The global fisheries crisis: dispelling myths and misconceptions, and fishing for solutions

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Many authors have highlighted the crisis facing world fisheries and the threat this implies for the world economy, food supplies, and livelihoods. Several authors have diagnosed the problems (often simplified as 'too many boats chasing too few fish') and prescribed remedies (reducing the number of vessels or 'fishing capacity'). In general both the diagnoses made and remedies prescribed emphasize the need to address environmental problems (over fishing, resource depletion, habitat destruction, etc.) using technical managerial approaches (rights-based management, Marine Protected Areas, etc.). These are often based on partial data, myths, and misconceptions. They also fail to address the human dimensions of fisheries, especially the human rights of communities whose livelihoods and food security depend on accessing living aquatic resources. The Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication being developed by the FAO, along with related measures that link the promotion of best practices (for responsible fisheries), including 'scale subsidiarity', to the social development of fishing communities, would go a long way to resolving the global fisheries crisis while alleviating poverty and promoting sustainable development.

Keywords: fisheries, food security, human rights approach, scale subsidiarity, artisanal fishing, fishery chain, fishworker

FISHING AND FISHERIES-RELATED ACTIVITIES provide livelihoods, income, and food for millions of people the world over. Commerce and ancillary services (boat building, net making, supplies, provisions, etc.), together with processing, storage, and transport provide motors for driving economic development, employment creation, and for multiplying the benefits derived from primary production. Fisheries, especially small-scale fisheries, also make an important contribution to the progressive realization of the right to adequate food (De Schutter, 2012; FAO, 2013).

Given the crucial importance of fisheries as a source of food, livelihoods, economic well-being, and as a global patrimony of inestimable value, it is startling that fisheries are so riddled with misconceptions, so poorly understood, and so misrepresented; and, as a result, so mismanaged.

Recent decades have witnessed major transformations of the world's fisheries. The technology of fishing has become more capital-intensive and less environmentally benign. The growing international demand for fish has raised levels of trade, extraction, and pressure on fishery resources. Increasingly, communities that

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have traditionally depended on fishery activities have had to compete with other interests for access to coastal and aquatic resources and spaces. In many cases, they have responded by adopting more intensive practices that undermine sustainability and which are less equitable. But more often than not, fishing communities and small-scale fisheries are marginalized in negotiating processes, and tend to be displaced by competing interests such as mass tourism development, industrial aquaculture, land and sea grabbing activities, mining, oil and mineral extraction, and energy generation.

Coastal areas have been at the receiving end of great in-migration, urban expansion, and industrialization. This has affected, and sometimes dramatically altered, the living spaces of small-scale fishing communities and their access to the coastal waters. In most parts of the world, community-based institutional arrangements have come under strong socio-economic pressure. Communities living in low-lying areas which depend on fisheries for their livelihoods will need to adapt to rising sea levels and a higher incidence of natural disasters (including floods, tropical and other storms, and related storm surges). Changing weather patterns and extreme events are likely both to disrupt the fisheries on which they have traditionally depended and make their living conditions highly precarious (Garcia and Rosenberg, 2010).

All these changes are a reflection of the larger political, economic, technological, and social framework in which these sectors operate, and highlight the need for a radical change in approach.

According to FAO data, fisheries (capture fisheries and aquaculture) supplied the world with about 148 million tonnes of fish in 2010; of this, 128 million tonnes was used as human food. In 2009, fish accounted for 16.6 per cent of the world population's intake of animal protein and 6.5 per cent of all protein consumed. Worldwide, fish provides around 3 billion people with almost 20 per cent of their average per capita intake of animal protein, and 4.3 billion people with at least 15 per cent of such protein. FAO says that global capture fisheries production in 2008 was about 90 million tonnes, with an estimated first-sale value of US$93.9 bn, comprising about 80 million tonnes from marine waters and a record 10 million tonnes from inland waters (FAO SOFIA, 2012).

But all these figures are likely to be significant underestimates. The FAO only receives information on about 70 per cent of commercially exploited fish stocks. In the case of Africa, FAO receives data from 40 per cent of the countries. A 2011 study by the University of British Columbia (UBC) claimed catches from the Arctic are hugely under-reported and may be 75 times larger than previously estimated (Zeller et al., 2011). Another UBC study published in 2012 estimated that Chinese distant water fleets catch 12 times more than reported. Most countries also underestimate amounts of fish produced by small-scale fisheries. In fact, in many countries, such data are simply not gathered. In the case of Mozambique, a 2009 report showed when small-scale fisheries were properly included the fish catch was over six times greater than that reported by the Mozambique authorities to the FAO. The Big Numbers Project run by the WorldFish Center in Malaysia shows similar disparities between reported catches and actual catches by the small-scale sector (BNP, 2009).

