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Natural Resources and Pro-Poor Growth: The Economics and Politics

PART II

Chapter 6

Fisheries for Pro-Poor Growth

Fisheries are an important source of wealth for many developing countries. However, in many coastal areas fish stocks are severely threatened by overfishing. Institutional weaknesses, lack of capacity for effective policy implementation as well as the migratory and open access character of fish resources all pave the way for overexploitation. This chapter provides an overview of the institutional and political dimensions of sustaining fisheries for pro-poor growth.

6.1. Overview

Fisheries are an important source of wealth for many coastal and island developing countries. About 95% of the world's 50 million fishermen live in developing countries (FAO, 2007; OECD, 2008), and fisheries provide a critical source of food for millions. Internationally traded values in fish products from developing countries far exceed all other export commodities, and some countries generate up to 30% of their fiscal revenues through fisheries (OECD, 2005).

But fish stocks in many coastal areas of the developing world are severely threatened by overfishing. Institutional weaknesses, lack of capacity for effective policy implementation, as well as the migratory and open access character of fish resources underlie overexploitation.

To reconcile the joint objectives of growth, poverty reduction and the safeguarding of fishery resources, effective resource management is needed. Several political and management challenges in the fisheries industry, including illegal and unreported fishing, have to be addressed. Additionally, difficult choices regarding potential trade-offs between large-scale industrial fishing and local small-scale fishermen have to be made, and more public revenues from fisheries have to be generated. Notwithstanding these challenges, with improved management, fisheries can contribute increasingly to pro-poor growth, as several countries have shown.

6.2. The contribution of fisheries towards growth and the economy

6.2.1. Fisheries and GDP

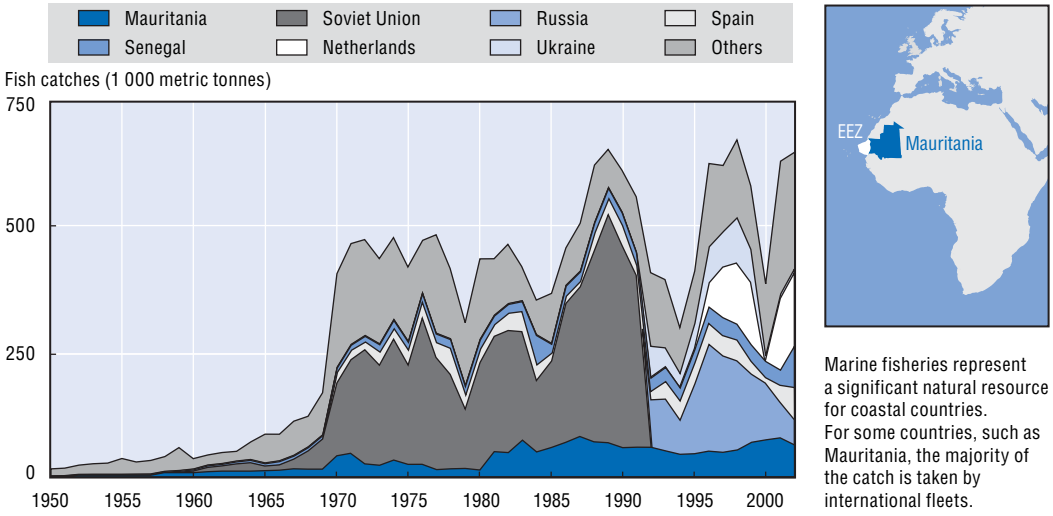
Fisheries contribute significantly to GDP in a range of low-income countries. The sector contributes more than 10% to GDP in some Asian countries, *e.g.* Cambodia, the Maldives and Kiribati, and more than 5% in African countries such as Gambia, Mauritania and Sao Tomé. In many Asian and West African countries, fisheries contribute between 2% and 5% to GDP (Sugiyama, Staples and Funge-Smith, 2004; Tallec and Kébé, 2006).

The fisheries sector has experienced a long period of expansion, but is now in crisis. Global marine production has increased six-fold over the last 50 years. Marine catches peaked in the late 1980s, and are now falling, despite increasing efforts (FAO, 2007b). In 2002, 72% of the world's marine fish stocks were being harvested faster than they could reproduce (UNEP, 2004). Higher value species are declining because of overfishing, and the production of low value fish for fishmeal[1] and oil accounts for 25% of the marine harvest (FAO, 2007b).

