Fishing for the Millennium Development Goals:

small-scale fisheries showing the way forward

Eva Munk-Madsen/
Danish Society for a Living Sea

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Contents

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Method and purpose

This report is the result of a 2 month research project initiated by The Danish Society for a Living Sea and carried out by Dr. Scient. Eva Munk-Madsen (Consultant, Canada). It includes a case study performed by two Danish postgraduate students, Helga Mathiassen and Anders Barfod (Roskilde University, Denmark). The study focuses on the body of social science literature that discusses small-scale versus large-scale fisheries worldwide, alongside reports from NGO's (Non Governmental Organizations), international agencies and government bodies. Besides the literature study, two fieldworks have been carried out; one case study took place in Tamil Nadu in India and the other in Ghana, West Africa.

Firstly, the study aims to inform the Fisheries Network, which is an umbrella of Danish NGO's engaged in environmental, social and economic justice in the field of fisheries whether in Denmark, Europe or in developing countries. Currently three organizations are adjoined in the network: The Danish Society for a Living Sea, the Africa Contact and People Uniting and Generating Aid for Development (PUGAD). The network requested this research to attain a common and solid foundation for their contributions to the political process and in their project work, which aims to achieve the Millennium Development Goals. Secondly, the report seeks to provide accessible and reflexive information to engaged civic society, fishery bureaucrats and students.

The Millennium Development Goals were agreed upon in September 2000 by United Nations (UN) world leaders. The agreement is remarkable in that the formulated goals are very specific and endorsed by major international development institutions such as The International Monetary Fund (IMF), the World Bank, all member nations of the UN and the whole UN system as such. In the UN system the Food and Agriculture Organization (FAO) plays the key role in monitoring and defining problems and solutions regarding fishing and fishery development.

The eight goals read as follows:

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development

This study focuses on the role of fishing people, fishing communities, fishing nations and fishing corporations in relation to achieving these goals. Some of these goals are more closely connected to fisheries development than others, thus our focus is mainly on poverty reduction, food security, empowerment of women and environmental sustainability; i.e., goals 1, 3 & 7.

1. *Introduction:* **Fishing for subsistence, livelihood or corporate profit?**

To answer how fisheries worldwide can support the Millennium Development Goals we set out from a particular perspective: Fishing for food (subsistence fishing), fishing for a livelihood (family enterprise fishing) and fishing for commodities (industrial enterprise fishing) may all be modes of fisheries that can support human development. However, we choose to look at their direct contributions in eradicating hunger and poverty and their direct ability to generate employment by the means of distributing fishery resources among the many, rather than concentrating resources in the hands of the few (goal 1).

In mainstream development and political theory, economic growth in itself is assumed to foster human development. This entails a perception of fisheries as having an indirectly positive effect on human development through any profit they generate. Fisheries politics worldwide have thus been geared towards maximizing the production of commodities, and this policy has seen great success in achieving this goal. Fish products are now the highest traded food commodity on the world food market.[1] A side effect of this is that fish - nutritious high value protein - is exported from waters and countries affected by malnourishment and undernourishment to rich countries where consumers are able to pay, pick and choose to eat healthily.

Addressing the nutritional value of fish products – i.e., these products' ability to feed people – calls for greater scrutiny of the roles, positions and empowerment of women in fisheries and fishing communities (goal 3).[2] The actual responsibility for feeding the family depends on women's access to resources. The common perception that men provide for women and children does not hold true; crucial subsistence fishing and processing is often performed by women and children. Women's productive and reproductive activities in the fisheries and aquaculture sector are essential for achieving other development goals, and this needs recognition and support in policies concerning the management of resources, fish trade regulations and infrastructure.

Fisheries politics target human activities based on living natural resources. History shows us that there are limits to the amount that can be harvested from living marine resources without causing disturbance and a decline in the ability of such resources to reproduce themselves (goal 7). Based on scientific theories of the Maximum Sustainable Yield (MSY) of fish stocks, a huge effort has been taken to manage fisheries internationally, regionally and nationally. The international community of statisticians and marine biologists has made significant progress in the modeling and measuring of fish stocks and marine ecosystems, while governmental bodies that manage marine resources are constantly evolving. However, regardless of how well intended they may be, they have not prevented fish stocks from collapsing and overfishing continues to grow. The parties are struggling to manage a sea of decline rather than an ocean of abundance.[3]

Instead of looking only at sustainability or profitability we here set the task of investigating how different modes of fishing may directly support the 3 Millennium Development goals we will focus on:
The eradication of extreme poverty and hunger
The promotion of gender equality and the empowerment of women
The ensuring of environmental sustainability

While addressing these goals in the context of fisheries we will at times broaden them and at times specify them. Fishing directly for food and subsistence has the absolute highest value in connection with the eradication of hunger. When a 10-year old boy paddles out in fair weather into the red sea on a few boards tied together in order to catch a few small fish with a hook and line, this food may be essential for the dinner pot that his mother is to prepare for the family. Such activities never enter fisheries statistics and yet securing and supporting such subsistence opportunities are crucial for food security measures. No financial resources are required in many cases where fish are caught for subsistence; only time and skill are needed. Time and skill may be the only resources possessed by children, women or men fishing at a subsistence level, and for the poor the most productive way they can spend their time is in procuring food to eat for themselves.

Fishing for a livelihood, meanwhile, can make the difference between poverty and complete devastation; "livelihood fishing families" may be able to send their children to school and seek medical help when needed. Thus, fishing may provide the necessary means for directly achieving other Millennium Development Goals, such as maternal health and primary education. Securing access to fish resources for subsistence, part-time or full-time production – for women as well as for men – is thus vital for keeping the poor from devastation.

Fishing for commodities on an industrial scale targets the market of the wealthy, picky and choosy, rather than the hungry and poor. However, through the generation of employment for men and/or women it may keep families fed, housed and clothed as an indirect side-effect. This commonly assumed positive side-effect of corporate industrial fishing will be considered and compared to small-scale fisheries in our comparison of fishing modes.

Notes

1 FAO 2010

2 Choo et.al 2008

3 Pauly, Watson & Alder 2005

2. Small-scale versus large-scale fisheries

Small-scale and large-scale fisheries are two widely used categories in fisheries literature and in policy debates. Although the distinction sounds simple, a clarifying discussion is needed in order to achieve a common frame of reference, especially when referring to fisheries worldwide. There is a multitude of fishing modes in the world and rather than offering two distinct categories, small-scale and large-scale represents a continuum. At one end of the scale a child collects mussels in an estuary for her mother to prepare for supper, and a farmer, whose supplies have run short due to drought, rows out on the lake and throws his cast net to catch food for the family until the next harvest; while at the other end a factory ship owned by a multinational corporation with a bridge resembling a spaceship from a science fiction movie, with automated processing, freezing and storage capacity, highly advanced fish finding, navigation and communication technology, and engine power that can haul huge and heavy gear at great depth while manned by an international low-wage crew and sailing under flag of convenience, steams out onto the high seas and stays there for months at a time.

The categorization of fishing modes often occurs through defining oppositions:

- subsistence fishing versus commercial fishing
- coastal fishing versus distant water fishing
- artisanal fishing versus industrial fishing
- inland water fishing versus marine fishing

EEZ, Continental Shelf, High Sea, Flag of Convenience:

The United Nations (UN) agreed upon extending the national jurisdiction zone for coastal states of its waters from 12 to 200 nautical miles in 1977. This zone is called the Exclusive Economic Zone (EEZ). By signing UNCLOS (United Nations Common Law of the Sea) a coastal state is bound to respect the EEZ of other coastal states and may claim full jurisdiction of activities in their own EEZ.

With the extension of EEZ most of the global continental shelf (the shallower part of the sea bottom around the continents) now lies within national jurisdiction of one state or another. At some places the continental shelf stretches far out from the coast, while at other places it falls quickly and steeply to depths where light cannot penetrate and productivity ceases. Most productive fishing ground, globally speaking, lies on the continental shelf.

The high sea is the part of the ocean that lies outside the EEZ of any coastal state, and with a few exceptions there are generally less fish to be found here. High sea fishing may take place at the border of a productive EEZ – or illegally inside the bordering EEZs.

Every registered vessel, whether merchant or fishing, belongs to a flag state. A flag state has the right and duty to regulate and control the performance of vessels sailing under its flag. When a vessel registers in a state purely to avoid control and regulation, it is said to be sailing under a flag of convenience. Some states issues certificates without imposing any regulation or control of the vessels, just to make money on license fees.

Subsistence fishing means that the catch is for consumption in one's own household, although fish may be bartered or sold locally when a catch is higher than the need of the household.[1] Commercial fishing is based upon the sale of its catches, although to varying degrees it may also be the most important source for feeding the crew. While subsistence fishing definitely belongs in the small-scale category, commercial fishing is a continuum. This continuum covers a variety of fishing modes from traditional technologies to large-scale and highly modernized technologies that are incrementally larger in scale and/or more technologically advanced than previous modes. Ownership and organization is an aspect of the differentiation between small and large scale commercial fishing. The small-scale tends to operate through share-based livelihood fishing where crew and boat owners share the profit and risk, while large-scale operations tend to be corporate owned and profit-oriented fishing.[2] Scale also reflects the catch capacity of the vessel, i.e. the volume and value of the catch. Large vessels are able to fish large quantities while small-scale vessels take minor catches.

The distinction between small and large scale is blurred however when it comes to what is considered small-scale in the context of industrialized as opposed to developing countries. In Norway, a 12 meter vessel equipped with radar, satellite navigation, hydraulic steering, net-hauling, sonar, radio, and a lifesaving fleet etc., and manned by only one person yet catching as much as half a tonne per fishing day, is considered small-scale; yet if such a vessel ap-

peared in Mindanao in the Philippines it would certainly not be considered small. Conversely, fishing with large traditional canoes (a centuries old fishing mode prevailing in Africa and Asia) would be considered large-scale in the local context but small-scale if entering the fishing harbor of Bergen, Norway

Inland, coastal or distant water fishing will criss-cross the small-scale/large-scale distinction. Small-scale vessels from Indonesia cover long distances to catch high-value species in foreign waters,[3] and huge trawlers infringe into coastal waters and even into rivers if not banned and controlled.[4] However, inland, freshwater and coastal fisheries are generally small-scale, while distant water fisheries are generally large-scale.

Fishing modes related to locations:
Marine fishing: Fishing in salty seawater
Freshwater fishing: Fishing in freshwater lakes, rivers and inland water bodies
*Inland- or backwater fishing***:** Fishing in lakes or water bodies connected to the sea by a tidal or seasonal influx of sea water, rivers or canals; often brackish water (low salinity)
Coastal fishing/ in-shore fishing: Fishing that takes place in the vicinity of the coast
Distant water fishing/deep sea/off-shore fishing: Fishing that takes place far from the coast and/or home harbor of the vessel/crew

The distinction between artisanal/traditional and industrial fishing reflects the level of technology applied. Fishing boats powered by wind and oars are definitely artisanal when used in the context of developing countries, but recreational if used in the context of industrialized countries. However, sophisticated speedboats for tuna-fishing would be recreational in the waters of developing countries. In many artisanal fisheries outboard motors are now attached to traditionally crafted canoes that may be longer than 12 meters and have a crew of more than 10. Although such new technologies are being used in this context, we still consider such fisheries artisanal due to their social organization and the way they are embedded in the socio-cultural context of traditional fisheries.
To sum up, we lean on the Food and Agriculture Organization of the United Nations' (FAO) description of small-scale fishing as: "*labor-intensive fisheries using relatively small crafts (if any) and little capital and equipment per person on board. Most often family-owned. May be commercial or for subsistence (see below). Usually low fuel consumption.*" We let artisanal fishing be included as small-scale following this description: *"Typically traditional fisheries involving fishing households (as opposed to companies), using relatively small amount of capital, relatively small fishing vessels, making short fishing trips, close to the shore, mainly for local consumption."*[5]

Small scale inland water fishing on the Aral lake in Kazakhstan (Photo: Knud Andersen)

In industrialized countries, small-scale fisheries as well as large-scale fisheries are industrialized. Subsistence fishing is now termed recreational fishing, but may still be performed by less mechanized methods. Large-scale distant water fishing has a long history; much longer than industrialization. For six centuries, European large-scale distant water fishing and small-scale coastal fishing has co-existed as two complimentary modes of production. The former is a corporate based mode of production that exploits distant fishing grounds that require large vessels, supplies and equipment, and which demand investments beyond the reach of coastal fisheries.[6] In this way, salted cod-fish was brought to the European market, as well as whale oil to light the street lamps in medieval cities.