To this must be added estimates that some 20 per cent of marine catch is illegal and unreported.

Where does the fish come from? Who catches it? Who consumes it?

Fish and fishery products continue to be among the most traded food commodities worldwide, accounting for about 10 per cent of total agricultural exports and 1 per cent of world merchandise trade in value terms. The share of total fishery production exported in the form of various food and feed items increased from 25 per cent in 1976 to about 38 per cent (57 million tonnes) in 2010. In the same period, world trade in fish and fishery products grew significantly also in value terms, rising from $8 bn to $102 bn (FAO SOFIA, 2012).

The Asian region accounts for most of the world's fishing communities and people who live from fishing (86 per cent). It is also where most of the world's fish (from both aquaculture and capture fisheries) is produced and where most fish is consumed.

FAO data for 2008 shows that China is the world's number one fish-catching nation, followed by Peru, Indonesia, USA, Japan, India, Chile, Russian Federation, Philippines, and Myanmar. However, for both Peru and Chile, a significant part of the fish catch is destined for industrial purposes through reduction to fishmeal and oil – roughly one-third of the world's recorded fish catch.

The most important fish-catching area by far is the North West Pacific (i.e. off Japan, China, Russia, and Korea), followed by the Southeast Pacific (where the catches off Peru and Chile are particularly important), West Central Pacific, North East Atlantic (EU and neighbouring countries), Eastern Indian Ocean, Western Indian Ocean, Eastern Central Atlantic (off West Africa), North East Pacific, South West Atlantic, and North West Atlantic. In 1987 the North West Atlantic (the Grand Banks of Newfoundland and adjacent areas) accounted for cod catches of around 14 million tonnes, today they are around 50,000 tonnes.

The 27 nation bloc of the European Union, Japan, and the USA are the world's most important markets for fish; 70 per cent of the fish catches that enter international trade is destined for these markets.

Japan is the single largest national importer of fish, followed by USA and then Spain, France, Italy, China (a large amount of which is for reprocessing), Germany, UK, Denmark, and North Korea. The largest exporting nations are China, Norway, Thailand, Denmark (mainly fishmeal), Vietnam, Chile, USA, Canada, Spain, and Netherlands.

Both Japan and the EU are increasingly dependent on fish caught outside their own waters, much of which is imported.

Japan is the world's most important fish-eating nation, consuming about 7.5 billion tonnes per year, or about 10 per cent of the world's catch. Japan may still be one of the largest fish-producing nations, ranking high in both the aquaculture (no. 10) and fish-catching charts (no. 5). But its self-sufficiency in fish has declined from 113 per cent in 1964 to 59 per cent in 2006; that is, its dependence on external supplies of fish has shot from zero in 1964 to 41 per cent in 2006.

Japan catches its fish from three kinds of fishing operations: distant-water operations (operated mainly on the high seas, as well as under bilateral agreements in the 200 mile exclusive economic zones (EEZs) of foreign countries); offshore operations (operated mainly in the domestic EEZ, as well as under bilateral agreements in the EEZs of neighbouring countries); and coastal operations (operated mainly in waters adjacent to fishing villages).

Of the three categories, distant-water fisheries and offshore fisheries have been declining: the former yielded 518,000 tonnes (worth about $1,620 m) and the latter yielded 2,500,000 tonnes (worth about $4,206 m) in 2006. In contrast, coastal fisheries have maintained a stable supply of marine products, yielding 1,451,000 tonnes (worth about $5,524 m) in 2006.

In the EU, a great deal of the imports comes from intra-regional trade. However, even when such trade is discounted, the EU still accounts for about 28 per cent by value of total world fish imports. The main suppliers are Norway, China, and Vietnam. USA, Iceland, Argentina, and Thailand are also major suppliers.

As in the case of Japan, the EU's dependence on fish from external waters is increasing alarmingly. It is currently at around 60 per cent. The EU's own catches include those from 'community waters', and from distant water operations. Distant water operations include activities in international waters (for tuna and small pelagic species (mackerels and such like)) and from catches made in the EEZs of third countries under bilateral fisheries agreements. These latter agreements account for around 25 per cent of the EU catch.