6.2.2. Fisheries and employment

Employment in fisheries and aquaculture is significant in developing countries, and has been growing steadily in most low- and middle-income countries. Fisheries provide employment for approximately 47 million fishermen in developing countries, mainly in Asia (84%). Most are involved in small-scale fisheries. In Indonesia alone, the sector employs more than 6 million people. Fishery also provides significant employment in

Figure 6.1. **Catches in the Mauritania exclusive economic zone (EEZ), 1950-2002**



Marine fisheries represent a significant natural resource for coastal countries. For some countries, such as Mauritania, the majority of the catch is taken by international fleets.

Source: University of British Columbia (2006), Seas Around Us Project, *www.seaaroundus.org/TrophicLevel/EEZTaxon.aspx?eez=478&fao=34&country=Mauritania&Hasnote=1&typeOut=4&Tx=1*, accessed 10 January 2006.

Box 6.1. **Aquaculture has rapidly gained economic importance, but is not necessarily pro-poor**

Aquaculture is growing globally, and makes up 20% of the global fish harvest in what is called the "blue revolution", to draw a comparison with agriculture's "green revolution". Aquaculture continues to grow more rapidly than all other animal food-producing sectors. Production from aquaculture has greatly outpaced population growth, with per capita supply from aquaculture increasing from 0.7 kg in 1970 to 7.1 kg in 2004, representing an annual growth rate of 7.1% (FAO, 2007b).

But large-scale, commercial aquaculture often imposes major costs on small-scale fishermen and farmers who face environmental hazards, rising land prices and the resulting externalities caused by pollution and degradation of land and water bodies, allowing them little opportunity to join the industry. In many cases, large-scale, commercial aquaculture receives state support, leaving small-scale prawn farmers with limited access to credit and know-how. Again the drive for profits has led to a boom and bust cycle of intensive shrimp cultivation followed by collapse because of spread of disease, with the cycle repeating itself. This has happened in several Asian countries.

Source: Personal communication with Network of Aquaculture Centres in Asia-Pacific, *www.enaca.org*.

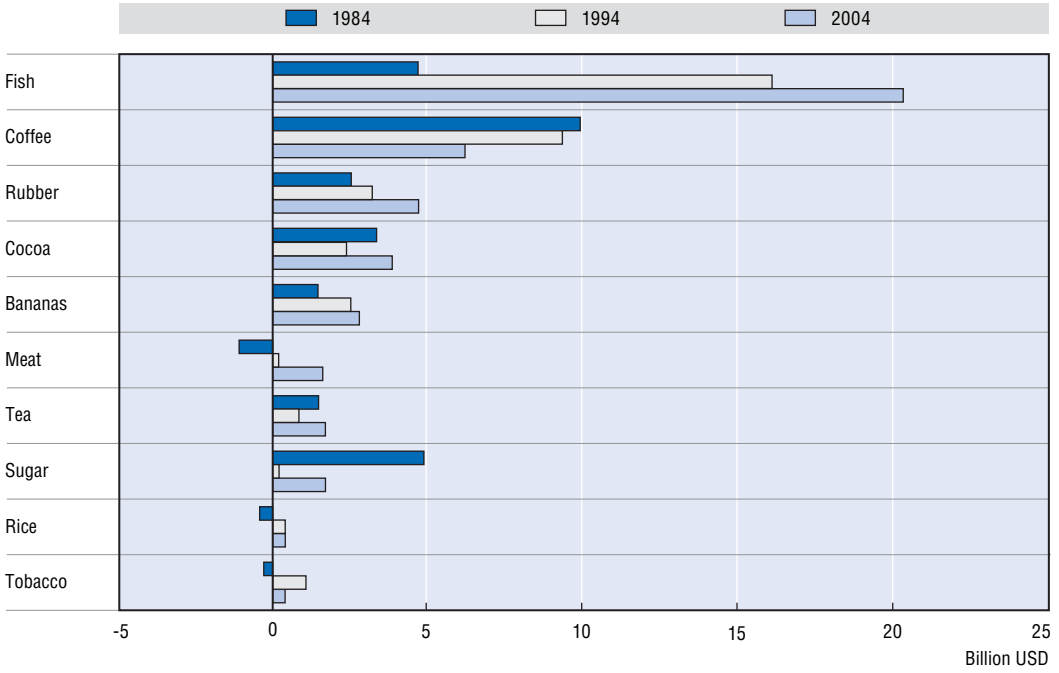
processing and marketing, which in many countries is primarily undertaken by women. Total employment including associated trades, input suppliers and fish processing probably exceeds 150 million (FAO, 2007b; MRAG, 2005a; MRAG, 2006b).