While large-scale distant water fishing has been capitalized and pursued for profit following the logic of rent-maximization, small-scale fishing for livelihood and subsistence fishing has been share-based and has taken place in numerous coastal communities. In coastal and small-scale fishing a sharing of risk and profit was and is common. Crewmembers still get a share of the catch – they are not wage-workers – while boat-owners work side by side with their crew as the fishing activity is perceived as a good way of life, and not merely a financial investment that could be replaced if a more profitable investment opportunity occurred.[7]

In industrialized fisheries, high-level technology and fishing methods are used in all vessels regardless of their size, and these are also penetrating into traditional fisheries in developing countries. This process lowers the labor inten-

sity and heightens the capital intensity, thus raising the investment level needed to begin a fishing operation. The larger the vessel and application of high-tech equipment the more capital is needed, while a larger share of the catch also needs to be sold to pay off investments and investors. This also means that less is left for the crew, i.e. those who actually perform the work. However, throughout this process of industrializing small-scale fisheries, the social organization and share-based remuneration, which is common throughout the world in small-scale livelihood fisheries, has survived.

As all large-scale fisheries today are industrialized we can sum up by quoting FAO's description of industrial fisheries: "*capital-intensive fisheries using relatively large vessels with a high degree of mechanization and that normally have advanced fish finding and navigational equipment. Such fisheries have a high production capacity and the catch per unit effort is normally relatively high.*"[8]

The FAO compiles data from fishing nations to monitor world fisheries. In the report "State of the World Fisheries", FAO uses vessel length to distinguish between small and large scale operations: Vessels below 12 meters are considered small-scale while vessels of 12 meters and over are considered large-scale. This is a simple definition that serves the purpose of presenting consistent statistics, but does not do justice to the qualitative characteristics of the different fishing modes that we pursue.

Machine power rather than manpower is employed in large-scale fishing

We will, however, present findings that are illustrative for our purpose of investigating fishing modes in relation to food security and poverty alleviation, equity and ecological sustainability. In its 2010 report, FAO's data reveals that more than 80% of the registered fishing vessels of the world are less than 12 meters. As inland vessels are not registered at all, the percentage of small-scale vessels in the world fishing fleet is higher. The fishing capacity, however, cannot be assessed by counting the number of vessels because one large factory ship may exceed the catch capacity of a small vessel a thousand fold and the investment to pay off a billion fold.

In 2008, 41% of the registered vessels were non-engine boats powered by wind and/or oars, which means they are clearly artisanal, small-scale vessels. This estimate is 4% lower than the data for 1998, showing a tendency towards motorization. 77% of the wind/oar powered vessels are in Asia and 20% in Africa,[9] which evidences the extinction of this climate-friendly fishing mode in industrialized countries (it is also decreasing in developing countries).

The general difference in scale in fisheries between developing and industrialized countries is illustrated by production levels. The average yearly production per fish worker is 24 tonne in Europe and 2.4 tonne in Asia. For aquaculture a comparison between Norway and India gives the same evidence. The production rate in aquaculture in Norway is 172 tons annually per fish worker compared to 2 tons in India.[10] But efficiency in production rates does not indicate the efficiency in distribution or the efficiency in providing equity, sustainability and poverty alleviation. Who benefits from the productivity and how does the productivity sustain the Millennium Development Goals? We will examine this more closely in the following chapters.

Notes

1 Snowman 2006
2 Højrup 2011
3 Field et. al. 2009
4 Ajantha 2009; personal communication: a teacher at the fisheries school in Esbjerg Denmark explained in 1979 how in the 1960s he skippered a trawler sent to West Africa as part of Danish Development Aid. As they ignorantly trawled up and down the river mouth they were attacked by angry canoe fishers whose fishing grounds they intruded upon and whose equipment they destroyed.
5 FAO 2012
6 Højrup 2011
7 Ibid
8 FAO 2012
9 FAO 2011
10 Ibid.

3. Overfishing

Human fishing activities increasingly exceed the capacity of marine and freshwater ecosystems to maintain a healthy balance. Numerous fish stocks have been depleted – FAO estimates that 80% of the fish stocks worldwide are fully exploited or over-exploited[1] – some species are threatened by extinction while stocks are at the verge of collapse. This is the tragedy called overfishing.[2]

Even in pre-historical times, archeological evidence suggests that human hunting practices drove species of large mammals to extinction. In later medieval times a fleet of ships from the Netherlands hunted ancient slow-swimming whales in the Polar Sea for their blubber to light the street lamps of European cities; two such species were driven to extinction long before industrialization occurred. The collapse of the cod stock at the Grand Banks outside Newfoundland did not occur until the diesel engine and war-time technologies, such as sonar and radar, had been applied in a fishery that supplied European markets with salted fish for centuries. Although cod-fishing was completely banned at The Grand Banks in 1992, the cod stock has never recovered. This is an alarming example of how unsustainable fisheries can cause irreversible changes in ecosystems **even** for species that are short-lived and fast-growing.[3]

Industrialization and the growing scale of fisheries have increased the range and capacity of the fishing fleet to such an extent that no corner of the ocean is spared. There is a tendency to fish at lower levels of the food chain as the top-predators are depleted; as the higher levels of edible fishes in the food chain are depleted, inedible jellyfish may take over previous bio-diverse systems. The depletion of marine eco-systems makes them vulnerable to natural fluctuations and this poses a threat to our food security both locally and globally.[4] In times of climate change far beyond our control and what we are able to reverse, non-destructive fishing practices become even more urgent.

Getting the most out of fish resources has dominated the management rationale for fisheries scientists as well as policy makers. Fisheries management was not founded on principles of ecological caution; it was founded on principles of maximum economic return. Maximum Sustainable Yield (MSY) is a scientific assessment of the optimal amount of fish to harvest from a given stock without depleting the reproductive potential of the stock, and it became a tool in political negotiations between fishing nations. MSY, the biological scientific fisheries regulation tool, has been refined by fisheries economists into MEY, Maximum Economic Yield, turning the goal of fishing from volume to value and from food to profit.

The United Nations Convention on the Law of The Sea (UNCLOS) allowed coastal states to claim an Exclusive Economic Zone reaching 200 miles out into the sea in 1977. This gave national sovereignty to many rich fishing grounds and moved earlier fights from the battlefield at sea to the negotiation tables of bilateral fisheries agreements. Although UNCLOS gave regulation opportunities stretching much further from the shore than the previous 3, 12 and 20 mile zones did, the management rationale of maximization was engraved in UNCLOS. If a nation was unable to harvest MSY in its own waters then other countries could do so. Many developing countries with rich fishing grounds neither had nor currently have the institutions or the money to build them and assess and monitor their marine resources. Their fisheries were artisanal rather than industrial, and although artisanal canoe fishing may go far out to sea they by no means have the capacity of an industrialized distant water fishing fleet.

Hungry fleets of highly efficient industrial distant water vessels seeking to make profitable returns on huge investments explored the high seas – the areas outside the established national EEZs – and entered the waters of developing countries with cash for access agreements, or simply by performing Illegal Unreported and Unregulated fishing (IUU) (see chapter 8).[5] For the EU such agreements were politically essential for the inclusion of new fishing member states who obtained their fishing rights in the waters of developing countries rather than in EU waters. The Spanish and Portuguese distant water fleets were not welcomed into EU waters when these countries applied for membership. The solution to include them as members of the EU in 1985 was to make cash agreements between the EU and countries in West Africa. This method of avoiding increase of overcapacity in the home waters of the EU by the entry of more member states was used again in 2004 when Estonia, Latvia and Lithuania were included in the EU.

While UNCLOS and a range of other international agreements on sustainability and biodiversity protection take resource monitoring and fishing effort control for granted, both of these measures have failed to save the fishing grounds and fish stocks of developed nations – even those with the most democratic and conscientious orientation. Attaining sound agreements concerning fishing effort is a political minefield with a powerful corporative lobby that protects its investments and prospects of profit. Even after fishing regulations have been

agreed upon they still have to be enforced, and it is extremely difficult and often practically impossible to control fishing activities and enforce regulations.

No-one knows better than the fishermen and fishing corporations how irresistible it is to go for the best catch rather than complying with legal rules. Evidence from a season on a scallop-scraping Norwegian factory ship in the Polar Sea in the late 1980s is but one simple illustrative example. The detection of a new resource around Spitzbergen of arctic scallops led to an immediate investment in a newly built fleet of huge factory vessels. Each and every vessel on the fishing ground was scraping for scallops in a National Marine Reserve where all fishing was strictly prohibited. The area was a feeding ground for a small population of walrus, an endangered and protected species of sea mammal whose numbers have failed to rise after their near extinction from medieval hunting. Both inside and outside the National Marine Reserve, the scraping completely eroded the ground and all marine life was killed in the area by the on-board processing method. Every time the coastal guard left by helicopter to inspect the fishing ground, the factory fleet was warned over the radio and it moved safely outside the borders of the reserve.[6] This example deserves attention because it stems from a rich, democratic and non-corrupted fishing nation with highly conscientious policies and highly developed monitoring and control measures. How can we realistically expect the control of fishing effort in the distant waters of developing countries to work, when it doesn't even work in the home waters of the industrial distant water fleet?

This evident overfishing, which leads to collapses and declines in stocks both locally and regionally, also shows up in the statistics of global landings of marine catches. Since the early 1990s the global catch has leveled out despite increased fishing effort in the less exploited areas of the world's oceans.[7] The major causes for global overfishing are connected to the organization, technology and distribution modes of large-scale industrial fishing:

Large multinational fishing corporations
Global commodity chains for fish products
Application of sophisticated fish finding and capture technology
Large specialized vessels

In short, fishing as an activity performed by big boats doing big business is responsible for global overfishing.[8]

Local and small-scale artisanal fisheries may also cause a decline in fish stocks and erode ecosystems by the application of disruptive methods like explosives, or when small-meshed nylon-nets replace traditional handcrafted gear. As local waters are depleted even small-scale vessels[9] may take to intruding into foreign waters, as reported in Australia when Indonesian vessels were found to be fishing illegally at Australian reefs after being squeezed out of their home waters by Taiwanese trawlers.[10]

Ghanaian migrant fisher folk have traditionally caught sharks for their meat, which is then salted, dried and traded far into Central Africa as an excellent source of protein with a long shelf life. This traditional fishery is threatened by both the disruptive practices of distant water vessels, who catch sharks merely for their fins or as bycatch, and by artisanal fishers who adopt unsustainable practices such as using small-size nets to catch large numbers of tiny baby-sharks which ought to have been left to grow.[11] The development and improvement of regulation and co-operation on measures that secure sustainable fishing modes and practices are crucial in small-scale fisheries as well.[12] In the next chapter we will look into the mindset that governs our global waters and why it does not succeed.

Noter

1 FAO 2010
2 Pauly 2005; Mansfield 2011
3 Ibid.
4 Ovetz 2006
5 Ilnyckyj 2007; Waldo 2009
6 Munk-Madsen 1988
7 FAO 2010
8 Mansfield 2011
9 Small-scale in the perspective of industrialized fishing; large-scale in the perspective of developing countries. See chapter 10.
10 Ovetz 2006
11 Munk-Madsen 1999
12 Scharm 2005; FAO 2008b

4. Management of fisheries – self-interest or sharing?

The so-called "tragedy of the commons" has been pointed out as the main cause of overfishing.[1] This theory is readily accepted in fisheries policies and it lays the foundation for most of the management principles and measures in fisheries regulation. The application of this theory, however, is much more of a tragedy than the principle of shared use of resources; when common property is deemed the problem, privatization and exclusion become the solution – with tragic consequences.

Commons have been shared by numerous communities and groups of people on land and at sea throughout history, usually with some sort of regulation for their use – although not always without conflicts between groups or within groups concerning their governance. When European settlers arrived at the North American prairie and land was divided into private farming lots, they entered a commons occupied and used by the migrating natives. The bison were common property resources and the prairie was a commons.

Cultivated fields surrounded every village in Denmark until the 19th century, and outside of these fields lay the commons shared by one or more villages.[2] Here farm animals were herded and grazed while firewood and other resources were collected by the landless and landowners alike. Access to common property resources have always been and still are crucial for the lives of the resource-less. In Iceland the initiation of full-time fishing had huge implications for the landless and for the society as such. For 300 years the population of Iceland was stable, because for the descendants of the Viking settlers marriage was only legal for landowners and land was not split between heirs. When fishing changed from being a seasonal activity for farmers to a year-round trade, settlements grew up at the coast and beaches and landless people could now marry and sustain themselves from the sea.[3] The erosion of the population control measure resulted in a population increase and in deforestation and overgrazing of the island. However, instead of a farming society an industrious fishing nation grew on the richness of the surrounding ocean.

The principle of sharing resources has been governing small-scale fisheries worldwide. Crewmembers are paid in share of catch; they are not wage-workers. This deeply rooted principle of sharing still applies in small-scale fisheries in both industrialized and developing countries.[4] As state governance of fisheries grew, the 'right to catch' became the governing principle. Fish could not be owned before they were caught and when caught they belonged to the fisher. This has changed. Defining the common property nature of fish resources as the root problem has led to the promotion of privatization of the water commons worldwide. A central claim of the theory of 'the tragedy of the commons' is that when a resource is shared there are no incentives for anyone to take long-term care, but when a resource is privately owned then the owner has an interest in the long-term sustainability of the resource.