Fisheries production systems and fishery chains

One of the most fundamental misconceptions about fisheries and fishing is that fishing activities exist in isolation, as an enclave. This has tended to encourage the development of inappropriate fisheries policies and misconceived approaches to fisheries management and conservation. So too it has skewed fisheries development policy towards production and increased earnings from the sector, at the expense of the social and environmental dimensions. Thus the world over, fishery ecosystems are being overexploited and degraded by fishing practices that are both destructive and intensive, while the social and economic conditions in communities that depend on fishing remain poor. Such a productionist approach to fisheries, where modernization is seen essentially in terms of improved economic performance, has failed to deliver sustainable and equitable fisheries.

Fishing does not exist in isolation but as part of complex fishery production systems with many interlinked activities ranging from fishing to consumption. In turn fishery production systems and fishery activity chains are increasingly linked to global economic and financial systems, including investment and trade. This opens fisheries to speculation and other processes that may serve to undermine both the social and economic viability of the fishery production systems and the interlinked activities within the fishery chains.

If we define a fishery production system as a 'series or chain of interrelated operations, processes and activities aimed at transforming investment (in time,

energy, resources) into benefits (food, income, profits, capital)' (A. Garcia Allut, personal communication, 2010), and refer to the interlinked activities as 'fishery chains', fishery activities fall broadly into three categories. These are:

1. small-scale or artisanal activities (including subsistence as well as commercial fishing);
2. semi-industrial or small-scale industrial fishery activities; and
3. industrial or large-scale activities.

Each production system has its own characteristics, intrinsic advantages and disadvantages. These are highlighted in Figure 1. While this figure shows most of the major differences between large- and small-scale fisheries, it does not pick up on some of the aspects that make small-scale artisanal fisheries inherently more sustainable and large-scale industrial fisheries inherently less sustainable. An understanding of these aspects is crucial for dispelling some dangerous myths and misconceptions about fishery activities.

In the case of small-scale artisanal fisheries, activities tend to be locally based, diverse in scope, low in impact, energy efficient, and labour intensive. They use such gear as gillnets, hand lines, and fish traps, generally categorized as 'passive gear', which tend to be highly selective. Catches tend to be low-volume, but potentially high value. Fish production is for local, regional, and international human consumption markets, livelihoods, and for local social and economic activities. Catches are often sold to and marketed by women in fishing communities. Women are also involved in such pre-harvest activities as gear rigging and preparing the vessels for sea. Women are also key actors in processing (filleting, smoking, etc.) and retailing of fish at local and regional levels, notably in West African and Asian countries.

Small-scale industrial or semi-industrial fisheries tend to be relatively small in terms of size of operation, but relatively intense in application and impact. Their operations include trawling and similar operations that require high power and high fuel consumption. Their markets tend to be more towards high-volume markets (for example for fishmeal) and high-value export markets (as in the case of shrimp trawlers). Capital investment may be relatively high, at the expense of labour. The mechanized nature of the operations also has implications for economic viability and environmental sustainability; increasing fuel prices and resource scarcity are making this production system increasingly unsustainable.

Industrial and large-scale fishery production systems tend to be capital intensive, nomadic, and based on high-impact fishing gear (such as trawling or purse seining), with a relatively large carbon footprint. Industrial and semi-industrial operations are responsible for most of the world's discards (around 40 per cent or more of the world's fish catch) because of the unselective nature of their gear or economic pressures that encourage them to dump fish of low economic value.

The human consumption market outlets for their products, especially in Europe, include canned and frozen products generally sold through large retail outlets. These products are increasingly being marketed as 'sustainable' under such eco-label schemes as the 'Marine Stewardship Council' (MSC). The main fishing method employed in MSC-certified fisheries is trawling, one of the least sustainable

	Industrial	Artisanal/small-scale
No. of fishers and and fishworkers employed in marine fisheries	9 million	52 million
Annual marine fish catch	56 million tonnes	34 million tonnes
Percentage of marine catch used for local human consumption	56%	77%
Capital costs of each job on fishing vessels	US$30,000–300,000	US$250–2,500
Annual marine catch destined for reduction to fishmeal and oil, and non-food products	Around 22 million tonnes	Little
Annual fuel consumption	14–19 million tonnes	1–3 million tonnes
Quantity of fish caught per tonne of fuel used	2–5 tonnes	10–20 tonnes
Fishers employed for each US$1 million invested in fishing vessels	5–30	500–4,000
Discard rate	13%	3%