In several West African countries, 10% of the population or more earn their livelihood from fisheries, *e.g.* Benin (10%), Ghana (10%), Cape Verde Islands (14.6%), Gambia (15.4%). Inland and coastal fisheries and related fish processing and trading provide full or part-time employment to between 6 and 9 million people in sub-Saharan Africa (Tallec and Kébé, 2006; World Fish Center, n.d.).

6.2.3. Fishery exports

Fisheries can account for an important share of foreign exchange, and more than a third of the world's fish catch (by value) is traded internationally. Fish is the most valuable agricultural commodity that is traded internationally. Net export revenues from fish exports earned by developing countries reached USD 17.7 billion in 2001, more than coffee, cocoa, sugar and tea combined (OECD, 2006a; MRAG, 2005a; MRAG, 2006c). Seafood exports from Africa into the European Union were worth USD 1.75 billion and constituted the most important product among agricultural exports. For African least developed countries, the seafood trade was worth USD 570 million, and again this was the largest agricultural export product. There are at least 15 countries where fisheries provide over 5% of the exports. For some countries, particularly in West Africa and the Pacific, they provide 20-30% of total exports (FAO, 2007b).

Figure 6.2. **Net exports of selected agricultural commodities by developing countries**



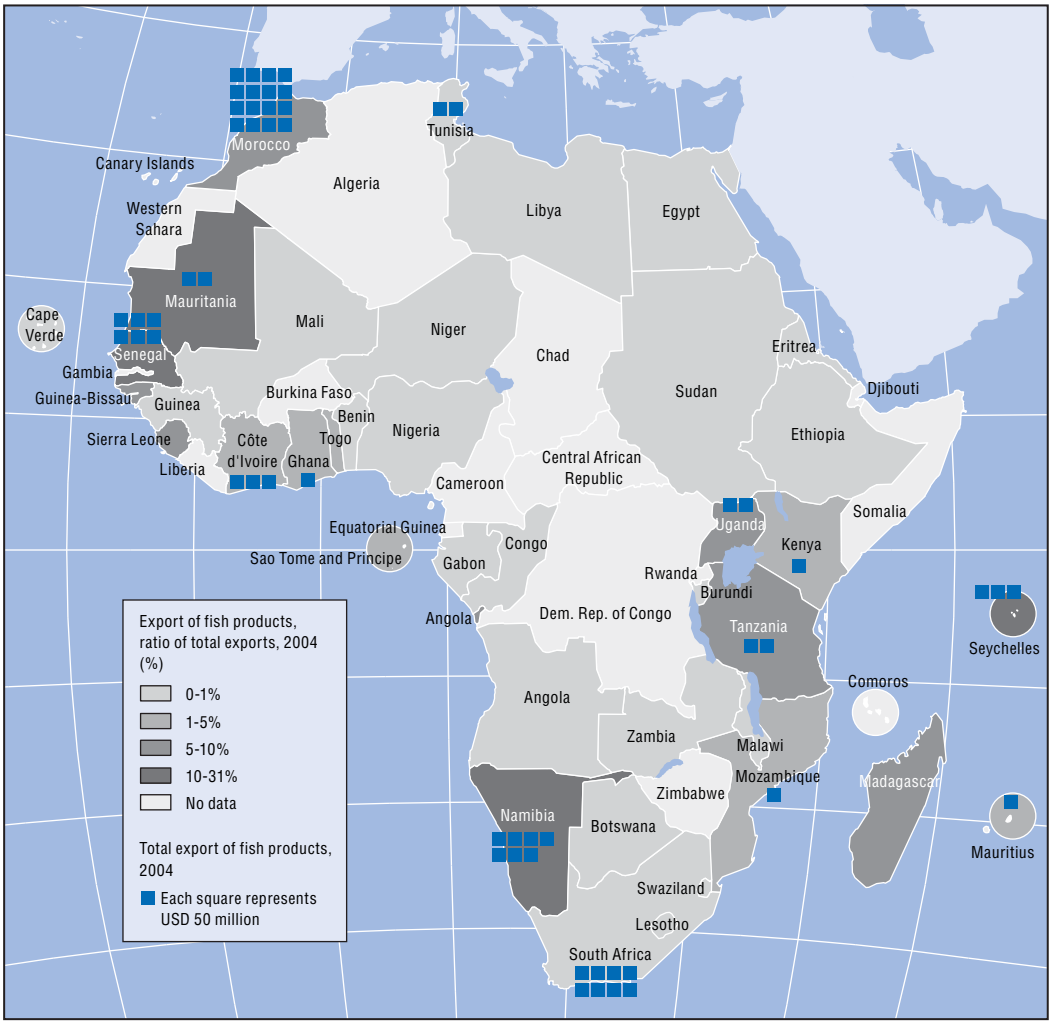
Source: FAO (2007b).