A measure of privatizing fish resources has been the introduction of Individual Transferable Quo-

Regulation of fisheries by collective and individual quotas:

TAC: Total Allowable Catch is a fisheries regulation measure. It specifies the collective quota of a given species in a given area and time. It is informed by recommendations of marine biologists, but it is set after negotiations between the parties involved.
Registered/licensed fishing vessels may fish on TAC collectively.
Landings are recorded and a fishing stop may be announced when the TAC is reached or exceeded. Others ways to enforce the TAC are:
- limit the number of days a vessel may go fishing per year
- limit the maximum landing per fishing trip of a vessel
- close the fishery at weekends or at other times

ITQ: Individual Transferable Quota is a vessel quota that can be transferred from one vessel to another. This leads to higher prices of vessels as a vessel owner may buy an extra boat just for the sake of the quota attached to it and then transfer the quota to the vessel with which the fishing is performed. That will leave one vessel without its quota, and it cannot be used for fishing anymore or in unregulated fishing only. The sum of the ITQs given generally matches the TAC, thus an ITQ is often a relative volume as TAC may fluctuate from year to year.

Technically individual quotas could be given to all fishermen and fisherwomen, with or without vessels. Individual quotas could also be made non-transferable and sent back to the state when someone withdraws from fishing. Quotas could also be given to groups of vessels belonging to a specific harbor or to a landing site. The strong belief and opportunity for fast profit connected to privatization of common property resources is the major obstacle to continuing the principle of sharing.

tas (ITQs). A quota is a specified amount of one or several species of fish to be taken in a given area within a certain time or season – it is a right to fish a specified amount in a specified water body. When a quota becomes individual it is allocated to a specific vessel instead of a group of vessels or a community. When a quota is both individual and transferable then the owner of the individual quota can sell this right to fish. Before quotas became individualized and marketable all who worked on a vessel had a share in them. Now resources are taken away from those who only own their labor (crewmembers) and given to those with capital (boat owners).[5] Thus fishing rights are distributed according to liberal market principles – those who pay more get more. Gone is the opportunity for those who have less, or nothing at all, to support their livelihood by sharing in the use of the commons.

Although there is ample evidence of devastating consequences for small-scale fisheries and fishing communities in industrialized countries, ITQs (Individual Transferable Quotas) are suggested as a management tool worldwide.[6] When quotas were privatized in Denmark in 2006, the price of a vessel-quota rose by 1000% in just two years.[7] Harbors in Iceland have been left empty as boat quotas are bought up by larger corporations.[8] Resource access has been concentrated in the hands of the few, and often in the hands of corporations rather than active fisher folk. As such the application of ITQs involves a high-level commercialization of fisheries, removing its scope from being a culturally rooted way of life supplying a livelihood to becoming purely a business.

Privatizing resources and relying on market principles to achieve sustainable fisheries follows the ideology of mainstream economic theory that permeates national and international policies and regulatory bodies. The rationale of 'the economic man' is individual self-interest, and it is celebrated as the best approach to achieve the best result for all. Put simply it goes like this: if everyone pursues their individual self-interest, the maximum economic benefit for all will be reached. Taken to the fishing grounds there is NOTHING about ITQs that promotes long-term care. With or without an ITQ, immediate self-interest as opposed to long-term care can be (and will be) pursued in fishing behavior. Eroding the principle of sharing the commons calls for even stronger and stricter controls to enforce regulations as fishing is uprooted from the cultural norms of communities.

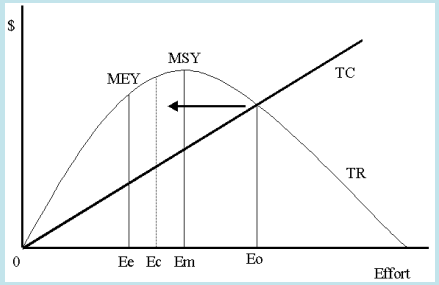
Acknowledging the extent to which we, since the beginning of human history, organize and live according to cultural norms, religious rules, and political and neighborly connections makes it extremely paradoxical to forward profit-orientation (self-interest) as the best principle to attain sustainable fisheries. Fishing people world-wide have ample experience with balancing co-operation and competition in their practice. An example of resistance to enforced privatization is found in the tiny Danish fishing community of Thorupstrand, where fishers have self-organized to secure their community's survival after ITQs have been imposed on them. They have formed a non-transferable community quota of the allotted individual vessel quotas. This hinders the concentration and loss of fishing rights for the community caused by the introduction of the possibility to realize profit individually by selling fishing rights at a sky-high price.[9] The transformation of the commons into market assets undermines centuries old social and cultural norms regulating the use of the commons. Managing the commons must be based on caring and sharing. Without policies that build trust and co-operation we cannot survive as humans on Earth. Nor can we feed the hungry, alleviate poverty and attain gender equity and ecological sustainability.

When small-scale fishers have been threatened and displaced by the introduction of large-scale industrial vessels, it has not been met without resistance. Violent conflicts have been numerous when small-scale fisher folk have tried to protect their gear and livelihood.[10] The well-known pirate problem in the Somalian waters sprouted first as a resistance to the invasion of industrial fishing vessels.[11] Now the threat has moved from violence at the fishing grounds to the planning and negotiation tables between fisheries authorities, governments and powerful corporations. Disguised in words of ecological sustainability and the maximization of rent, the privatization of the commons puts the most vulnerable fisher folk at risk – those who have the least apart from their labor to invest.

In light of the huge number of people in developing countries whose livelihoods depend on part-time small-scale fishing, a different management model is being proposed by concerned fisheries researchers. Instead of a pure profit orientation as in the wealth-based management model, a welfare-based model is proposed. With welfare as the scope the focus is on sustainable livelihoods derived from fishing activities. A welfare orientation values direct distribution of benefits to those in need, and focuses on how access to fish resources is crucial for the seasonally underemployed, for the landless, and for women[12] and children. Where a wealth based model will control access to fisheries by favoring the best profit makers, a welfare based model will favor access to those whose livelihood directly depends on fish resources.[13]

The wealth-based management model is founded on a line of thought in fisheries economics that combines the theories of the tragedy of the commons, the MSY (Maximum Sustainable Yield) and MEY (Maximum Economic Yield) developed by economists and biologists. The goal of this management model is the generation of the highest possible rent (profit) from fisheries.[15] From this perspective, access must be restricted and the best businesses should catch the fish, leading to concentration rather than distribution and sharing. However, it is assumed that no matter who realizes the profit, the economic benefit will trickle through society and elevate all. However, there is NO evidence that this assumption holds true. On the contrary, regulating access according to this assumption has squeezed out first and foremost subsistence fishers, part-time fishers and small-scale fishers from access to fisheries in most industrialized countries. In developing countries the application of this model would be devastating for the majority of fishing households who have no alternative livelihoods.

The welfare function from small-scale fisheries in developing countries is their capacity to provide labor, cash income and protein for resource poor households. This is related to open or semi-open access to the commons. As fishing is pursued as a supplemental activity or as



The modeling of MSY and MEY, the foundation of most fisheries management[14]

Visual representation of MSY/MEY: Along the horizontal axis lies the fishing effort (number and capacity of vessels applied in a fishery). Along the vertical axis is the value of the catch: $. The curve shows the total catch by a given effort. The Line TC shows the Total Cost of the effort. In the beginning the catch increases with increased effort until the effort reaches Em. This is the maximum sustainable yield of a fish stock. With efforts higher than Em the total catch will decrease in the long run – overfishing is taking place.

If left unregulated then the effort is assumed to stabilize where cost and output equals out, namely at Eo. Subsidies will increase the effort further. The same output gained at Effort Eo could be gained with much lower cost at Effort Ee. Fisheries biologists recommend efforts at Em or lower from a conservational point of view, while fisheries economists argue for Ec from a profit maximization point of view – at this effort the highest total profit would

a last resort for many of the poor households, fisheries management needs to be pro-poor.[16] FAO sum up the benefits specifically derived from small-scale fisheries as compared to industrial fisheries:

- Greater economic efficiency
- Less negative impact on environment
- The ability to share economic and social benefits
- Contribution to cultural heritage

To enhance the pro-poor function of small-scale fisheries, FAO proposes to give preferential access to resources to small-scale fishers, decentralize management responsibility, improve the local post-harvest and marketing opportunities, and recognize, grant and protect land settlements of fishing households. This stands in sharp contrast to solving overfishing problems through the eradication of fishing rights to the small-scale and marginalized.

Integrated management schemes have been applied in several developing countries. Success is seen when literacy, sanitation or saving schemes have been addressed before safety-at-sea and resource management.[17] However, it is difficult for this shift of paradigm to penetrate the actual distribution of fishing rights. In South Africa new legislation has given preferential access rights to subsistence fishers and to reserve areas for their use. Although this is a legal recognition of the rights of the poorest, the granting of these access rights has not been implemented; small-scale subsistence oriented fishers still need to fish illegally or fish within the limitations of a recreational license.[18]

Vietnam is the home of 650000 fishers and fish farmers[19] and 86% of the vessels are fishing in near-shore waters.[20] The national fishery policy intends to reduce the number of small-scale vessels by as much as 40% from 2006-15 to alleviate the fishing pressure on near-shore fishing stocks. A policy of subsidizing larger vessels has been implemented to encourage more fishing further out – but without alternative livelihood options, such a goal seems impossible to implement. While small-scale fisheries also engage in over-exploitation of local fish stocks, they provide welfare for many and management policies need to take that into account.[21]

Rent maximization/profit orientation in fisheries management has not proven to lead to ecological sustainability, alleviate poverty or create gender equity. A shift of paradigm is needed, a shift that directly reaches for the Millennium Development Goals.

Noter

1 Hardin 1968
2 Hastrup 1992
3 Munk-Madsen 1990
4 Højrup 2011; Britwum 2009
5 Højrup 2011
6 Hersoug 2005; Bene et. al. 2010; World Bank/FAO 2009 cited by Bene et al. 2010
7 Højrup 2011
8 Skaptadottir 2005; Einarsson 2011
9 Højrup 2011
10 Subramanian 2003
11 Waldo 2009
12 Munk-Madsen 2005
13 Bene et al. 2010
14 FAO 1999
15 Development Economics Research Group 2010
16 Bene et. Al. 2010
17 FAO 2009
18 Snowman 2006
19 Bene et al. 2010
20 Development Economics Research Group 2010
21 Ibid.

5. Employment – a means of distributing resources

On the basis of national statistics, FAO estimates that 8% of the world's population, is engaged full-time or part-time in the fisheries and aquaculture sector. The majority of the fish workers live in Asia. From 1980 to 2008 the number of fish workers globally increased by 167%. Much of the increase is related to a rapid increase in aquaculture workers in Asia.
The regional distribution of fish workers reads as follows:

- 85.5% in Asia. China holds most, followed by India and Indonesia.
- 9.3% in Africa
- 2.9% in Latin America
- 1.4% in Europe
- 0.7% in North America
- 0.1 % in Oceania

Half of the fish workers are women and 95% of the women fish workers live in developing countries. As such the fisheries sector offers a very important opportunity for women to generate an income and thus family sustenance. 90% of the fish workers are employed in the small-scale sector, which highlights how important this sector is for fishery livelihoods.[1]

The employment in capture fisheries is decreasing while it is growing in the aquaculture sector. The decrease in the number of capture fishers is highest in industrialized countries. Norway saw a decrease in 20 years of more than 50% in the number of capture fishers and in 30 years Japan saw a decrease of 64%. According to FAO, the reasons for these decreases include a *decrease in catches*, which means unsustainable fisheries, *capacity reduction*, which means the closure of access to fisheries and the concentration of fishing rights on fewer vessels, and *technological development*, which means replacing human labor with capital investment.[2]

Large-scale and small-scale fisheries have different capacities when it comes to the generation of employment. A comparison of fishing sectors from two industrialized countries, Norway and Canada, shows that small-scale fisheries employ five times as many fishermen as large-scale fisheries for the same landed value of catch. This means that five times as many people get a livelihood in industrialized small-scale fisheries compared to industrialized large-scale fisheries from the same amount of catch. When the comparison is done according to capital investments then small-scale and large-scale fisheries employ the same amount of people per unit of investment.[3] It is the relatively lower capital investment in small-scale fisheries that leads to the higher efficiency in distribution of value – attained by the higher employment rate. Labor intensity instead of capital intensity distributes value. A large vessel with low capital intensity may distribute value better than a small vessel with high capital intensity. For example, a large Ghanaian canoe with a crew of sixteen may feed many more people on the same amount of catch than a small Norwegian vessel owned and worked by one person only.
On a global scale, it is estimated that small-scale fisheries employ 25 times more people than large-scale industrialized fisheries to catch the same amount of edible fish, while using only a quarter of the fuel.[4] As small-scale fisheries are more labor-intensive, more people are engaged and get a share of the catch. The higher the capital investment in vessels, gear and technology, the larger the share of catch is

On a landing day in Nagapattinam (Tamil Nadu, India), 3000 people are employed in the small-scale labor intensive fish trade and transport (Photo: Eva Munk-Madsen)

needed to pay it off. A similar scenario presents itself when it comes to fuel consumption. The higher the fuel consumption, the more of the fish resources go towards this expense and the less is distributed among the fishers. This means that labor intensive fisheries, processing and trading networks are superior to capital intensive fisheries when it comes to distribution, although they theoretically may be classified as economically less efficient because they produce smaller profits for invested capital.