Figure 1 Efficiency in marine fisheries: industrial and small-scale fisheries compared
Source: after Thomson (1980), World Bank (2010)

fishing techniques known to mankind. Over 3 million tonnes, or 50 per cent of MSC-certified fishery tonnage, are caught in pelagic, mid-water or bottom trawls alone. Although developing countries contribute to 70 per cent of global marine capture fisheries production, their share in MSC-certified fisheries is quite low: 188,000 tonnes or just 3 per cent of total certified tonnage. And although the MSC unit of certification does not make a distinction between small- and large-scale or industrial fisheries, less than 6 per cent of the total MSC-certified tonnage comprises fish originating from small-scale fisheries (Mathew, 2011).

Production in industrial fisheries is geared towards mass consumption of fish as human food or as animal feed, based on an economic logic of high volume, low unit cost. Industrial fishing is essentially an investment sector, producing commodities for international markets, integrated into the global financial and food production systems. A new term, 'sea grabbing', recently has entered the fisheries lexicon, to describe the privatization of fishing rights and the procurement of access rights to fisheries by distant water fishing companies and commercial interests, often backed by international capital. Such 'grabbing' may be done through legalized market-based means (such as transferable quotas and concessions), licensing agreements, and irregular deals struck between senior ranking public servants and politicians and fishing companies.

Large-scale industrial operations may employ unqualified workers from poor countries, who are often forced to work under difficult conditions for low wages. The use of such forced labour is increasing in the EU, where young workers find fishing unattractive due to the low wages and difficult conditions, and the poor image of fishermen. The tactics used by recruitment agencies and the subcontracting that fishing companies engage in to meet their labour needs means that the responsibility for ensuring decent working conditions and providing decent wages including social security is ill-defined, and that workers are effectively tricked into accepting such conditions.

Industrial fishing also targets fish for industrial uses, which channels between 20 per cent and 30 per cent of the global fish catch into the production of fishmeal and fish oil. Such industrial fishing removes large quantities of smaller fish from marine ecosystems, much of which could be potentially channelled into fishery products for human consumption. For example, in Chile 400,000 tonnes of juvenile sardines were caught in 2012 for reduction into fishmeal, provoking a resource crisis in 2013, which has in turn led to a social and economic crisis in the fishing communities that depend on these resources.

Within fishery production systems the linked fishery chain activities fall into the three main realms of production, marketing, and consumption. Production includes pre-harvest activities (provision of inputs: navigational, fish catching, propulsion equipment); harvest or fish catching; and post-harvest activities (fish landing, vessel and gear maintenance, first sale of fish). Marketing includes the preparation and handling of fish after its first sale, intermediary sales, processing and packaging, transport, and retail sales. Consumption includes human consumption, with subsistence consumption at local level, luxury consumption at both local and global levels, and mass consumption at global level. Fishery products for direct human

consumption are increasingly finding their way into dietary supplements and into the pharmaceutical and cosmetics industries (as 'nutriceuticals'), and promoted as health products (as in the case of fish oil).

An important difference between small-scale artisanal and industrial production systems is that the links in the artisanal fishery chains tend to be longer and more complex, while for industrial production systems, the links are shorter and with a high degree of both vertical and horizontal integration. This tends to make small-scale artisanal fisheries much more equitable in distributing the benefits from fishery activities.

Fishery work and fishworkers

FAO report that employment in fisheries and aquaculture has grown substantially in the last three decades, with an average rate of increase of 3.6 per cent per year since 1980. But this registered increase may be more due to flaws in the process of gathering statistics than the reality. However, this does not detract from the fact that fisheries are an important source of food and livelihood for millions of people, often in remote locations with access to few alternatives. FAO estimate that in 2010, 54.8 million people were directly engaged, full-time or, more frequently, part-time, in capture fisheries or in aquaculture and at least 12 per cent of these were women (FAO SOFIA, 2012). Again this is likely to be an underestimate, given that women's engagement in the fisheries sector is often unpaid, unrecognized, and unrecorded. Many government statistical offices do not even record the numbers of women engaged in the sector (ICSF Women in Fisheries website; Harper et al., 2013).