6.2.4. Public revenues from fisheries

Fisheries provide public revenues at the national level, particularly in fishery-rich countries. Many West African countries generate a large share of their public revenues through the sector. Between 1993 and 1999, fishery access agreements with foreign fleets provided 30% of the government revenue in Guinea Bissau, 15% in Mauritania and 13% in Sao Tome. At the local level, fishery taxes can provide a significant source of local revenues (OECD, 2005).

Mauritania had been looking for ways to increase the benefits from granting access to its fisheries resources to foreign fleets. The agreement signed with the European Union in 2001 provided for significant increases in financial compensation, greatly increasing the

Figure 6.3. **Export of fisheries products in Africa**



Note: For some African countries, particularly in West Africa and to a lesser extent also countries bordering the Indian Ocean, fisheries contribute significantly to exports. Real export figures may even be greater than official statistics suggest, given illegal trading. Furthermore, it is remarkable that the fish sector is important for a landlocked country like Uganda on the shores of Lake Victoria.

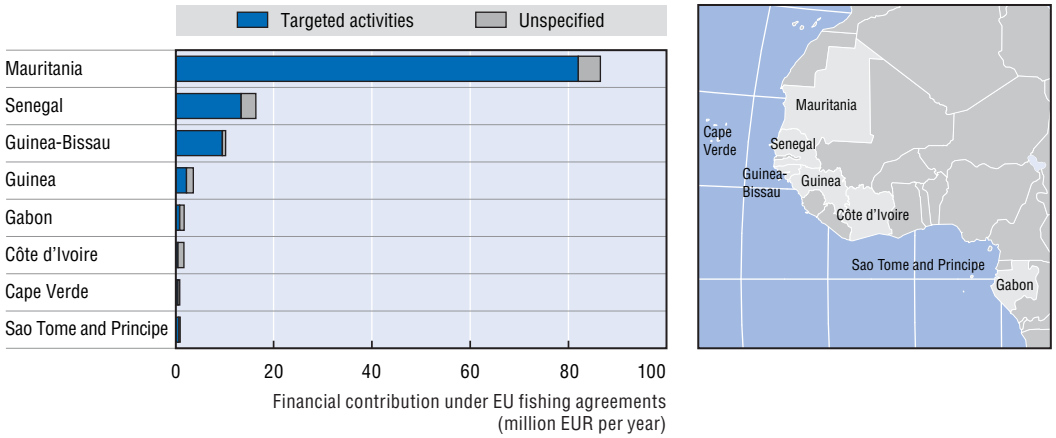
Source: FAO Fishery Information, Data and Statistics Unit (2006); FISHSTAT Plus – Fisheries commodities production and trade 1976-2004. *www.fao.org/fi/statist/FISOFT/FISHPLUS.asp, accessed 27 September 2006*. World Resources Institute (2006), *Earthtrends – Trade in Goods and Services: Exports of goods and services, http://earthtrends.wri.org/searchable_db/index.php?theme=5, accessed 27 September 2006*.

sector's contribution to the national budget. But it also included specific provisions for developing the local fisheries sector and improving the control and surveillance of fisheries activities, helping to conserve the resource. The latest agreement concluded with the European Union in 2006 includes annual financial contributions of EUR 86 million to the country, totalling EUR 516 million over the six-year period covered by the agreement (OECD, 2005; Agritrade, 2007).

6.2.5. Subsistence income from fisheries

The fisheries sector provides many poor communities with subsistence livelihoods. Some 50 million people dependent to some degree on fisheries are poor in absolute terms

Figure 6.4. **EU fishing agreements with West and Central African countries**



Notes: Financial contribution under EU fishing agreements (million EUR per year).
Fisheries activities by European Union countries in the seas of West Africa contribute EUR 120 million annually in government revenues. A part of the contribution is dedicated for the support of national fisheries policy to promote sustainable fishery resource management. For some of the poorest countries under these agreements, such as Guinea-Bissau, the EU payments represent a significant part of government revenues.

Source: FAO (2006), Contribution of fisheries to national economies in West and Central Africa – Policies to increase the wealth generated by small-scale fisheries, New Directions in Fisheries – A Series of Policy Briefs on Development Issues, No. 03. *www.sflp.org/briefs/eng/03.pdf* (accessed 4 October 2006).

