become a major issue (Chapman 2004a).

This lack of interest, along with relatively high expectations of remuneration, meant that Marshall Islands did not have a large, eager labour pool for domestic tuna developments. Unreliability, absenteeism and high turnover were cited as labour problems by industry interviewees in 2002 (Gillett 2003). Lack of skilled tradespeople for service industries and locally based fleets were also cited as a constraint in 2003 (Chapman 2004a). As of 2005, there was a shortage of workers skilled in ship repairs, especially in hydraulics and refrigeration. An SPC report from 2004 detailed ways in which Marshall Islands might increase the number of local tradespeople (Chapman 2004a). The foreign investment proposal for a floating dry dock included a training scheme (Ching Fu Shipbuilding Company c.2003).

The Fisheries and Nautical Training Centre (FNTC) conducted education and training in basic seamanship, marine engine and vessel maintenance and fishing techniques (including longlining), although no courses were run in 2002 or 2003 due to a shortage of funds and resources (Chapman 2004a). The College of the Marshall Islands has in the past offered vocational courses in trades relating to marine industries, as well as two-year diploma programs, which included marine-related topics. The college, however, had difficulty in encouraging students to take courses in marine studies areas, due to lack of interest in fisheries-related careers (Chapman 2004a).

## Future prospects

Future prospects for the tuna industry in Marshall Islands in 2005 looked similar to those outlined by Robert Gillett in 2003. Constraints on development of tuna industries noted by Gillett in 2002 included land availability, quality and price of labour, docking facilities and services, visa problems, lack of preparation for HACCP requirements, and

difficulties for local companies to compete against financially stronger Asian companies (Gillett 2003). Suggestions for improvements from Gillett include

- improved information on the likely future of the fishing fleets that Marshall Islands relies on for trans-shipping
- make sure future small-scale fisheries developments are technically and economically viable before starting
- develop a Tuna Management and Development Plan
- develop a HACCP strategy for exports
- make sure Marshall Islands is in a good position to achieve a reasonable allocation within the WCPFC
- develop the commercial code and streamline the procedures for establishing businesses, in terms of licensing and access to land.

Gillett (2003) found that one of the major advantages Marshall Islands had for developing tuna industries was that the government had made some reforms to its business environment. He found it rated highly compared with other Micronesian countries in terms of immigration and customs requirements, rates of prosecution for fishing-related violations, and the costs of ice, cold storage, stevedoring, packing materials and fuel. Marshall Islands was also seen as more attractive for tuna industries than some of its neighbours because of MIMRA's focus on industry, government incentives such as tax holidays and the quality of fisheries infrastructure. Marshall Islands attracted companies that found the business environment too difficult, for various reasons, in Guam, Palau and the Federated States of Micronesia.

## **Governing tuna industries**

Fisheries in Marshall Islands are governed by MIMRA, which was established in 1988 under the *MIMRA Act* (1986, revised 1997). There was an extensive review of Marshall Islands' fisheries policy and institutions under an ADB loan in the mid to late 1990s (ANZDEC Limited 1997). As part of this, a national fisheries policy was drafted and adopted by the cabinet in 1997, and was followed diligently by MIMRA. The development of Majuro as a service centre for trans-shipping fleets was one of the more significant outcomes of this reform effort.

Since then, the Forum Fisheries Agency (FFA), with funding provided by the Canadian government under the CSPOD II fund, has worked with MIMRA to develop a Tuna Management Plan. The process of developing the plan has included working on the following issues: i) assessing the feasibility of options for domestic tuna development, including a longline fishery; ii) identifying constraints to further development of Marshall Islands' tuna resources; iii) identifying potential infrastructure developments that would promote tuna-related development; and iv) reviewing Marshall Islands' labour-force issues for fisheries-related industries with a view to training needs (MIMRA 2004).

The Tuna Management Plan as an overall framework was formally adopted in mid 2005 by the government, with specific provisions to be worked out during 2006 (MIMRA



2005). Possible improvements to fisheries management and development, including introducing more consultative decision making, were detailed in a *National Preparation Report* for the Global Environment Facility Strategic Action Program (Lewis 2004b). Details of MIMRA's observer scheme are available from the 2005 WCPFC Scientific Committee Marshall Islands national report (MIMRA 2005).

As in other Pacific island countries, the Marshall Islands government has in the past been involved in tuna enterprises. This included MIDA's joint-venture partnership with a US purse-seining company, which started operations in 1989, and another which started in 1991 (Chapman 2004a). These operated at a net loss (Gillett 2003). An OFCF study from 1998 found that MIDA had invested about US\$12 million for tuna-industry development, largely unsuccessfully (Gillett 2003).