Fishery workers, or 'fishworkers', comprise small-scale or artisanal fishermen, fisherwomen, and others whose livelihoods are based on fishing and fishery-related activities, including pre- and post-capture or harvesting activities. Several terms are used synonymously with fishworker, such as fisher (gender neutral form of fisherman, i.e. a man or woman who catches fin fish, shellfish, or even seaweed), and fisherfolk. The latter, like fishworker, applies to all workers in the fishing sector, including fishers, divers, gleaners, gatherers, traders, processing workers, gear riggers, etc.), fisher people (as in the World Forum of Fisher People, WFFP), and fish harvesters (as in the World Forum of Fish Harvesters and Fishworkers, WFF).

They include a plethora of actors, both men and women, who may be shore based or use vessels to access waters beyond the shore (in both inland and coastal areas), who may be highly visible, or whose activities are not properly taken account of, or adequately represented. They may also include groupings from indigenous peoples, local communities, or even migrant populations, rural communities, and urban populations.

Fishworkers organize themselves in several ways, at various levels, to engage in commerce, political lobbying, democratic processes, community management and administration, management of fishery-related activities, and so on. Their organizations reflect their diverse array of interests and activities, including vessel owners associations, crew syndicates, trade unions of workers, community-based

organizations that may be concerned with allocating fishing access rights and engaging in the management of fishery and fishery-related activities, cooperatives or producer organizations, and others. Often at national level, several organizations may represent fishworker interests, and often their voices may be conflictive.

Increasingly owners and workers of highly commercial, mechanized, intensive forms of fishing, such as trawling, are categorized along with subsistence-level fishers as small-scale and artisanal. They are often included in the same organization, where they attempt to speak with one voice. So too, fishworkers may include fishers, processors, and traders whose activities are geared towards export markets, as well as their counterparts whose activities are geared towards subsistence and local and regional markets.

On the one hand, there are many millions of fishworkers living below the poverty line, engaging in subsistence-level activities on the margins of society and the economy. On the other, there are those who are thriving commercial operators, engaged directly in the market economy, not 'poor fisherfolk', but rather a 'force for food production'.

Fishworkers have a keen understanding of the ecosystems to which they relate. This is manifested in numerous ways, as in the diversity, selectivity, and ecological sophistication of the craft and gear used. Small-scale fishing communities also feature institutional arrangements that emphasize use rights, greater equity, and quick conflict resolution. Taken together, these aspects constitute an important store of social capital that exists in the communities.

Just as there is no average or typical artisanal or small-scale fishery, there is no average or typical fishery worker. Small-scale fisheries the world over have evolved in time and locality from specific ecological and changing socio-economic and cultural contexts which are marked by diversity rather than homogeneity. Likewise, the nature of the work undertaken by workers in the fishery sector varies from one geographic location and cultural context to another.

Taking FAO statistics as our guide (FAO SOFIA, 2012), as a fishery worker, you are most likely to be Asian (around 87 per cent of fishery workers are in Asia) and employed in the marine sector (74 per cent of the global fishing fleet operates in marine waters). Traditionally, as a coastal villager your success as a fishery worker would to a large extent depend on your family relations and on your inherited and learned knowledge of meteorological and oceanographic conditions. As a seagoing fisher, you would have put to sea in the late hours of the night or in the early hours of the morning to take advantage of the cooling land relative to the sea and the resultant offshore winds to drive your sail-powered craft towards the fishing grounds. In the afternoon, as the land warmed up relative to the sea, you would use the onshore breeze to take you home. Your fishing craft would be small, light, and fragile, and your vessel handling abilities would be critical to your survival. You would have to work under gruelling conditions of sun, sea spray, icy winds, torrential rains, and in later life you would suffer from work-related ailments and disabilities, including arthritis and rheumatism, severed Achilles tendons, bronchitis and respiratory ailments, and skin cancer (FAO, 2007, 2012; see also Safety for Fishermen and ICSF Labour Standards in Fishing websites).

You would have used nets and lines made from cotton and other natural fibres, probably manufactured in your household by the unpaid labour of your womenfolk. Likewise on returning to shore, you would have either sold your fish directly to a 'middleman' to whom you were indebted (perhaps he owns the boat and gears), or passed the fish to your wife or mother for sale or household use. The unpaid labour of women would have been used to process (salt, dry, fillet and so on) the fish, and prepare it for sale or household consumption. As a seagoing fishery worker you would be entitled to your share of the catch, worked out after the boat's share, the gear's share, and operational costs have been taken account of. As a shore-based worker (carrying the catch to shore, mooring the vessel, processing the fish, rigging the nets, etc.), you may be paid in kind.