Box 6.2. **Economic role of the fisheries sector in Bangladesh**

The fisheries sector is important for the Bangladesh economy. It accounts for some 4% of GDP and more than 11% of annual export earnings. The sector provides income to some 1.5 to 2 million full-time and around 12 million part-time fishermen. Furthermore, fish producers are among those people classified as extremely and moderately poor, male as well as female.

Within the sector, inland capture fisheries contribute 51%; aquaculture 21%; marine industrial fishery 1%; and marine artisanal fishery 27%, to total production. Government of Bangladesh statistics show sector annual growth rates of around 6.5%. Demand for fisheries products is strong and is expected to continue to grow.

Source: FAO Fishery and Aquaculture Country Profile Bangladesh (n.d.), *www.fao.org/fi/website/FIRetrieveAction.do?xml=FI-CP_BD.xml&dom=countrysector&xp_nav=1&xp_displayType=menu,* accessed 16 October 2007.

(OECD, 2006a). In Africa, some 150 million people (men, women and children) are primarily dependent on fisheries[2] for their livelihoods (World Fish Center, n.d.). For many poor families, fishing is a way of reducing their vulnerability to risks by supplementing and diversifying their incomes. It also provides a safety net for the poor when other economic opportunities are limited or other food sources such as agriculture are at seasonal lows. Small-scale fishermen provide half the world's fisheries production for direct consumption (MRAG, 2006c). Small fish are especially important for poor consumers, as they can be purchased in small quantities at low cost.

An estimated one billion people, mostly in low-income countries, depend on fish as their primary source of food (UNEP, 2004). Fish is also often one of the cheapest and most accessible sources of protein available to the poor. One billion people worldwide rely on fisheries as their main source of animal protein (MRAG, 2006c). In low-income food-

deficient countries (LIFDCs), fish makes up 22% of animal protein consumption overall (MRAG, 2006a). Additionally, fish is an important source of minerals and micronutrients to many low-income households.

6.3. What role can fisheries play in lifting people out of poverty?

The way that fisheries and aquaculture can contribute to pro-poor growth has been re-evaluated in the last two decades. Past approaches assumed that poor fishermen would benefit from increasing fisheries production and (often subsidised) technology. But this had disappointing results, with over-capitalised fishermen chasing fewer and fewer fish. There is now a greater focus on resource management and on improving governance processes to tackle the challenge of open access. Now the challenges are to *i*) increase growth, *ii*) ensure that the poor benefit from the resulting growth, and *iii*) sustain fisheries for pro-poor growth.

6.3.1. Increase growth through fisheries management

Reduce fishing effort in a pro-poor way. Sustainable harvesting of an overfished stock can be achieved by reducing fishing effort. This can be done by reducing fishing inputs, *e.g.* the type and amount of gear used, the number of fishing boats, or the capacity of each boat. Controlling fishing input can be done through various measures, including licensing (*e.g.* of vessels), allocation of rights (*e.g.* total allowable catch, individual quotas), and regulation (*e.g.* on gear types and sizes). The relative importance of various policy objectives determines the combination of measures that should be applied. If the objective is to maximise the generation of rents from, and economic value of, fisheries, that may entail restricting access to a small number of highly cost-efficient fishing boats, whose profit could be shared with the state through taxes, auctioning of access rights or other mechanisms. If, however, employment is the primary concern, a larger number of small vessels may be allowed access. Whatever the policy objectives, new styles of co-operation such as co-management structures in communities can be a way to address community-based fisheries management. Furthermore, the code of responsible fishing developed by the Food and Agriculture Organization (FAO) of the United Nations can guide fisheries management.

Raise productivity without creating overcapacity. It is important to invest in more productive fishing techniques and processing, but without creating overcapacity. This can be done by promoting competition, while subsidisation can encourage excessive capacity. For example, the Federated States of Micronesia spent USD 120 million to develop their own tuna-processing industry (as compared with a GDP of USD 194 million in 1993), but by 1995 all plants were operating at a loss (Schurman, 1998).

Combat illegal fishing. Illegal, unreported and unregulated (IUU) fishing[3] is a serious global problem, particularly in some of the poorest parts of the world. It represents a major loss of revenue, and can reduce food security.[4] In Guinea, up to 60% of vessels sighted during patrols in 2001 were fishing illegally. Under-reporting can be as high as 50% in Kenya and even 75% within the shrimp fisheries in Mozambique. The estimate for the total value of all IUU fishing across sub-Saharan Africa is about USD 900 million, or 16% of the total catch value for these countries. Many African countries could increase their GNP by up to 5% by eliminating IUU fishing and increase public revenues from fishery rents (MRAG, 2005b).