After these failures, the Marshall Islands government moved to a policy of providing an enabling environment for business, and having any tuna developments run by the private sector (Joseph, pers. comm.). The PM&O loining plant was an example of an entirely private-sector venture. Its failure thus cost the government nothing but the revenue and economic benefits that disappeared with the company's demise. In the case of the Fishbase, the government had worked around its ownership of the means of production by leasing it to the private sector rather than attempting to run it itself.

The Marshall Islands government has shown itself willing to follow some of the advice of technical specialists working on the ADB, SPC, FFA and CPSOD II-funded contributions to fisheries development policy. This willingness to try new ideas is probably why the Marshall Islands has been relatively successful with its tuna developments since the mid 1990s. It has not developed a large domestic industry, but the investments that have occurred during this time were profitable while they lasted and cost the government very little even when they failed. Developing Majuro as a service sector for trans-shipment has been an economic success story, albeit currently constrained by the seasonal nature of surface fisheries in the Marshall Islands EEZ, and qualified by social problems.

### Consultative processes in government

Due to the government policy of focusing on gaining wealth from distant water fishing via trans-shipment supply, servicing and processing, no industrial-scale domestic fishing industry has existed in Marshall Islands since the 1990s. In 2002, there was no commercial fisheries industry association in Marshall Islands. Larger companies such as PM&O and the MIFV were members of the Chamber of Commerce, and there was an association for tourism-related charter boats (Gillett 2003).

### Conclusion

Marshall Islands has experienced a number of setbacks and generally overcome them, moving from government involvement in fishing operations to successfully encouraging and supporting private-sector investment. The resource potential, freight and transport connections, and pragmatic, relatively business-friendly approach of the government to development means Marshall Islands is in a good position to maintain and increase

the wealth it generates from tuna industries (Tables 6.6 and 6.7). The shortage of local managers, a suitable labour pool and relatively high wages are constraints to tuna-industry development; these factors are at least caused partly by the ability of Marshallese to go to work in the United States. With the development of management skills and the implementation of its tuna management plan, the outlook could be improved further. The social impacts of hosting a busy international port in the lagoon detract from the economic benefits gained from tuna industries, so this is another area in need of policy attention. Finally, the fluctuations in the fortunes of the tuna sector are somewhat tied to El Niño cycle-driven resource availability, so strategies to smooth (or adapt to) this variation need to be factored into development strategies.

### Development aspirations and tuna

The Marshall Islands government's general development aspirations were laid out in the *Strategic Development Plan Framework 2003–2018: Vision 2018*. Specific objectives regarding marine resources mentioned in this document included (Chapman 2004a)

- maximising rents from resources within sustainable limits
- developing income-generating activities in sustainable coastal fisheries
- ensuring all new developments are sustainable by having them approved through management plans based on scientific stock assessments
- strengthening fisheries education and training and employment opportunities for graduates
- enhancing capacities of the sector to sustainably increase fisheries production, onshore processing, trade and exports.

Table 6.6 Marshall Islands: indicators of domestic development, 2001

	Locally based vessels active	Cannery/loining facilities	Sashimi packing facilities	RMI nationals jobs on vessels	RMI nationals jobs on shore	Frozen tuna exports (mt)	Fresh tuna exports (mt)	Cooked loin exports (mt)
PM&O Processing	0	1	0	0	395	0	0	3,852 (9,632mt raw tuna inputs)
MIFV	49 LL	0	1	0	38	0	76	0
Koo Fishing	5 PS	0	0	5	4	36,598	0	0
Edgewater	5 LL	0	1	0	20	0	0	0
Total	54 LL, 5 PS	1	2	5	457	36,598	76	3,852

**Notes:** LL: longline PS: purse-seine MIFV: Marshall Islands Fishing Venture.

This figure is not representative of MIFV's annual production because it started production late in 2001. In 2002, MIFV exported 1,121mt of fresh whole fish and loins and 1,120mt of frozen tuna and by-catch. Edgewater started up in late 2001 and did not start exporting until 2002.

**Source:** Gillett, R., 2003. *Domestic tuna industry development in the Pacific islands. The current situation and considerations for future development assistance*, FFA Report 03/01, Pacific Islands Forum Fisheries Agency, Honiara.