Your expert knowledge of your trade; of vessel handling at sea; of current and wind patterns; of the seasonal changes in fish movements and habits; of environmental signals that warn of danger or the presence of fish shoals; of navigation and the location of fishing grounds; of fish handling, processing, and marketing would have been passed on to you from your father, mother, elder brother, sister, and so on.

Modernization and globalization have changed many aspects of traditional life and the skills required for fishing: some for the good; some for the bad. These processes have also brought about dramatic changes in the way fishery workers earn their living. In many communities, motorization has replaced sail power, reducing the need to rely on the daily cycle of sea breezes and tides. International markets reach down to many local communities, demanding supplies of high-quality fishery products that must comply with their requirements. Small-scale fishing vessels now carry ice boxes, and may spend several days at sea. Satellite navigation (GPS devices) has replaced traditional positioning systems based on triangulation; electronic sonar and fish finding devices have replaced local knowledge of fishing grounds and environmental signals; and in many cases city-based export traders have replaced local women in the handling, processing, and sale of fish for local markets. Natural fibres have been replaced by nylon and other artificial fibres, and your equipment would no longer be manufactured locally but in centralized factories, bought through local outlets.

At a glance, modernization seems to have improved the lot of small-scale fishery workers. The back-breaking tasks of rowing vessels or hauling sails and gears have been made easier with motors and mechanical gear haulers. Earnings for some may have increased thanks to higher values obtained from export markets, but costs have also increased. As a woman fishery worker, you might find yourself having to exchange your body for fish ('sex for fish'), and be at high risk of HIV/AIDS and sexually transmitted diseases (Béné and Merten, 2008). Your husband and partners, in making long trips to distant grounds, and basing themselves in other fishing centres, may take other wives and partners, enhancing such risks, and leaving you alone to raise the children and to make ends meet.

The issue of child labour is also important; in 2008 some 60 per cent of the 215 million boys and girls estimated to be child labourers worldwide were engaged in the agriculture sector, including fisheries. True, learning about the sea, vessel handling and fishing requires apprenticeship starting from an early age. At the same time, it is

Box 1 Pescanova: how are the mighty fallen!

Pescanova, one of the world's largest fish producing companies and pioneer of freezing at sea, filed for bankruptcy protection on 1 March 2013. As well as declaring massive liabilities to the tune of €1,500 m, it has debts estimated to be between €2.5 and 3 bn. In addition significant discrepancies between the Pescanova accounting process and the bank debt figures have been announced, as has the opening of an investigation into 'possible evidence' of 'market abuse performed by the company, its directors or third parties'. According to company reports, Pescanova has fixed assets worth €1.12 bn, thus facing serious problems as it would not be able to settle its debts even by liquidating all its assets.

The Spanish company is the owner of the largest European fleet of fishing vessels (80 to 90 vessels catching 110,000 tonnes annually), and the second largest in the world behind the fleet operated by the Chinese Government. Pescanova, often through joint venture operations, secured exclusive fishing rights in a number of fishing grounds around the world. Its fleets operate from bases in Southern Africa, Latin America, and many countries around the world.

The company's fishing and marketing operations included subsidiaries and fishing quotas in Argentina, Chile, Namibia, Australia, the United States, and elsewhere. In addition to its large fishing and on-sea processing fleet, Pescanova has built up a highly vertically integrated business, enabling it to become a leading provider of fresh and frozen fish and fish products to the three major world markets: Europe, Japan, and the United States. Pescanova also diversified its operations from fish catching, processing, and marketing to aquaculture.

The company has dominated the Spanish fish and frozen foods market, gaining a 65 per cent market share. The company's subsidiaries include consumer products groups, such as Pescafina and Pescafresco, and others, including Caternova, for the restaurant and catering sector; Cofrio, supplying frozen fish and foods to the wholesale market; and Riazor, focused on shrimp and other shellfish and seafood products.

Sources: Undercurrent News and Grupo Pescanova websites

possible to differentiate between 'acceptable work' and 'harmful work', and to work to eliminate the 'worst forms of child labour'. Fishing communities are notorious for low levels of education, literacy, and numeracy, and depriving children of the chance to go to school and to obtain an education by pushing them into work at an early age deprives them of opportunities for their personal development and the development of their communities (FAO-ILO, 2011).

Too many boats, too few fish?