6.3.2. Ensure the poor benefit from growth through fisheries management

Ensure that industrial fisheries do not harm the poor. Subsistence fishermen are among "the poorest of the poor". In general, there is a direct link between the volumes caught offshore by commercial vessels and the possibilities for exploiting the same species in coastal zones. A major concern in such cases is competition between coastal self-employed and independent small-scale fishermen and domestic and foreign commercial fleets for the same fish stocks. Small-scale fishermen are politically marginalised, and typically have little influence on the negotiation of access agreements, so they get only limited benefits. Declining catches by self-employed fishermen caused by competition with industrial fishing vessels has been a major issue in West Africa and parts of Asia, such as Thailand, Indonesia and Cambodia.

Increase public revenues from fisheries. In the absence of taxation, the financial benefits from exploiting fisheries resources are fully captured by the private sector, without compensation to society at large. In addition, individual operators have no direct incentive to restrict their catch, since they do not, individually, derive any direct benefits from doing so. Imposition of levies on volume caught, in combination with proper management measures – which may include restricting access to fishing grounds – can generate revenues to compensate the owners of the resource, (*i.e.* the country whose fishing stocks are being exploited) and help reduce fishing efforts. Several African countries provide examples of how public revenues could be significantly increased (Box 6.3).

Box 6.3. **Hard bargaining for public revenues from foreign fishers: Successes in Africa**

Many developing coastal states are unable fully to harvest their fisheries resources. For them, fisheries agreements with foreign fleets are the main mechanism for generating public revenues from fishery resource extraction and regulating the catch. The agreements generally provide for financial compensation to be paid by the foreign country (or private operator) to the country in whose waters the fishing takes place.

Countries which have entered into access agreements include some of the poorest and least developed, such as Angola, Guinea Bissau, Mauritania, Mozambique, Sao Tome and Senegal. While these agreements represent significant financial resources, the potential for public revenue generation has not yet been fully realised. Until recently, access fees were equal to less than 1% of the total estimated value of the catch. Over the last six years, countries have stepped up their bargaining efforts, often supported by NGOs. Subsequently, Mauritania doubled its revenues to 30% of GDP, and Madagascar's shrimp fishery licence succeeded in capturing 8% of the fishery value by 2003.

Senegal signed a new agreement with the EU in 2002. It includes decreased fishing possibilities of sensitive stocks for EU vessels and provides for a two-month biological moratorium to give more protection to fish stocks and to minimise the risk of competition with the independent small-scale fleet. The financial compensation has also been increased from EUR 12 million to EUR 16 million a year.

Source: Rojat, Rojaosafara and Chaboud (2004); Europa: Gateway to the European Union Press Release 26/06/02: Commission welcomes renewal of EU/Senegal fisheries protocol, *http://europa.eu.int*.

Ensure that revenues raised are used for pro-poor expenditure. Typically fishery revenues enter the general treasury, so their pro-poor impact depends on the extent to which general government expenditure is pro-poor. However, there are cases where some of the

revenues are earmarked for improved fishery management, *e.g.* enhanced monitoring, control and surveillance.

Enhance opportunities for small-scale fishermen. Most fishery value-added production is capital-intensive, technology-intensive and skill-intensive. To benefit, fishery producers may need to form associations to negotiate better terms. Fisheries co-operatives, over the last two decades, have become discredited, as access to subsidised equipment and credit has led to elite capture and politicisation. However, there are several ways in which these groups can be supported to increase the value of the fishery assets of the poor, setting in place proper investments, policies and institutions. Investment can be made using the resources collected through devolved rent collection. One critical area is the provision for cold storage of the fish catch, both at landing sites and during transport. Since fish degrade quickly in tropical environments, up to half the landings may be lost before they reach the market. Other investments can include roads and electricity and the construction and management of landing sites. Furthermore, purchasing monopolies at the local level should be abolished.

6.3.3. Sustain fisheries for pro-poor growth

Fisheries tend to be an open access resource. It is widely recognised that free and open access often leads to overfishing. In Asia, the cumulative weight of fish living in coastal waters is estimated to be 8% to 12% of what it was 50 years ago. Even with more fishermen and more sophisticated equipment, the fish caught per unit of effort has been declining. In the Gulf of Thailand, the catch per hour by the same ship with the same equipment fell from 300 kg/hour in 1961, to 18 kg/hour in 1999. Collapsing fish stocks can have dire consequences for those who have come to depend on the resource (Bass and Steele, 2006).