Table 6.7 Marshall Islands: indicators of tuna development, 2004–2005

Company/fleet	Domestic vessels: no. and type	Processing facilities: no. and type	Jobs for nationals: no. and type	Annual exports: volume and type	Annual domestic sales: volume and type
MIFV (vessels included in Chinese DWFN)	10 full-time and 25–30 part-time small-scale vessels operating around Majuro Several other small-scale vessels operating in outer-islands areas	7 fisheries centres around the country, including one in Majuro	-	0	Fresh chilled and frozen tuna for domestic consumption
Totals	38 longline several dozen small-scale	Fishbase, sashimi packing plant 9 fresh-fish processing facilities	0-	A-grade tuna to Japan as sashimi B and C-grade to US as loins/steaks	-

**Notes:** Edgewater fished and processed shark; it was unclear whether it also fished and processed tuna. Of the Japanese longline fleet, 11 vessels were not directly from Japan but were cited as being from the company Pacific Food and Services Inc. and 14 were from the Guam subsidiary of the company, Sanko Bussan. Of the 38 MIFV longline vessels listed here as Chinese, an unspecified number were Taiwanese owned.

**Sources:** Interviews conducted in June 2005, Marshall Islands Marine Resources Authority (MIMRA), 2005. Fisheries report—Marshall Islands, Paper read at First Meeting of the Scientific Committee WCPFC-SC1, Noumea, New Caledonia. Chapman, L., 2004b. *Nearshore domestic fisheries development in Pacific islands countries and territories*, Information Paper for Fourth Heads of Fisheries Meeting, Secretariat of the Pacific Community, Noumea, New Caledonia.

The picture of development from marine resources, including tuna, emerging from this list closely resembles the picture of development that emerges from MIMRA's policy and vision statement (MIMRA 2003).

**Policy.** Improve economic benefits from the fisheries sector within sustainable limits, promote responsible, private-sector led fishery developments, and strengthen institutional capacity to facilitate the responsible development and management of the nation's fisheries resources.

**Vision.** To develop the Marshall Islands into a major fishing port and centre for maritime activity within the Western and Central Pacific region.

Marshall Islands' aspirations for development from tuna resources are also listed in the tuna management plan as follows (MIMRA 2004)

- provide an enabling environment that will promote and encourage private-sector development in the commercial fishing, charter/sport fishing, processing and support sectors in Marshall Islands
- promote sustainable and responsible domestic development and harvesting of the tuna resource in the Marshall Islands EEZ in an environmentally friendly way, to provide food for local consumption and export-oriented income
- maximise the benefits and economic returns to Marshallese—local communities and Marshall Islands as a whole
- create employment and income-generating opportunities for Marshallese, including those in outer islands
- collect accurate data from all tuna fishery activities in Marshall Islands, ensuring that all by-catch and any interactions with protected species are recorded
- ensure that all development within the Marshall Islands tuna fishery is consistent and compatible with any obligations or requirements as set out in local legislation and/or international agreements that affect the Marshall Islands
- eventually reduce and replace foreign fishing access with Marshallese-owned and operated vessels.

## Domestic fishery development

MIMRA's pragmatic approach to development from tuna industries meant that, in light of the disastrous longline project in the 1990s, development of domestic fisheries was much less of a priority in Marshall Islands than in other Pacific island countries. Developing a domestic longline fishery was mentioned in early drafts of the Tuna Management Plan and SPC assistance had been sought to investigate possibilities, but in 2005 the director of MIMRA saw little likelihood that an economically viable domestic longline fishery could be established in the near future (Joseph, pers. comm.). Instead, the government's plan was to continue to domesticate wealth from fishing done by foreign-owned companies through processing the catch onshore and through service and supply industries. Other possibilities for domestic fisheries development mentioned in the 2003 Gillett report into domestic development for Pacific island countries included developing an albacore fishery in the north of the country, and developing a longline base at Enewetak close to concentrations of yellowfin and bigeye tuna, but these were not being pursued in 2005.

## Domestic processing

In the early 1990s, there had been talk of building a cannery in Majuro, pending access to land and a fresh water supply (Gillett 2003). In 2005, however, canning was not part of the Marshall Islands government's plans for increasing onshore production. One of the areas noted in 2002 as needing work to facilitate development of processing and tuna exporting was implementing a HACCP plan (Gillett 2003). By 2004, MIMRA had completed a HACCP plan with assistance from an FAO-funded consultant. Marshall Islands still needed to enact the regulations, set up an inspection laboratory and be approved as a Competent Authority by the European Union in order to be able to export processed foods to the European Union and had applied for 'pre-approved' status. MIFV was upgrading its facility in anticipation of changes being required in order to be able to export tuna loins and steaks to the European Union as well as to the United States (MIMRA 2004).