When fresh fish is traded through the hands of many middle women before it lands with the consumer, its value is distributed to many people. In Ghana the local fish trade is a woman's occupation. Men perform the fishing, while women perform the local processing and trade. Access to landed fish is crucial for women's opportunities to make a livelihood. Husbands are culturally obliged to sell their share of catch to their wives at a fixed price, which is negotiated by the lead woman fishmonger. Networks of credit are involved, creating and sustaining loyalties in the passing of resources. Sometimes fresh fish is exchanged up to 4 times before landing with the customer who eats it.[5] The length of the chain distributes benefits to all the women involved; the profit may be incremental, but they all get a share.

High efficiency in global food production has never been proven to feed the poor or hungry. On the contrary, industrialized agriculture has led to overproduction, lowered markets prices and the subsidized destruction or storage of food while people have been starving to death elsewhere. Fisheries that are efficient in meeting the Millennium Development Goals are fisheries that have the ability to distribute rather than concentrate profit. In this respect labor-intensity instead of capital intensity is superior, and labor-intensity is characteristic of small-scale fisheries.

A modernization of fisheries in developing countries, which entails capital investments in up-scaling the fishing fleet and the concentration of fishing rights to maximize resource rent, may create or increase poverty rather than alleviate it. When fishing communities and fishing households are often assessed as poor, the solution to alleviate their poverty will not come from excluding them from fisheries. Rather, the open-access of many developing countries' small-scale fisheries is crucial for the subsistence of the poorest rural populations.[6] Replacing labor intensity with (foreign) capital investment is a recipe for disaster for the distribution of livelihood opportunities, which is embedded in the large participation and sharing of work in small-scale artisanal fisheries.

Notes

1 FAO 2011
2 ibid.
3 Sumaila et.al. 2001
4 Jacquet & Pauly 2008
5 Britwum 2009
6 Bene et.al. 2010

6. Women in fisheries: food securers with a focus on livelihood

In the past, both women and men shared a focus on livelihood and food security in fisheries, for example among the mangrove-dwelling Btsisi people in Malaysia where husband and wife worked together in a flexible diversity of livelihood activities, including crabbing, fishing in the river or at sea using gillnets or angling, collecting fruits or snails and so forth. From an early 1980s study we learn that because working by oneself was considered lonesome, one should work with a friend; and the best friend was one's spouse. While environmental degradation and the industrial development of palm oil production has severely eroded the Btsisi peoples' sovereignty of mangrove resources and thus drastically limited their livelihood opportunities, the preference for teaming up with spouses in fishing or other activities prevails, thus upholding a relationship of equality between men and women.[1]

A global trait of small-scale fisheries is that the fishing is performed as an independent family enterprise, although the roles of women and men differ. Globally speaking women are quite active in pre-harvesting, not very active in harvesting and very active in post-harvesting activities, with lots of local exceptions from the rule.[2] Preharvesting activities include the provision of food, preparation of gear, raising of finances for fuel, and so forth. Harvesting activities are the actual catching of fish or other resources, while post harvesting covers the processing, sale and marketing of catches. In the small-scale fisheries of industrial countries, there are cases where women take to the sea with their husbands following the pattern of the Btsisi of Malaysia, instead of performing shore-based activities.[3] This also happens in developing countries, such as in Andra Pradesh in India where the women haul the nets as the 'Dhoonis'[4] have been displaced from the backwaters and now go to sea to fish.[5]

According to FAO statistics, women make up half of the working fishing population, and 95 % of these women live in developing countries. In this chapter they are the women we have in focus. The industrialization of fisheries is changing women's roles and opportunities. While they may gain some new employment opportunities, they may also lose access to independent processing and the trade of resources. It has long been known that where profit increases, men tend to take over women's traditional activities, especially in Africa.[6] However, recent case-studies indicate that the same pattern can be found in Asia and elsewhere.[7] From the fishing communities of Somanga and Songosongo in Tanzania there have been reports of how women have become displaced from the octopus trapping. Their industry was passed on from mothers to daughters for subsistence and local sale, but it was marginalized when octopus became a global commodity. Middlemen came in and financed vessels for men to secure an export supply. While the area is rich in aquatic resources, the people are poor and women's subsistence food production is crucial for their welfare; but this process of globalization undermines it.[8]

Harvest: Mainly women and children are hauling the land-seine in Indonesia (Photo: ICSF)

In Polynesia, recent development has changed gender roles and both women and men harvest marine resources in the lagoon of the Island of Moorea. Together or individually, men and women perform commercial as well as subsistence fishing and fish from canoes during the day and at night. While no technology is exclusively male, there is a gendered pattern where women tend to fish more for food (subsistence

Harvest: Women crabfishers in Brazil (Photo: ICSF)

fishing) and men tend to fish more for roadside sale (livelihood). Also, women tend to glean in shallower water and men in deeper water, the latter gender using more dive gear and spears.[9]

Some marine resources are generally harvested by women, such as seaweed, shells and snails.[10] It thus seems wise to include women in the management of resources to attain sustainable harvesting patterns. In a number of case studies on co-management regimes, from shellfish harvesting in the tidal zone on the Atlantic coast in Galicia to floodplain management in Bangladesh,[11] there is evidence of a high success rate where women are integrated. Traditionally, shellfish in Galicia were harvested by women on-foot for household consumption until the 1960s, when the shellfish gained importance as a well-priced commercial product. As many as 60000 *mariscadoras* (women shell-collectors) were active in the mid-seventies, with over-exploitation as a result. The implementation of a management system with women at the helms has, on the one hand, halted the decrease in resources and restored sustainability, and on the other hand it has professionalized the sector. Now approximately 6000 licensed mariscadoras are pursuing this activity on a commercial basis.[12] The shellfish collection has thus shifted from a subsistence activity for the many to a livelihood opportunity for the few. Local shellfish is not the daily food of coastal Galicians due to the commodification that led to overexploitation and thus restricted access.

The inland water bodies and floodplains of Bangladesh are among the world's richest fisheries. Around different beels (seasonally flooded plains used for fishing and the collection of snails and aquatic plants), management committees are set up to conserve resources, maximize output and regulate equity in access. The best results concerning compliance with regulations and improvement in sustainability and equity are found where women are most involved in the beel committees.[13] For a sustainable management of resources, women may show the way forward due to their wholesome perspective.

Shrimp farming is a growing industry in Asia, including Bangladesh, which we take as an example. Women who lose their livelihood resources (because they are displaced from their resource base by this industry's need for space) can find some employment opportunities in the catching of fries[14] for the very same industry. It is, however, a job that involves walking in waist-deep river-water dragging a fry-net. Both sharks and saltwater crocodiles come up the river making it a perilous occupation, although the influx of shrimp-lords who take over common property resources of the landless and degrade the mangrove forests is just as dangerous. This influx has led to resistance movements being met by bullying musclemen employed by the shrimp-lords. The expansion of the shrimp industry not only costs landless women their access to common property resources in the mangroves, it also cost lives in violent conflicts,[15] a

Postharvest: Women cleaning mussels in Peru (Photo ICSF)

Preharvest: Women angling in Chile (Photo: ICSF)

cost hidden to the consumers as these shrimps become popular far beyond the place of their origination.

Although case studies of women's harvesting activities are numerous, it is from post-harvesting activities that their major contribution to food security and family and community welfare derives; and here clashes occur due to the globalization of the fish trade. A well-known example is the Victoria Lake fishery for Nile Perch, where the women traders have lost access to fish to process and sell locally as exporters have gained priority. Women's access to resources furthermore depends on their relationships to men.[16] When women's share of the fish trade decreases, local fish availability and fish consumption suffers. Actual food security involves self-sustenance from local resources; it is not generated by the storage of excess grain or butter in the EU. At the Lake Selingue in Mali the male traders use motorized canoes while women paddle when they trade in fish. The inequity in technology makes women's trade more vulnerable to waste as they use more time and reach shorter distances than their male counterparts – and this is but one example of how women fish workers become marginalized with increased capitalization or technological development in fisheries.[17] As women tend to spend their profit wisely on family welfare, it is crucial to secure their resource access.[18]

While in India women are often the financial managers in a small-scale fishing household, receiving the full share of their husbands' payment from the sale of catch,[19] in West-Africa husbands and wives often work as two separate economic entities. Fish trade is traditionally a women's occupation and a Ghanaian fisher trader may depend on her husband or sons to get access to fresh fish for her trade, and she will have to buy this from her husband and pay him when the fish is processed and sold. There is a tendency towards women getting more responsibility for covering household expenses when they make a trading profit, while men can capitalize and expand their fishing business. [20] Where polygamy is performed the economic separation of married men's and women's businesses makes sense. Leaving the burden of providing for children with the wives concentrates capital with men, expanding their opportunities for more business - and more wives.

The gender inequity in resource access, as the examples above evidence, also have implications for food-security. Women's processing and trade mainly aims at sustaining families and local markets with fish to eat. The profit and capitalization in the globalization of fish trading not only evades women, it also erodes their traditional opportunities and responsibilities.

In industrialized countries the marginalization of women in pre- and post-harvest activities has long been completed, except in fish-processing factories where men and women perform different tasks.[21] As mechanization has replaced much of women's work in small-scale fisheries, they largely seek employment outside the fisheries sector. Although women's employment in fisheries has decreased, Europe has seen an increase in women's organizations as they defend their fishing communities against the privatization of resources, because this privatization weakens collaboration and community spirit, while undermining the livelihood fisheries.[22]

Notes

1 Nowak 2008
2 Biswas 2011
3 Munk-Madsen 1997
4 Dhooni means shoe. They are called Dhoonis because their vessels have the form of a shoe.
5 Shah 2010
6 Boserup 1970
7 Guhathakurtha 2008; FAO 2008b,
8 Porter et. al. 2008
9 Walker & Robinson 2009
10 Shah 2010
11 Frangoudes et. al. 2008; Sultana & Thompson 2008
12 Frangoudes et.al. 2008
13 Sultana & Thompson 2008
14 Newly hatched shrimp larvae
15 Guhathakurta 2008
16 Tindall & Holvoet 2008
17 ibid.
18 Kripa & Surendranathan 2008
19 ICSF 2010
20 Britwum 2009
21 Husmo & Munk-Madsen 1994
22 Kumar et.al. 2010

7. International, regional and local trading – who gets to eat the fish?

Who eats the global landings of marine, inland water and aqua cultured fish? Large-scale industrialized vessels and some smaller fishing vessels not only travel long distances in global waters to catch fish, but once caught the fish might embark upon an even longer journey before they are eaten.

Fish has become the most traded food commodity in the world. The greatest exporters are the poorer countries and the greatest importers are Japan and the Western countries. Also, Low Income Food Deficit (LIFDC) countries have a growing and greater role in the international fish trade.[1] In 2006, 20% of the total fish export value was generated by LIDFC countries.[2] This is of great concern when we focus on the ability of fisheries to eradicate hunger and alleviate poverty. Traditionally, fish has been a cheap source of protein for poor people. As more and more fish are caught to be exported to wealthy consumers in industrialized countries, less may become available locally at affordable prices.

Small-scale fisher folk have always known how to distinguish between the rare high value species on which to make a profit and the more abundant low value species on which to sustain themselves and others nutritionally. Perceptions of fish are highly cultural and contextual. Some eat fish for the delicacy, others to satisfy basic needs – they are simply hungry. For the sake of nutrition, herring is better than salmon nowadays. Both species are rich in essential oils, but herring is short lived and small. Because of its position at the lower end of the food-chain, it doesn't accumulate and store toxins from pollution to the same extent as salmon, whether wild or farmed. The farmed salmon may furthermore contain accumulations of additives from their fodder. The fact that salmon is a high value species and herring is a low value species has to do with culture and abundance. In earlier times when salmon was very abundant in Danish waters it was also lowly estimated. Law-regulated farm workers' contracts stated that farm workers could only be fed salmon 4 times a week. Although farmed salmon has now increased the volume in the market, it has not lost its popularity and estimation among present day consumers, unlike the days when Danish farm workers secretly bemoaned the stinginess of their employers for giving them the fifth salmon meal in a week.

When fish becomes a global commodity we learn what to like through advertisements and what we believe to be good for us through science. The latter is a very effective kind of advertising that can be biased and linked to commercial interest as well. European, Japanese and North American people did not crave tropical prawns before they were pushed on them, nor did they suffer from protein deficiency only to be relieved by the import of fish products from the waters of developing countries; rather, they grew wealthier and pickier. Demand for fish from the developing countries in the global north has been invented by advertising during the course of globalization, and has never been essential for the basic wellbeing and survival of people in the rich northern nations.