Box 6.4. **Improved fishery management and increased rent capture in Namibia**

Before independence in 1990, access to Namibia's fisheries resources was largely uncontrolled and coastal waters were massively overfished, primarily by foreign fleets. The newly elected government instituted a new policy, a legal and management framework to manage effectively its fisheries and develop a domestic industry. Quota fees – based on total allowable catches for major species – and licence fees were introduced with fishing rights biased in favour of Namibian vessels. By-catch fees and a marine resources fund levy were imposed, based on tonnage of landed catch, to finance fisheries research and training. As a result, the sector contributed about USD 220 million to GDP in 2000 and was valued at USD 354 million in 2001. The indirect benefits have also been substantial: the fish-processing industry has grown rapidly. The number of whitefish-processing plants has grown from zero in 1991 to more than 20 in 2002, and employment in the sector has increased to about 14 000 people. The government also invested heavily in monitoring activities, with an integrated programme of inspection and patrols at sea (*i.e.* onboard observers), on land (monitoring of port landings) and in the air (via satellite). While expensive, this investment pays off. The ratio of monitoring costs to value of landed catch declined from an annual average of 6% over 1994-1997 to under 4% in 1999, reflecting an increasing value of landed catch. Namibia's rights-based fisheries management system incorporates an effective monitoring and compliance system at a cost that is commensurate with the socio-economic value of the sector. As a result, Namibia enjoys very high levels of compliance by its fishing industry, a situation very different from that in 1990. In its efforts to improve fisheries management, Namibia has benefited from assistance from several donors.

Source: Nichols (2003).

Shape rights-based institutions. A critical factor for sustaining pro-poor outcomes is the establishment of rights-based institutions in fisheries management. Most examples of successful fisheries involve some form of rights allocation, *e.g.* secured and transferable long-term access rights. Rights remove perverse incentives to race for fish and lead towards efficiency, rent optimisation and wealth accumulation. Furthermore, rights have clearly demonstrated economic and environmental success in countries such as New Zealand and Namibia. Namibia has developed a competitive, nationally owned fishing industry that generated profits of over USD 350 million in 2001 (Nichols, 2003) (Box 6.4).

6.4. The politics of sustaining pro-poor fisheries

Poverty in fisheries areas has major institutional and political dimensions. Fisheries may be capable, with appropriate management, of generating considerable wealth, which can then be reinvested in the economy and used as a basis for economic growth, poverty reduction and equitable distribution. However, the success of this process will depend on the institutional capacities of various types and the incentives required to make the right investment choices and to ensure effective implementation. To reconcile the joint objectives of growth, poverty reduction and the safeguarding of the fishery resource, there is a need for effective management. While state fishery departments have a vital role, they are often limited in capacity and prone to patronage. The high value of fisheries for the economies of many developing countries leads to high rents in the sector, which drive political incentives that are not necessarily pro-poor. However, there are examples where the government and the private sector have worked together to improve management, as was the case in Madagascar's shrimp industry (Box 6.5).

Box 6.5. **Promoting growth of the Madagascar shrimp industry**

Shrimp-fishing has been developed into a major industry in Madagascar. From the 1960s, it was managed through annual licences allowing access to either exclusive or common fishing zones. In the mid-1990s irregular and discretionary licensing exacerbated competition among fishing companies and a loss of confidence between the State and the private sector resulted in overfishing and serious threats to the future of the fishery. In 1994, on the joint initiative of the shrimp industry and government, a professional organisation was set up, designed to represent its members' interests and develop a fair policy dialogue. In 2000, a decree introduced new fishing rights, raised fees and made licences longer-lasting, transparent, competitive, transferable and dependent on annual economic performance reviews. Although some challenges remain, considerable progress has been made in building up working institutions, which show evidence of a successful co-management approach that is also paying off in economic terms. The shrimp industry is now providing USD 75 million in foreign exchange earnings, and licence fees have reached 8% of the catch value.

Source: Rojat, Rajaosafara and Chaboud (2004).

There is an urgent need to limit open access, but where many different fishermen use a single body of water, such as a coastal area, lagoon or lake, there remain limited incentives to work collectively over the short term. In most countries large-scale fishermen will have greater political access than smaller-scale self-employed fishermen. Often commercial fisheries will be given greater support by the state. Politicians also find it hard

to resist demand for subsidies for fishing gear, a factor that has contributed to overcapacity in the sector in many countries.