## Developing port infrastructure

Marshall Islands could boost its economic benefits from servicing international fleets further if it developed the capacity for ship repairs, such as a dry dock and a net-repair facility. Ships coming to Majuro for repairs might then stay in port for seven to 10 days, whereas for trans-shipping they stay an average of only five (Ching Fu Shipbuilding Company c.2003). Marshall Islands' existing dry-dock facilities were not large enough, but MIMRA had received proposals to develop port infrastructure, including a floating dry-dock facility (Ching Fu Shipbuilding Company c.2003).

Aspirations will have to overcome these difficulties for this kind of venture to work. Repair facilities would have to be reliable and their costs low enough to make it cheaper than for vessels to steam to and from cheap shipping repair centres in China. Another constraint for this type of industry is the seasonal nature of the Marshall Islands surface fishery.

Marshall Islands also has logistical difficulties with obtaining spare parts and other materials necessary for repairs. Since Marshall Islands seems to have more favourable freight conditions than other Pacific island countries covered by this report, the main issue appears to be that local businesses have not yet picked up on this demand. Possibly MIMRA could encourage local trading companies to import parts to enable service industries to be more competitive.

## Human resources development

Other benefits, such as meeting employment aspirations, could come from human resources development, if operations effectively trained and employed Marshallese labourers, technicians and managers. These kinds of jobs might be more desirable to Marshallese than working on fishing vessels. Because of the training required and because Marshall Islands' wage rates are high by regional standards, commercial proposals to develop ship-repair facilities have included requests for government assistance with training costs, and for reductions in the minimum-wage standard (Ching Fu Shipbuilding Company c.2003). Considering the wage levels in Marshall Islands compared with China,

where the Chinese and Japanese fleets based in Marshall Islands went for repairs (McCoy and Gillett 2005; Ishizaki, pers. comm.), it seems unlikely that ship-repair services in Marshall Islands could be competitively priced.

## Environmental issues

The word ‘sustainable’ was used in just about every aspiration listed in the Marshall Islands government documents relating to fisheries quoted in this report. The Minister for Resources and Development and chair of the MIMRA board, John Silk, wrote in his preface to the 2002–03 MIMRA *Annual Report*: ‘I cannot emphasize enough the fragility of our fishery environment and the need to ensure its sustainable use’ (MIMRA 2004). Other Pacific island countries covered by this report also used the word copiously in government documents about fisheries, but Marshall Islands was one of only two (the other being Papua New Guinea) that had committed itself through aid projects to a survey of coastal resources. Deep-sea offshore tuna fisheries are much more robust than near-shore fisheries, so it would be worthwhile for the Marshall Islands to consider management of near-shore fisheries, deflecting effort when necessary and possible to offshore tuna fisheries.

## Recommendations

- Maintain and progress advances made in the following areas
  - an enabling environment for private-sector development, especially in trans-shipment, viable onshore processing and service and supply areas
  - environmental monitoring of near-shore fisheries and the effects of pollution
  - a trust fund for small coastal development projects, emphasising the need for pre-assessment of projects to determine economic and biological sustainability.
- Improve capacity in MIMRA and the private sector, especially in the area of negotiating and administering distant water fleet access, and to ensure an adequately skilled workforce to support domestic industry development.
- Fully implement the Tuna Management Plan, including the development of management measures for tuna stocks.
- Develop and pursue clear negotiating objectives and strategies that maximise the long-term national benefits of regional and multilateral cooperation in tuna management.

## Notes

<sup>1</sup> Kiribati was the highest in this study, with an estimated 42.81 per cent of GDP coming from access fees in 1999. For Cook Islands, the figure was 0.21 per cent; for Papua New Guinea, 0.17 per cent; for Solomon Islands, 0.10 per cent; and for Fiji, 0.01 per cent (Gillett and Lightfoot 2002).

<sup>2</sup> This amount included licence fees as well as other fees collected by MIMRA from vessels under multilateral and bilateral access agreements.

<sup>3</sup> For a history of all the small-scale coastal fisheries development projects in Marshall Islands, see Chapman 2004a.

<sup>4</sup> The Japanese distant water longline fleet must trans-ship in Japan, so has not trans-shipped in Marshall Islands. They have ultra-low temperature (ULT) freezing capacity so stay out at sea for months or more than a year before needing to offload.