Most people agree that the main problems to be addressed are overfishing and fishing over capacity. Fish are being caught at a faster rate than they can reproduce and grow, fishery habitats are being destroyed faster than they can recover, and the fishing fleet is several times the size required to catch the fish available. This gives rise to a major misconception: that this is a problem of 'too many boats chasing too few fish', and the solution is to reduce the number of boats. But overfishing and fishing capacity are not just about numbers of boats. This is also about when and where fishing is done. It is a combination of size, power, fishing technology, location, season, and many other factors. It includes the use of unselective and environmentally destructive gear, and the application of management measures

that cause waste by discarding over-quota and lower-value fish, and which inadvertently cause the degradation of fishing grounds and key fisheries habitats.

The 'too many boats' view fails to identify those fishing fleets that do the most catching and the most damage. These are the highly mechanized vessels using gear such as bottom trawls that have the potential to do considerable damage to the environment, which discard large quantities of 'by-catch', and which exert huge pressures on fish stocks (Kolding and van Zwieten, 2011). It makes no distinction between small-scale artisanal fishing activities that are relatively sustainable and larger-scale industrial and semi-industrial activities that are relatively intensive and potentially highly destructive. Sustainable development requires that social, economic, and environmental demands are met in a balanced way. The industrialized fishing model, placing as it does relatively short-term economic demands ahead of social and environmental considerations, is not conducive to sustaining employment and decent work, food supplies, and a healthy environment.

For the International Collective in Support of Fishworkers (ICSF), the solution to overfishing starts with a SMART approach (based on Small-Scale Artisanal Fishing, as defined below), based on multi-species, multi-gear, low impact, multi-season, energy efficient, and labour-intensive fishing, that is integrated into upstream and downstream fisheries activities rooted in local communities, where the objectives of fisheries management should be both to conserve fisheries resources and to provide sustainable livelihood opportunities. SMART fisheries are of greater strategic importance and of greater inherent value to society at large compared with large-scale industrial fisheries. With due recognition and respect for human rights, and if provided with the right kind of support, SMART fisheries have tremendous potential to contribute to sustainable development and to the attainment of the United Nations Millennium Development Goals (FAO, 2013; De Schutter, 2012).

The principle of 'scale subsidiarity' could be one way forward (Bavink and Jentoft, 2011). This advocates that whatever fish stocks can be caught by small-scale fishermen, should be caught by small-scale fishermen; that larger-scale fishing units are considered in a fishery only after exhausting the possibility of employing smaller fishing units in the same fishery in the entire range of distribution of relevant fish stocks, with due consideration for the safety of such fishing operations as well as the safety and working conditions of fishers on board.

This would go hand in hand with 'a human rights-based approach to fisheries' based on the values, standards, and principles in the UN Charter and the UN Declaration on Human Rights, among others. Taken together these reflect an international consensus on a legal framework of entitlements and obligations to achieve human rights. Such a framework provides a widely endorsed vision of what development should strive to achieve: to secure the freedom, well-being, and dignity of all people (De Schutter, 2012). The benefits from fisheries should not be privatized at the cost of society.

Linking fishery rights and human rights reflects a move towards an approach more in line with the reality of the diverse livelihoods of small-scale fishing communities and the complexity of poverty. To apply a rights-based approach in this sense to the allocation of rights to fish implies also addressing the broader human rights of fishers to adequate livelihoods and equitable benefits (De Schutter, 2012). Good

access rights will balance social, cultural, economic, and environmental goals, assist in reducing conflict, enhance food security and livelihoods for small-scale fishers and fishing communities, and facilitate the conservation of local ecosystems.

This approach is inherent in a recent initiative of the FAO towards the development of International Guidelines for Securing Sustainable Small Scale Fisheries (FAO, 2013). It marks a departure for FAO and international instruments, which in the past have addressed only states. A human rights-based approach implies the involvement of all stakeholders. The coupling of an approach based on 'scale subsidiarity' and human rights principles would go a long way to righting many of the wrongs in fisheries (Béné, 2011; De Schutter, 2012; Charles et al., 2012; Allison et al., 2012).

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Safety for Fishermen: <www.safety-for-fishermen.org/en/>

International Collective in Support of Fishworkers (ICSF) Women in Fisheries: <http://wif.icsf.net/>

ICSF Labour Standards in Fishing: <http://labour.icsf.net/>

Undercurrent News: <www.undercurrentnews.com>