Many fishing nations import some species and export others. The global net-importers (importing more than they export) are Japan, USA and the EU, who together import 69% of the global net-import of fish products. While Africa exports more fish than it imports in terms of value, it is a net-importer quantity-wise due to the import of low-value, small pelagic fish marketed for human consumption. The growth in fish trade is partly related to structural changes in the fisheries sector, such as the outsourcing of processing to countries with low wages and labor standards, trade liberalization policies and technological innovation in processing and marketing. Fish has moved steadily from local consumption to international markets since the 1960s. While world fish production increased steadily from 1976 to 2008, the proportion destined for export also increased – 39% of global production was exported in 2008. Developing

Tiger prawns, tuna and red snapper have become more common than herring and codfish in Northern countries (Photo: Holger R. Lauritsen)

Street fish vendors in Tamil Nadu, India, supplying fresh affordable protein inland (Photo: Eva Munk-Madsen)

countries accounted for 80% of fish production in 2008 and for 50% of the export. Fish is now by far the top export commodity of agricultural products from developing countries, followed by coffee and rubber. China, Norway and Thailand are the three top exporters.[3]

The global per capita consumption of seafood is increasing. In the 1960s it was at 9.9kg person annually, while in 2006 it had risen to 16.7 kg per person. However, the amount differs significantly regionally. In industrialized countries in 2005 the consumption was at 29.3 kg per person, nearly three times as much as that in developing countries (10.6 kg excluding China). In Low Income Food Deficit Countries people ate only 8.3 kg fish on average per person. So while the waters of developing countries produce most of the fish on the global market, their inhabitants eat the least of it. The gravitation of fish into the international market may compromise the food security of the exporting countries. The foreign exchange earnings from fish export in the developing countries might not

be devoted to feeding the poorer segments of the population at all, but rather geared towards importing luxury products for the elite.[4]

The consumers in the developed world are increasingly purchasing fish originating from waters outside their EEZs. Between 2001 and 2005, almost 30% of the fish consumed in the EU originated from outside their own EEZ. The amount may have increased in the present decade. On a global scale it is notable that 12% of the human population consumes 30% of the fish, with the major markets being the EU, USA and Japan.[5]

The export of fish does not necessarily entail a threat to food security and the marginalization of small-scale fisheries. A recent quantitative study claims that there is no evidence of the international fish trade contributing to national economic development and wellbeing in Sub-Saharan Africa, or any statistical evidence that it undermines food security.[6] Qualitative case-studies come to opposite conclusions; however, as case-studies they do not claim to provide global evidence.[7]

Historically, the inter-regional export of fish has benefited artisanal fisheries as well as groups of people with little or insufficient access to fish protein. Ghanaian women fish-processors and fishmongers in artisanal fisheries have traditionally procured shark meat and fish by salting and drying it before sending it far into Africa, thus exporting their products without leading their communities to starvation. Norwegian coastal cod-fishing has provided much more dried fish than the locals could consume (it is unheard of that the locals didn't eat as much 'mølje'[8] as they possibly could), making a profitable export industry to southern European countries. In urban Denmark 50 years ago, a fish meal would consist of two fish-cakes and five potatoes, whereas in coastal Norway it would consist of five fish-cakes and two potatoes. It makes sense for small-scale fishing households to use their catches for subsistence; unless high-value species are the only ones targeted, fishing households will feed themselves from their fish resources. The households discern what to eat and what to sell, but in commercial industrialized fisheries this direct link between fishing for food and fishing for profit is broken, and only commercial value is taken care of.

70% of the food that sustains humanity today is grown and harvested by peasants in small-scale arrangements that oversee a large diversity of species and strands. This includes the fish and other aquatic organisms harvested and/or grown by small-scale fishers and farmers. While industrialized food is produced, processed and distributed in a chain, peasant production and distribution takes place in a web of relationships. It isn't the industrialized food chain that feeds the hungry – hungry, poor and rural people are not profitable consumers to target. Although fish is traded internationally to a large extent, 85% of grown food is consumed relatively close to where it originates. A small-scale, decentralized fishery and aquaculture targets the hungry much more accurately than the large-scale industrial fleet and processing industry. Almost half of the world's population today suffers from insufficient or inappropriate nutrition; just over one billion people are hungry and simply don't get enough calories, another billion suffer from micronutrient deficiency – their food is not nutritious enough – while 1.3 billion people are overweight and obese. The latter group relies on the intake of cheap, calorie-rich yet nutritionally poor processed food to a large extent, which is provided and promoted through the industrialized food chain.[9]

The global growth in aquaculture shows marked differences in industrialized and developing countries, the latter relying more on a web-based peasant mode of production. The importance of inland peasant fishponds for food security cannot be exaggerated. Asian fishponds are found on farms of less than 2 hectares, or as backyard waterholes yielding substantial amounts of catfish for subsistence and local markets (take Vietnam and Bangladesh as examples). Such small-scale production modes rest on diversity and are likely to be much more resilient and responsive to sudden changes in the climate. Commercial industrialized aquaculture, on the contrary, is uniform and narrow. Atlantic salmon is now bred in 19 countries and is based on a single Norwegian privatized breeding program.[10]

Thus the two modes of fishing and fish production we are comparing have different implications for the Millennium Development Goals of eradicating hunger, alleviating poverty, securing ecological sustainability and attaining gender equity. The last goal may be directly targeted by supporting women's continued activities in aquaculture and post-harvest small-scale fisheries.[11] While industrialized fisheries take the resources from the poor to the rich countries through global trade, local small-scale fisheries provide food and livelihood for local communities through local markets and web-based production.

Notes

1 FAO 2010; Sumaila et.al. 2010
2 Swartz et. al. 2010
3 FAO 2010
4 Swartz et.al. 2010
5 Ibid.
6 Bene 2008
7 Porter 2008;Tindall &Holvoet 2008; Westaway & Allison 2007
8 A traditional fish meal prepared from spawning cod, cod roe and cod liver
9 ETC group 2009
10 Ibid.
11 Munk-Madsen 1993

8. FPAs and IUU fishing – violence to ecosystems and between people

Many studies have been conducted of the Fisheries Partnership Agreements (FPA)[1] that the EU has entered into with African Coastal states, first on the west coast and later also on the east coast. The increased fishing pressure and evident overexploitation of resources and the fairness or inequities of these agreements are widely discussed.[2] The phenomenon of FPAs or joint ventures of foreign fishing corporations with local companies isn't only occurring in African waters, and the EU is not the only state/union that enters partnership agreements to operate their industrialized fleet overcapacity in other countries' waters. However, the EU agreements are subject to a policy of transparency and are thus known and can be investigated by civic society.

Photo: Greenpeace

The theoretical research performed on EU-FPAs is vague in its conclusions. Neither the postulate that selling fishing rights to foreign vessels creates national economic development that alleviates poverty, nor the postulate that it undermines local food security can be substantiated by the quantitative analysis of sub-Saharan African coastal states that have such agreements.[3] The same holds for the claim that the export of EU overcapacity to African waters has positive benefits for both sides, i.e. poor African coastal states earn money for their state coffers and the EU gets to employ its overcapacity elsewhere.[4] These positions, however, are strongly rejected by the majority of other authors and investigations.

The EU negotiates its FPAs purely as business agreements to attain the best deal. This is not in accordance with the United Nations Law of the Sea, which signifies that FPAs are to be founded on the premises that the coastal states are incapable of harvesting the resources, that resources are monitored and managed and that fishing effort is controlled. It is widely agreed that none of these premises hold true in the case of FPAs with African coastal states. The EU pays no attention to the consequences for local small-scale fisheries that are crafted, efficient and capable of going far out to sea. Also, the Convention of Biological Diversity is overruled with a narrow business perspective that does not include ecological considerations.[5] It is widely agreed that severe overfishing is resulting in a decline and collapse of formerly extremely diverse and abundant upwelling ecosystems.

The cash payment for access is disproportionately small compared to the value of the catch and yet very difficult to withstand for states like Mauritania, which receives 30% of its annual fiscal budget through its FPA and is under pressure from the World Bank and the International Monetary Fund (IMF) to implement this measure to decrease its foreign debt. Apart from being unfair and unsustainable, the restrictions in the agreements cannot be enforced because the African states have no institutions that can enforce the conditions, while the EU does nothing about this. It is thus standard practice to violate restrictions in the agreements concerning gears and zones.[6] Those African countries that declined FPAs, i.e. Namibia and Morocco, were soon capable of harvesting their own resources by building up their own fishing capacity.[7]

Behind the FPAs of the EU lies the problem of

overcapacity. After UNCLOS established the 200 mile EEZs (Exclusive Economic Zones) in 1977, nations with distant water fishing fleets were forced to take to the high sea (waters outside of the EEZs) or enter into agreements with the nations in whose waters they fished. The EU suffered from overcapacity in its fishing fleet and while wanting to expand the Union by including new member states, the current members did not want to share EU waters with the industrialized fleet of these new members – buying licenses in foreign waters was thus a solution of political convenience.

The fishing capacity of the EU fleet is 2-3 times higher than the estimated sustainable yield (MSY) of EU waters and 88% of EU stocks are considered to be in a poor state.[8] The overcapacity relies on subsidies, as is common for the industrialized fleet worldwide. Building subsidies, fuel subsidies, license payment subsidies and even subsidies to down-size fishing capacity have supported the growth of these large and insatiable predators at sea.[9]

Out of approximately 100 FPAs in West African waters, only 12 are held with the EU. Japan has 40 and Taiwan, Korea and China are other major FPA holders. [10] During a Greenpeace investigation of Mauritanian and Senegalese waters in 2010, vessels sailing under flag of convenience stemmed from Russia, Iceland, Latvia, Sweden and Belgium. Alongside these vessels, there were others from the EU and the coastal states themselves. Bottom trawlers targeting shrimp and pelagic freezer trawlers are the main types of fishing these vessels perform. Some of the most powerful EU vessels at the fishing ground had a capacity to process up to 300 tons of catch per day.

When EU vessels enter private joint venture with local corporations, they are no longer under the jurisdiction of the EU. Many Spanish shrimp trawlers re-flagged to Senegal as the Senegalese state did not renew its FPA with the EU in 2006. According to local sources, the fishing pressure has only increased thereafter.[11]

Flag of convenience for the industrialized distant water fleet means that they will not be under any control – IUU fishing can take place uninhibited (fees and bribes enable this carte blanche). There is no consensus on how much of the global catch comes from Illegal, Unreported and Unregulated fishing; some estimates consider it to be 25% of total global landings.[12]

It has been the concern of FAO to address and diminish IUU by developing the Code of Conduct for Responsible Fishing. Based on the voluntary participation of flag states, coastal states and fishing ports, FAO has developed further guidelines for controlling IUU – all of them depend on political will and resources.[13] Concerned nations and large NGOs have set up a task force on the issue. According to their report, approximately 20% of IUU catches are taken in the high sea (waters with no national jurisdiction), and the rest is performed in the EEZs of coastal states.[14] There are no applicable international legal measures to prevent IUU.

We have looked at FPAs in West African waters as an example of how these agreements contribute to the depletion of marine resources and undermine local small-scale fisheries. Now let us look at the East African waters to give an example of the havoc that results from IUU fishing. IUU is also known as pirate fishing. The hijacking of merchant ships in Somalian waters is born out of the conflict between industrialized fishing piracy and local small-scale fishers defending their fishing grounds. As the Somali Navy and Police Coast Guard Service disintegrated due to civil war after 1992, the waters were left unguarded and they were soon invaded by an armada of foreign distant water fishing vessels. Somalia's EEZ is one of the five richest fishing grounds globally. European, Asian and African vessels are illegally exploiting the area with no consideration of spawning periods, ecological damage and loss of livelihood in local fishing communities. 800 foreign vessels were engaged in unlicensed fishing in 2005, and could be spotted on a daily basis only a few miles from the shore. Among them were vessels from Italy, France, Spain, Greece, Russia, Britain, Ukraine, Japan, South Korea, Taiwan, India, Yemen, Egypt, Kenya and other states. It is estimated that the fish taken in this area by EU vessels alone is worth 5 times more than the foreign aid the EU gives to Somalia.[15]

Deep sea fishing vessels in the harbor of Las Palmas that serve vessels of different origins fishing in West African waters (Photo: Knud Andersen)

The fishing practices used here include catch laundering through mother ship factories, transshipment and re-supply at sea; mixing the illegal catches with legal catches.[16] Somalian warlords set up trading companies with European or Arabian partners, issuing fishing licenses without any legal foundation as "a deal between thieves". As illegal fishing trawlers started to trespass into the 12-mile inshore artisanal fishing waters, violent conflicts arose. Small-scale fishermen lost gear, boats and lives and started to arm themselves. Fishing pirates responded by arming themselves and the violence spiraled. The violent conflict has turned into a business of

its own that targets the shipping industry, and it has attracted international attention and intervention. The diverse international fleet that engaged in IUU fishing piracy, however, is not chased by naval ships or prosecuted by international bodies. Meanwhile, small-scale fishers do not get any international help to protect their fishing grounds.[17] On the contrary, they risk losing their lives – two South Indian fishermen were killed by the naval guards of an oil tanker on February 15 2012, as the guards assumed them to be pirates.[18]

Violent fishing methods that destroy marine habitats and the resource base of vibrant fishing communities have also led to violence between fishers in these different industries – even on national levels. In India where industrialized trawling was introduced in the 1980s as part of development aid, as it was in many other developing countries, violence broke out between these vessels and the traditional fishers who saw their gear destroyed, their catches diminish and were in increased danger at sea as their small vessels were accidentally hit and sunk at night. Communities were divided as some became crewmembers on these trawlers. In the state of Tamil Nadu the Catholic Church helped motorize the traditional vessels in an attempt to calm the conflict. However, the motorized catamarans enabled people to reach further and travel faster when chasing the trawlers from their fishing grounds.[19]

Violence has thus arisen between people with the intrusion of large-scale industrial fishing in artisanal fishing waters. However, another kind of violence accompanies this fishing mode. One aspect of the destruction caused by large-scale industrialized fisheries is the phenomenon of discard, i.e. unwanted by-catch that is thrown overboard. Damaged from the catch, even live fish will die when released. Thus discard is twice as destructive because it is a total waste of resources, which are depleted without being consumed. A glimpse of the huge problem of discard with unselective fishing methods is again provided from West Africa. A large number of bottom trawlers fish for shrimp off West Africa and they discard 4 times as much as the amount of shrimp they catch. Rays are killed and discarded in such huge numbers that they pollute the fishing ground and change the ecosystem.[20] Sharks and rays, now threatened with extinction by the foreign distant water fleet, are traditionally caught for human consumption by small-scale artisanal fishers, thus highlighting the human and social aspect of such massive ecological destruction.