But access regulation provides advantages over the long term, *e.g.* preventing the degradation of the resource and subsequent increases in poverty. Comprehensive longer-term visions of resource management are needed, *e.g.* fleet size reduction combined with the development of economic opportunities beyond fishing, aiming at higher longer-term benefits.

There are also positive examples where the private sector has been forced to behave more responsibly. This can be facilitated both by government efforts and by the market through the development of fishery certification, which is now taking off through, for example, the Marine Stewardship Council. Most of the examples of certified catches are still from the industrialised world, but there are a few from the developing world. One is the South African Hake fishery (Box 6.6), and another is Vietnam's 2005 certification that was signed to promote sustainable fisheries throughout the country, starting with the catches of clam and anchovy.

Box 6.6. **Pro-poor growth in South Africa's hake fishery**

The lucrative fishing of hake took off in the 1950s to peak in the 1970s at more than 300 000 tonnes. Half of this was caught by foreign vessels. By the mid-1970s the fishery industry had collapsed from overfishing. The exclusion of foreign vessels and a conservative management strategy led to a gradual recovery. Since the late 1970s, the fisheries industry has been managed by company-allocated quotas and a Total Allowable Catch (TAC), limiting the numbers of vessels. The TAC had recovered to 164 000 tonnes in 2005 and accounted for half the value of South Africa's fisheries, and the industry has also been able to export to Europe and the US. Only domestic vessels are allowed to fish, of which 61 are deep sea and 29 are inshore boats. In 2004, the South African Deep Sea Trawling Industry Association decided to seek certification and in 2005, became the first hake fishery in the world to be certified as sustainable. Roy Gordon, managing director of I&J, one of the largest hake-processors said: "*This will help gain entry into new international markets which in turn would also mean the creation of additional jobs for South Africans and rich returns on the country's valuable hake resources.*"

Source: MSC (2005).

Pressure for pro-poor growth will require taking on the political forces that limit the voice of poor fishermen and a more pro-active private sector. Achieving this goal will require coalitions to drive reform from the poor themselves, supported by civil society and, where appropriate, external pressure. This is challenging, but there are some examples of limited success – for example in Kerala, India (Box 6.7).

Box 6.7. **Trawler bans in Kerala: Mobilisation of marginal fishermen to demand pro-poor growth**

"Our only hope lies in the sea, for we know that it belongs to the dead, the living, and those yet unborn."
Kerala fisherman

Until the 1960s, fishing in the southwest Indian state of Kerala was largely restricted to non-motorised craft dominated by certain caste groups. In 1961 there were an estimated 60 000 traditional fishing crafts. In the mid 1960s the government, with donor support, started to introduce small trawlers to take advantage of the rising demand for prawns. This led to declining real incomes for self-employed fishermen, from INR 850 a year in 1974 to INR 420 a year in 1982. There were also fewer fish available for poor consumers, for whom it was the main source of protein. In the 1970s, conflicts between trawlers and independent fishermen led to the formation of a trade union: the Kerala Independence Fishworkers' Federation. In 1981, this federation demanded a trawler ban when fish spawning takes place and a trawler-free coastal zone. Their tactics included fasts, road-blocks and protests at the government secretariat in the capital Trivandrum. Political parties created fishermen's organisations and joined in, to benefit from this mobilisation. Legislation was passed for zoning, and in 1989, after much agitation, the trawler ban was introduced. This ban was later dropped, but the self-employed fishermen have moved from being a marginal group to a key political force.

Source: Kurien (1992).

Notes

1. Fishmeal is used as feed for aquaculture and animal feed.
2. These are notional estimates. They do not account for millions of part-time, subsistence and seasonal fishers. According to ICLARM (2001), some 51 million people (95% of them in developing countries) rely directly on the sector for their livelihoods and another 10 million people are involved in aquaculture. If employment in related industries is taken into account, over 200 million people around the world heavily depend on fishing for their livelihoods.
3. IUU fishing within EEZ (Exclusive Economic Zones) encompasses poaching, under or non-reporting, or unauthorized fishing by area, season, gear, quota, or species. Outside EEZs, there may be non-compliance with an RFMO (Regional Fisheries Management Organisation), or there may be unregulated fishing outside the area of an RFMO.
4. IUU fishing also contributes to a loss of marine biodiversity and other negative environmental effects that are not in the focus of this report.

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