This focus on FPAs, joint ventures, the re-flagging of large-scale industrialized vessels and uncontrollable IUU fishing, magnifies the destructive nature of large-scale industrialized fishing. It highlights the deeply problematic structure of this fishing mode for sustainability and for food security, locally as well as globally. In the final analysis, the world's oceans are a treasure chamber for the whole of humanity, irrespective of national boundaries. Unfortunately, we have allowed structures of plundering and destruction to grow and we need to find a way out of this situation.

Which is better, a regulated and transparent plundering as performed under FPAs, a clear-cut theft as performed by vessels operating without any license agreement, or IUU fishing taking place in the disguise of a license agreement? Truly none of the options pose a sustainable solution for eco-system care, nor do they support the eradication of hunger and extreme poverty or support the building of gender equity.

It is beyond doubt with respect to the Millennium Development Goals that it is better to discard the industrialized large-scale fishing fleet in African waters as a means of re-building resource richness. This can be combined with giving priority to small-scale coastal fisheries, educating and regulating fishing methods in artisanal fisheries to avoid destructive practices, and supporting the further development of women's traditional employment and skills in processing, storing and trading fish locally and regionally. Such a system combines a concern for both wealth and welfare by encouraging food security, good nutrition and a surplus for households and communities.

Noter

1 Another concept is also widely used: Cash For Access agreements (CFA)
2 Fiskerifagligt netværk 2010, Scharm 2005; Ilnyckyj 2007; Allain 2007; Osinga & Obidulla 2010
3 Bene 2008
4 Scharm 2005
5 Ilnycky 2007
6 Ibid.; Greenpeace 2007; Gorez 2006
7 Scharm 2005
8 Osinga & Obaidulla 2010
9 Jaquet & Pauly 2008
10 Allain 2007
11 Osinga & Obaidulla 2010
12 Allain 2007
13 FAO 2002
14 High Seas Task Force (2006)
15 Waldo 2009
16 High Seas Task Force 2006
17 Ibid.
18 Indian Times February 16, 2012
19 Ajanta 2009
20 Allain 2007

Case Fishing for a livelihood – the battle for fish resources in Ghana

A study in six Ghanaian fishing communities confirms the conflict between industrial fishing and small-scale fishing in African waters. Ghana does not have FPAs with foreign countries, but Korea, China and multinational companies have a significant presence in Ghanaian waters through joint-venture agreements, investments in industrial vessels and the processing industry; moreover, South European vessels illegally enter the Ghanaian waters[1]. A Ghanaian owner of tuna vessels highlights the fact that European vessels catch migrating tunas before entering Ghanaian waters thereby effecting the stocks[2].

In Ghana the conflict between industrial fishing and artisanal fishing is ongoing and, according to this study, much greater than the existing literature and the Ghanaian authorities convey. All of the fishermen interviewed in this survey see the industrial fleet as the main reason for their decreasing catches.

According to officials, industrial and canoe fishers are supposed to catch different species. Findings from this study show that this division does not apply in practice. Industrial vessels often enter areas reserved for canoe fishers and catch large quantities of small pelagics, which make up the livelihood of the artisanal fisherfolk. Officials seem convinced that enforcement of the regulation will solve the battle for resources. This is not necessarily the case since stocks near the coast are declining, forcing canoe fishers to seek deeper waters in order to maintain catches. Consequently, it is likely that competition between the fleets will increase in the future.

This unequal competition is critical for the artisanal fisherfolk. Not surprisingly this sector feeds and employs a lot more people than the industrial fleet. The majority living from the artisanal-caught fish are people living at the margin of subsistence for whom fish is the only accessible resource while a big share of the industrial-caught fish is exported to rich countries. Furthermore, women within the artisanal sector are self-employed as fishmongers and processors.

It is claimed that both industrial vessels and small-scale fishermen use unsustainable fishing methods; however, this study points out a decisive difference: while industrial trawlers have always made use of damaging fishing methods to increase their profit, small-scale fishers have only recently adopted more intensive methods (which are in some cases unsustainable, like light fishing) in response to the decline in fish stocks.

The case study

This study was carried out in February/March 2012 in the Ghanaian Western and Central Region. The findings are based on interviews with artisanal fishermen and fishmongers in 6 fishing communities and meetings with authorities such as the Fisheries Commission, the Marine Fisheries Research Department and regional fishery managers. The point of departure for the study has been artisanal fishery, but an interview with a former owner of several industrial vessels has also been carried out. Furthermore, available reports and articles on the Ghanaian marine fisheries sector have been studied.

The Ghanaian fishing fleets:

The Ghanaian people have a long and proud tradition of artisanal fishery. Since the 17th century the Fanti people have developed methods and skills in marine fishery[3]. Today, fish is still an extremely important part of the population's diet; it accounts for 40-60 % of the national animal protein supply[4].

The fishing vessels are usually divided into 3 fleets: the artisanal (canoe) fleet, the semi-industrial and the industrial fleet. Semi-industrial vessels make up only 4 % of total national landings and will not be further examined in this case.

Around 70 % of total fish landings are made by artisanal fishery[5]. The fleet covers a wide range of different sized vessels, from one-man canoe fishery to large canoes with 30 crewmembers. Approximately half of the canoes are powered by outboard motors[6], while the other half is propelled by paddle or sail. The canoes use numerous different types of net and they target all kinds of fish, mainly small pelagic species, of which sardine, mackerel and anchovies are the most important. A watsa net, a small-scale version of purse seine, is the most common method for catching sardines. It is estimated that 13,500 canoes were operating in 2010[7].

The industrial fleet covers imported steel vessels. Tuna vessels are primarily financed by joint-venture agreements with foreign investors. They go to sea for a maximum of 3 months and land the fish in the two main harbors, Tema and Takoradi[8]. The industrial sector has a high degree of mechanization and contains 60 trawlers (mainly bottom trawlers) and 33 tuna vessels, of which 15 use pole-and-line techniques[9] and 20 use purse seine[10]. Previously the fleet also contained pair trawlers, but this method was banned in 2008. Despite the ban, some trawl-

A typical canoe for marine fishery in Ghana. 15 crewmembers set out to catch sardines with a watsa net. (Photo Mathiassen & Barfod)

ers still apply this method. They mainly target demersal high-value species, such as Cuttlefish and Red Snapper, but also get smaller pelagic species as by-catch.

Ghana is no exception regarding IUU fishing (illegal, unreported and unregulated fishing). Landings from industrial, as well as the artisanal fleet, are considered higher than official data indicates[11]. Laws and regulations are poorly enforced and, as a consequence, illegal fishing methods and industrial vessels entering protected areas are common. In addition, there are several instances where Spanish and French vessels enter Ghanaian waters without license, presumably with the intention of returning catches to Europe[12].

Fish is a source of life

The fishing communities are highly dependent on the fishery resources. Fishery is the foundation of entire societies' livelihoods and fish is the only income for most families in fishing villages.

Fisherfolk are among the poorest in Ghana. Their income is about 2/3 of the national average (2000)[13]. The majority do not have an income that allows investment, which is often necessary in order to follow alternative livelihood strategies. Education level, access to health, sanitation, clean water and electricity is low compared to the average Ghanaian population[14]. Lack of financial capital, skills and access to alternative natural resources[15] means that a decline in catch leaves the fishermen no options except to increase exploitation of the only accessible resource, fish[16].

The boat-owner Uncel from the small fishing village Miemia explains how fish is crucial food for every family in the village: *"Of course we eat fish every day, because we have fish here. You don't have to buy the fish. We only eat meat once in a while because meat is not here."*

Most children grow up to become fishermen, processors or fishmongers[17], following in the footsteps of their parents, although several respondents expressed a wish for another future for their children. The fishermen Nana and Fransis from the village Dixcove describe the situation: *"We don't want our children to suffer like we do. We want them to go to school so they can find different jobs. But the fisheries are*

Abena is a fishmonger at the market near Agona Junction, Western Region. She is selling smoked tuna landed in fishing villages nearby (Photo Barfod & Mathiassen).

not developing or helping us to send our kids to school."

While the men are fishing, the women are engaged in processing and selling the fish. Either they clean the fish and sell it fresh or conserve it by smoking, drying or frying. It is estimated that 80% of the fish is smoked. In some places the fishmongers buy fish directly from the fishermen, while in other places they return some of the profit to the fishermen after trading the fish[18]. Most of the fish is sold at markets, but every time the fish change hands, the fisherman, processor or mongers consumes a small part.

As a part of the study different paths a sardine can take from fisherman to consumer have been mapped.

The figure covers the results from this particular survey. There might be cases where the fish will pass through additional mongers, traders and transporters before reaching the consumer.
Due to high levels of informal fish trade, there is no reliable data showing distribution of the fish. Although it is difficult to give a precise number of the people benefiting from the fisheries, it is clear that relatively small amounts of fish feed and employ large numbers of people. When the catches are reduced it obviously affects a huge amount of families, not only within the coastal fishing villages but also the processors, mongers and transporters all over Ghana.

Declining stocks and growing conflicts

Since 1950 the marine waters of West Africa have experienced a decline in fish stocks due to a more than ten-fold increase in fish harvests by domestic and foreign fleets[20]. This is also the case in Ghana, where over-capacity and use of unsustainable methods within the fishery sector are a major reason for the declining stocks[21]. In the early 1970s researchers noted that high levels of exploitation affected stocks of several species[22]. After massive exploitation by trawlers in the 1970s and 1980s, the trigger fish almost disappeared in 1989 and stocks have not recovered since[23]. Likewise, sardines and mackerel have showed signs of depletion throughout the 1990s, possibly due to overexploitation or the shifting nature of sardine stocks[24].

The development in different landed species. Small pelagics in particular have been declining within the last 10 years[25]

The coast of Ghana is located in the Gulf of Guinea and the productivity of the marine system is dependent on the Central West African Upwelling. In the coastal waters of Ghana the upwelling seasons occurs annually between July and September. The level of productivity caused by upwelling systems can vary greatly from year to year, because of its direct link to ocean and atmospheric circulations[26]. Catches tend to be sporadic and poor outside the upwelling season[27].

During the last 5-6 years observations made by the Marine Fishery Research Division[28] in Ghana indicate a decline in marine productivity through the major upwelling season. This has triggered a reduction in catches of pelagic species such as sardines (see graph above) and is believed to be caused by intensive fishing and climatic factors[29]. The use of nets with undersized meshes, mite- and chemical fishing are all unsustainable methods used within the fishery sector in Ghana. They have negative impact on reproduction of fish and the marine ecosystem[30], and thereby also the outcome of upwelling seasons. Moreover, changes in climate such as the increasing sea surface temperature and reduction in salinity are disturbing the coastal upwelling system. The ideal conditions for the coastal upwelling system are when sea surface temperature is low and salinity is high, i.e. directly the opposite conditions from those indicated by the measurements made within the last years[31].

Catch of the day. Two canoe fishers, from the village Ekumfi Ekumpoano, return with a small catch (Photo Barfod & Mathiassen)

harsh reality in the fishing communities. The canoe owner Uncel from Miemia in Western Region explains how the seasonal peak has been reduced: *"During the high season we catch between 40-50 pans[32] of fish in one canoe with a 22 in the crew. During low season we only catch three pans, sometimes one and sometimes nothing. But we haven't been catching many fish in high season since the last 4 years."*

A decline in small pelagic resources especially affects small-scale fisherfolk. They are highly

dependent on the productivity of the upwelling season, since they generate capital during this period to support their family when catch is low. Industrial fisheries are less vulnerable to changes in upwelling, because they primarily target demersal species. Also trawlers are facing declining resources. According to a World Bank report the trawling industry is considered to be in crisis, suggesting decommissioning of the fleet during the next 10 years[33].

The battle for fish resources

There are different views as to how and to what degree the different fleets affect each other. This becomes clear through browsing the literature and questioning the authorities and the local fishers. It is not clear as to what extent the different fleets are fishing in the same areas and targeting the same species.

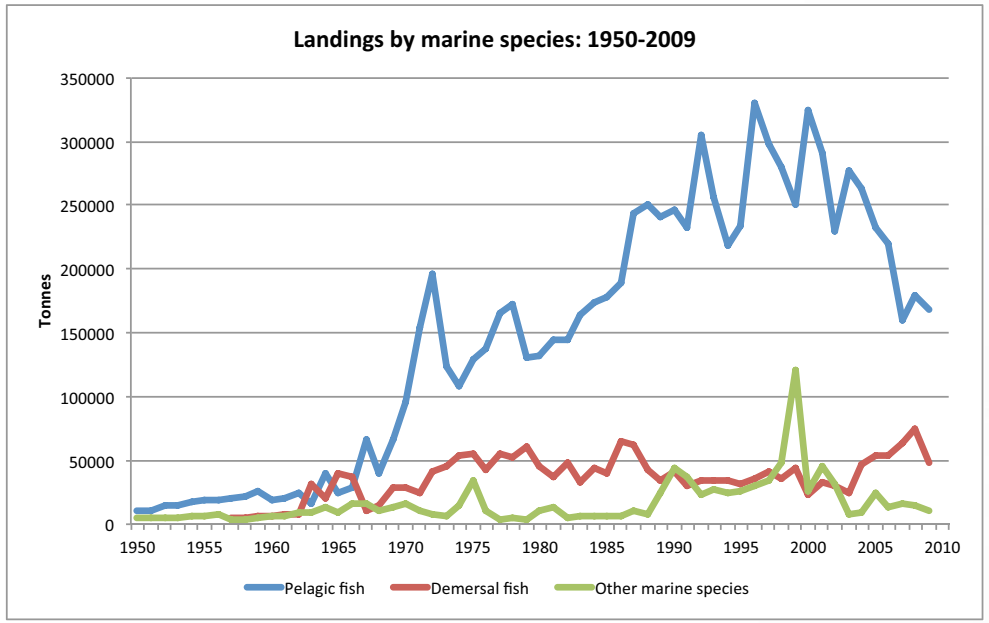
The literature mainly focuses on direct clashes, where artisanal gear has been destroyed or dragged away by the semi-industrial and industrial trawlers, or even collisions between canoes and larger vessels[34]. There has been little research concerning the impact of the industrial fisheries on the catches of the small-scale fleet. Only a few reports and articles mention this issue and in little detail.

According to the Fisheries Act of 2002, waters of less than 30m depth are reserved for small-scale fishing. This rule is poorly enforced due to lack of capacity within monitoring, control and surveillance authorities. Consequently, the industrial vessels are often seen operating within this limit, targeting specific high-value species[35]. As they use unselective methods like trawling they do not only catch the "target fish" but also significant amounts of juvenile and smaller fish species that make up the livelihood of the artisanal fishermen. Furthermore, the declining resources near the coast have forced the small-scale fishers to seek deeper waters in order to catch small pelagics[36]. If these tendencies continue in the future, conflicts between the different fleets may increase.

The majority of fishers interviewed confirmed the damage of gear and boats, but also emphasized the effect semi-industrial and industrial fishery had in relation to declining stocks; all said that the industrial vessels were the main reason for their reduction in catches.

Canoe-owner Michael Ansah from Elmina outlines the situation: *"Both industrial vessels and semi-industrial vessels are the reason why we don't catch fish. Sometimes they fish in waters only 14-15 meters deep and destroy our net."*

Authorities seem to believe that, if the 30m rule were to be enforced, there would be no conflict among the fleets. The artisanal fishermen, however, claim that they operate beyond 30m depth, which means that even if the laws were enforced, the fleets would still compete for the same fish in the same areas; this is a competition a canoe with a 40 HP engine can never win. Even if the fleets operated in different areas they may influence each other because fish move. For example, if a fish is caught in deep waters it will not come to shore. According to an assistant director at the Monitoring Control and Surveillance division, there used to be tuna much closer to shore in Ghana[37]. It might be interesting to investigate the potential to increase the artisanal exploitation of the fish species that now are considered as a target for only industrial fishery.



The development in different landed species. Small pelagics in particular have been declining within the last 10 years[23]

Distribution of benefit

The study has investigated how the benefit from the industrial and artisanal fisheries is distributed amongst the population. Who does the fish feed and how many get a share of the profit from this resource?

Ghana is a net importer of fish. Despite the fact that fish production in Ghana cannot cope with the demand, a large share of the landed fish is exported. Exactly how much and to what countries is hard to tell due to unreliable and missing data[38]. Estimates vary between 9 % and 33% of total landings[39].

For the artisanal fisheries the whole sector is highly unregulated and there is a lot of informal trade in the country. As the map of paths for a sardine demonstrates, there are a lot of different paths a fish can travel before being consumed. There is, however, no doubt that the large majority is consumed within Ghana. The artisanal-caught fish that leaves Ghana is exported to other West African countries simply for the reason that it cannot live up to international quality standards. This is mainly due to the lack of infrastructure and access to cold store facilities at the landing sites[40]. This barrier to entering the EU and other rich countries prevents the fish from leaving the region.

When it comes to the industrial sector the exported fish go mainly to the EU, Japan, the

Fishermen repairing at the landing sight in Miemia, Western Region (Photo: Mathiassen & Barfod)

USA, Canada, Hong Kong and Singapore[41]. How big a share of industrial landed fish leaves Ghana is hard to tell. As an indicator one can look at the tuna industry; the three tuna canneries export 90% of their production, mainly to Europe, and tuna makes up the majority of the total export[42]. It is a clear tendency that high value fish is exported while low value fish is imported. Stakeholders in the Ghanaian fisheries sector have expressed concerns that the export of high value fish product will create a lack of these products in local markets[43].

In spite of low data reliability it is indisputable that, while the catches from the artisanal fleet mainly feed the Ghanaian population and to some extent other West African populations, a huge share of catches from the industrial fleet is consumed in countries not facing malnutrition. Fish caught by artisanal fishermen mostly feed a segment of the population that is more vulnerable to extreme poverty and hunger.

No statistical analysis compares how many people the artisanal and industrial fishing sectors employ respectively. However, the map of paths for a sardine gives an impression of the high number of people living from the artisanal fishery. Official Ghanaian statistics claim that 135,000 fishermen are employed in the marine sector[44]. A quick calculation tells that if a semi-industrial vessel on average employs 20 persons and industrial vessels employ 35 persons each, these fleets employ 12,480 persons in total. Hereof only 4,480 are employed by the industrial fleet[45]. This means that the canoe fleet employs 90 % of the total number of fishermen. From these statistics it is clear that the small-scale fisheries sector employs a lot more people. It should, however, be taken into account that the canoe fleet lands more fish than the industrial fleet. In 2009 the total (registered) landings of fish was 326,000 tonnes whereof 70 % was landed by the canoe fleet[46]. These calculations do not cover the post-harvest sector such as fish mongers, traders, workers at tuna canneries, transporters etc. A study of the artisanal fisheries in the Ghanaian Western Region suggests that one fishery job creates 7 additional livelihoods. To this children should be added[47]. There is no investigation of the multiplying effect made for the industrial sector with which to compare this statistic. But due to high levels of mechanization, activities in the industrial post-harvest sector, employ less people.

The distribution of the profit and also ownership of vessels and equipment are important factors.

The harbor in Elmina is one of the central landing sites for canoes in Central Region (Photo Mathiassen & Barfod)

Everyday the catch from the canoes employs thousands of women in the fish markets (Photo Mathiassen & Barfod)

It is unquestionable that the ownership of the equipment is spread among a lot more people in the artisanal sector. Because of the high investments associated with industrial fishery, only people or companies with massive financial capital enter the sector. Unlike the artisanal fisherfolk, they may have economic alternatives to fishery.

In most cases foreign investment is behind the industrial vessels and processing facilities. The law requires 50% Ghanaian ownership of tuna vessels and 100% Ghanaian ownership for all other industrial vessels[48], but it is no secret that the Ghanaian partnerships are, in many cases, so called "fronting" where the Ghanaian partner is a strawman. Another model that is used is the hire purchase agreement, where the vessels never come under the ownership of a Ghanaian.

Korean and Chinese companies own a large share of the industrial fishery sector and due to lack of skills among Ghanaians most captains and other high-ranking staff are Korean and Chinese[49]. Likewise the processing industry is dominated by foreign capital. The largest tuna cannery, Pioneer Food Cannery Ltd, has more than 80% of the total processing capacity in Ghana and is owned by the multinational seafood company MWBrands[50]. These facts indicate, not surprisingly, that a substantial share of the profit from the industrial fisheries ends up leaving Ghana in various ways.

Sustainable exploitation of Ghanaian fish resources

There might be more than one reason for the decline in stocks in Ghanaian waters, such as climate change and the simple fact that too many people live from a limited resource. However, in order to reach a sustainable exploitation of fish resources, it is undoubtedly necessary to change the methods of fishing currently used in the area. It is a well-documented fact that trawling and other unselective fishing methods have a damaging impact on the marine ecosystem. This said, it is also the case that the artisanal fleet fishers in Ghana utilize unsustainable methods, as the following case demonstrates.

Light fishing for a livelihood

Michael Ansah has been a fisherman all his life, almost 50 years. He owns a canoe and uses a watsa net to target the sardines. Every landing is shared between him and the 15-20 crewmembers. His wife processes and sells the fish. Fish is the source of life for the family. No fish means no income to pay for food, health insurance and school for the children.

Days with low catches are increasing, which makes it harder to cover expenses, because fuel and food for the crew still has to be paid. Michael Ansah used to fish without an engine, but during the last 15-20 years the decline in fish stocks has forced the artisanal fishermen to *expand the fishing area.*

Michael Ansah is a canoe fisher in Elmina. Due to decreasing catches he has started using light fishing to catch enough to support his family (Photo Barfod & Mathiassen).

"Nowadays you can not live from fishing without an engine", he tells. "*Before we could catch fish just out here. Now you have to go far away".*

He considers industrial vessels as the main cause of declining catches and meets trawlers on the sea almost every time he is out fishing.

Michael Ansah has invested in a generator used for light fishing, which is a way to increase the chance of catching enough to cover fishing expenses. A short look around in the small harbor in Elmina shows that many other fishermen do the same, although the method is illegal due to its negative impact on stocks.

The Head of District for the fisheries in Elmina is aware of the problem: *"Previously we had the sardine season from July to September with a huge peak in sardine catches. But the industrial vessels take the sardines before they come close to shore. The fishermen have to find methods to get a little catch. For many light fishing is the solution. This is against the Fisheries Act, but if you don't do it you can't live."*[51]

As the previous example indicates, there is an important difference in the reasons that the two fleets choose these unsustainable methods. Due to the declining catches, some canoe fishermen choose to start using light fishing or undersized meshes to feed their families. On the other hand, the industrial trawlers, which are owned by commercial companies, have from the very beginning been using unselective methods to increase their profit.

Self-regulation of the stocks

About 60 km west of Elmina you find another small fishing community called Dixcove. Fishermen in Dixcove mainly target tuna and shark,

Nana and Fransis in a canoe under maintenance – another expense that has to be covered by selling catches (Photo Barfod & Mathiassen)

and thereby differ from most fishing communities along the Ghanaian coast. In Dixcove too the fisherfolk suffer from decreasing fish resources. Nana and Fransis have been fishing for their whole lives.

"For our fathers and forefathers the fishing business was very okay. They had money to send the kids to school. Nowadays there's a difference. We have trouble paying for the schoolbooks. Our fathers were just catching the fish nearby, but we have to go far away to find the fish," Nana tells. One trip is normally three or four days in the open canoe. 10 years ago they could catch enough in only one day.

Fransis explains how the use of light and too small mesh sizes is destructive of the fish resources. But the industrial vessels are the main problem. *"They catch everything. The big fish and the small fish also. So there is no food for the big fishes and the juveniles never grow big,"* he says. "*Here in Dixcove we use large mesh sizes so we let the small fish go so they become big. If you take all the small fish you cannot live in the future"*.

Because of scarce fish resources and the increasing length of fishing trips, the fisherfolk in Dixcove agreed on a regulation. In the end of 2011 they decided to split the 260 canoes in two groups. While half of the canoes are out fishing, the other half has to stay home. This is a way to share the scarce resources and also to reduce the numbers of trips and thereby fuel expenses. The idea to implement the regulation came from fishing communities in Togo and Gambia. Both Nana and Fransis support the decision. *"It's a good decision,"* Fransis tells, *"but we will not see an improvement in catches before the industrial vessels go away."*

The fisherfolk in Dixcove demonstrate how small-scale fishers manage to regulate the fish resources themselves. This type of regulation is well known: a common way to enforce Total Allowable Catch is to limit the number of days a vessel may go fishing per year.

In light of the Millennium Development Goals, the small-scale fishery seems to be the way forward for Ghana. The fact that small-scale fisheries feed more and poorer people than the industrial fisheries testifies to the contribution to eradication of extreme poverty and hunger (goal no. 1). Also, when it comes to ensuring environmental sustainability (goal no. 7), the small-scale fishermen manage better, simply for the reason that they do not utilize fishing methods that are as damaging as those of the industrial vessels.

Notes

1 Interview with Yeboah 2012
2 Interview with Nketsia 2012
3 Atta-mills et al, 2004
4 Gordon & Pulis 2010
5 MOFA, 2012
6 Mainly 40 HP
7 Finegold et al 2010
8 Atta-mils et al 2004
9 Pole-and-line is an effective method of catching tuna using a hook and line attached to the end of a pole.
10 Interview with Yeboah 2012
11 Interview with Anti 2012
12 Interview with Yeboah 2012
13 Obeng & Anderson 2010
14 Gordon & Pulis 2010
15 Agricultural land etc.
16 Perry & Sumaila 2006
17 Gordon & Pullis 2010
18 Mensah et al 2006
19 Mathiassen & Barfod 2012
20 Antwi 2006
21 Interview with Baidoo-Tsibu 2012
22 Atta-Mills et al, 2004
23 Finegold et al, 2010
24 Atta-mills et al, 2004
25 FishStatJ 2012
26 Finegold et al 2010
27 ACP Fish II Project 2011
28 Research department under Ministry of food and Agriculture's Fisheries Commission
29 Interview with Bannermann, 2012
30 Interview Anti 2012
31 Interview Bannerman 2012
32 One pan of fish way between 27 and 31 kg 33 World Bank 2011
34 Finegold et al 2010, Mensah et al 2006, Bennett et al 2001
35 Interview Yeboah 2012
36 Finegold et al 2010
37 Interview with Yeboah, 2012
38 Finegold et al 2010
39 CRC 2010 & FishStatJ 2012
40 ICSF 2002
41 Finegold et al 2010 & Antwi 2006
42 Antwi 2006 and FishStatJ 2012
43 Antwi 2006
44 Republic of Ghana Fisheries and Aquculture Development Plan 2010-2015
45 The calculation are consistent with other estimates of employed canoe fishermen (Finegold et al 2010)
46 MoFA website 2012
47 Gordon & Pulis 2010
48 Fisheries Act 2002
49 Interview with Yeboah & interview with Kudjordi 2012
50 MWBrands, 2012 & interview with Kudjordi 2012
51 Interview with Nortey 2012

Case Seruthur – a vibrant Indian fishing village restored

Seruthur is a fishing village in Nagapattinam district in Tamil Nadu, a southeastern Indian coastal state. Seruthur is located 15 km south of the district center, Nagapattinam, at the river mouth of Vellaraia.

Nagapattinam district suffers from cyclones and was hard hit by the 2004 tsunami. In Seruthur 672 dead bodies were recovered; in 2005 the village had 2175 inhabitants distributed in 650 families.[1] A rehabilitation settlement with 434 new houses has been built a little further inland from the original village, while a third of the population still lives at the old site.

Nagapattinam district has 56 fishing villages and 41 landing centers[2], meaning that not every village has its own landing center. The district center Nagapattinam has a harbor where the mechanized fleet belongs. The other landing sites are for beach landing vessels.

Fishing from Seruthur

3 types of fishing vessels are in use in Nagapittinam district: catamarans, OBMs (outboard motor boats) and mechanized boats. From a European perspective these are all small-scale vessels. From the local perspective the beach-landing catamarans and OBMs are small-scale while the mechanized boats are large-scale. Big industrialised vessels can be found at the east coast only in very limited numbers.

In Seruthur the fishing is carried out with OBMs (outboard motorboats), that go to sea with ice and stay out for 3-4 days – as long as the ice keeps. A boat is manned by a crew of 3-4 and they fish with different types of gillnets targeting different species. The fishermen take pride in their profession: *"Our grandfathers went to sea, our fathers went to sea and this is all we know to do. Fishing is God to us"*, a spokesperson exclaims. They do not face many official regula-

A non-motorized catamaran and OBMs landing their catch at the beach of Seruthur

A large-scale mechanized trawler in Nagapattinam harbor with a watchman on board

Fishing fleet structure in Tamil Nadu

A **catamaran** (kattumaram in Tamil) is made of logs that are tied together. It is a technology that for centuries has proved its abilities in crossing the surf. After a fishing trip the logs are untied and dried in the sun. The size and length of the vessel varies with the number of logs. After the tsunami (2004) the compensation schemes for lost and damaged vessels has reduced the number of catamarans in Seruthur from 95 to approx. 10, since fishermen upgraded to OBM vessels. The remaining catamarans are non-motorized (before the tsunami motorization of catamarans was common) and mainly used in the yearly 6 week ban-period for motorized fishing.

An **OBM** (Outboard Motor Boat) is an open wooden boat strengthened with a cover of fiberglass. It is equipped with an outboard motor on a long stick for landing on the beach. OBMs can carry ice and more gear and catch than catamarans. They also go further to sea – up to 50 nautical miles. These vessels fish with different types of gillnet and driftnet or with hooks and lines. Many fishermen gained a part in an OBM after the tsunami instead of replacing their catamarans. However, today many OBMs are owned individually. There are now 235 OBMs in Seruthur compared to 110 before the tsunami. The fishing is share-based; after subtraction of costs the crew shares the sale of catch.

Mechanized boats are decked vessels. The term 'mechanized' refers to mechanized dragging or hauling of fishing gear as compared to manually hauling of nets or lines. Generally these vessels are between 30-50 feet; they have inboard motors and need a harbor to land. These vessels are either trawlers or fish with driftnet. They go far out to sea – up to 100 nautical miles – and stay out up to 10 days. The boat-owner may skipper his own vessel or hire a relative to do it and the crew may be up to 10 people. As trawlers consume more fuel than drift-netting the share for the crew is 20% in trawling and 50% in drift-netting. However, the crew is also paid a base sum for a trip irrespectively of any catch.

Deep sea fishing vessels are very limited on the east coast of India. Only a couple operate out of Chennai harbor, while the rest fish at the west coast. All in all, 76 Indian deep sea fishing vessels are in operation in Indian waters. This large-scale fishing fleet is largely an outcome of policies in the 1980s when joint ventures with foreign fishing companies were encouraged. Today all vessels must be Indian owned (51% of capital) and at least 25% of the crew must be Indian. These vessels are mainly tuna fishing long-liners and purse-seiners.

OBM and crew going out on a 3-4 days fishing trip

tions controlling their activities except for the 6 weeks of fishing ban for conservation purposes – which they humorously claim makes them weak due to not eating fish for such a long time. The trawlers pose lots of problems for them by destroying their gear and due to the risk of collision at night at sea. In the 1980s there were violent conflicts at sea as small-scale fishermen tried to protect their fishing grounds and gear from intruding trawlers. This has come to an end as the mechanized fleet has grown and more and more fishermen crew these vessels. Trawling is also banned in in-shore waters up to 3 nautical miles; a rule not necessarily adhered to.

Although all the fishermen in Seruthur perform small-scale beach-landing fishing and are pressured by the mechanized trawlers they don't want to ban trawling completely. As one fisherman says, *"Everybody needs to earn"*. However, they are in full agreement that pair-

Rights and rules: [3] It is common in India that environmental and customary rights are held in high legal regard. The Supreme Court tends to vote in favor of protection of the environment, customary common property rights, protection of the landless and so forth. However, there are no institutions to implement the courts' decisions. The case of shrimp farming is but one example where customary users of the mangrove resources have won in the Supreme Court over investors converting the mangroves into capital intensive shrimp farming for export. However, shrimp farming is spreading despite the court decisions against their wet-land-grab.

The export trade in the shady corner of the market place is male dominated

trawling and purse-seining had to be banned, which happened in 2000.[4] The fishermen recognize both of these techniques as highly exploitative leaving no room for fish reproduction in the areas they cover. This is the case for pair-trawling because of the large area of sea-bottom it erodes, and for purse-seining because it catches entire schools of fish – down to the last fish. To keep up their own catches the Seruthur fishermen need to go further to sea and use more gear – a sign of overfishing of their usual fishing grounds. However, it also has to do with the intensified fishing further out by the mechanized fleet. The general explanation given is that when the fish is caught further out less comes closer to the shore – an experience shared by small-scale fishers operating in industrialized countries' waters.

The fishermen co-operate at sea in case of danger. All vessels carry a sail for security if the motor breaks down. Motor repairing skills are crucial and it may take days to get a striking outboard motor to work again. If so, another vessel will always stay with the vessel in trouble, which will not be left alone. If a vessel doesn't return from a fishing trip all fishing stops and everyone goes searching. If a wreck has happened they may not be able to save lives, but recovering the bodies is important for the relatives.

Two types of fish trade – female and male

When the vessels return to shore in the morning after a trip, women traditionally take over the catch. It is the duty of the boat-owner's wife to carry the catch by head load from the shore to the market place and have it auctioned. This reflects the traditional role of women as the financial managers in small-scale fishing families. The husband, when paid, delivers his share to his wife who returns pocket money to him. However, as more fish is sold to middlemen for export nowadays, it may also be some of the crewmembers who carry the catch from the shore to the market place and the boat-owner himself may oversee the weighing instead of his wife. The profitable export trade is thus gradually shifting the gender roles letting men take over women's positions.

An auctioneer is preparing display of a batch for auctioning

Street fish-vendor from Seruthur in Paravai

The first landing of species for export is auctioned and sets the price for the following landings that day. The export fish are sold by weight while the local market fish is displayed on the ground and auctioned batch by batch. If a new export species arrives later, an auctioneer will be called and auction it to have a day price fixed for that species. The auctioneer will either be the boat owner's wife or another woman who is contracted to do it. The auctioneer is entitled to a small share of fish from each batch after she has auctioned it; that is her payment.

The market place fills up from early morning, first with auctioneers, women vendors, middlemen and auctioneers waiting for the boats to land. As more and more boats land their catch more vendors also arrive, mainly women

from Seruthur but also women and men from elsewhere who need fish for their trade. Many batches are auctioned simultaneously and the auctioneer must attract and keep the attention of the vendors with her voice.

Amadu – fish auctioneer from Seruthur

Amadu is part of a micro-credit group with a saving scheme – she took and repaid a loan to improve her house

Amadu is a widow at 35. She has three daughters and one son in the age of 8-15 to provide for. "My relatives helped me by letting me auction for their boats. I had to earn for us to live so then I developed the confidence to auction. It is difficult, but I am also happy, because I have to earn". It is hard on the voice, the throat and the chest to be an auctioneer. One has to repeat the price again and again. "When the men vendors say something to me (in-appropriate ed.), then it is difficult." The women are most tough to bargain with. "We can get to fight over the fish if they start collecting it before I have finished raising the price or if they don't want to give me my share." When the auctions are finished she sells her fish to other women vendors. Normally she makes 2-300 INR on an auction day. "I cannot carry head load because of health, so I do not do fish trade anymore. When my husband was alive I took fish from the boat to the market and sold it there. He died 6 years ago. There was a fight between two villages after a sport game. I told him not to go, but he did not listen." The village council has recently applied for a widows' pension for Amadu from the government. If granted that will supplement her income with 1000 INR per month. (app. 15 €)

Auctioning a batch for local marketing

When the vendors have got their fish from the auction they head off to sell at different market places within a range of 15 km. Subagayathu goes with 4 other women from Seruthur to a street market in Paravai 4 km inland. They share an auto-rickshaw and the cost of that. Being a vendor is time consuming and they have to sit at the market until the evening. Only those who have someone at home to cook and care for children can be fish traders because one needs to travel. Subagayathu can go because her daughter-in-law takes care of the household chores. The daughter-in-law also helps when Subagayathu buys fish at the auction and with dry-fish processing if not all the fish is sold, meaning that it has to be salted and dried by the evening. In this way she learns what is needed to become a vendor and can enter the trade herself when her children are grown and she herself is mature and confident.

Kalai Selvi, another successful fish vendor, goes to Velankanni fishmarket, but only until 1:30pm every day; then she has to go back and cook lunch for her husband and children. "*I also have to earn, otherwise my children cannot get educated*" she says, as she manages the family income with her husband's share of catch and her own profit from fish trade. Kalai Selvi is industrious and chairs several women's groups in the village in collaboration with different NGOs.
To become a fish vendor one needs confidence, time and money to start a trade. Another way to be included in the fish trade is to be a fish cleaner. A few elderly women in Seruthur earn their living by cleaning fish for retail customers who come to buy directly at the beach or by helping vendors and earning some fish for that. Transporters may also earn from the trade.

From Seruthur it is mainly auto-rickshaws that transport the women vendors and their fish to their point of retail sale. Some women specialize in dried fish processing and wholesale or retail of these products. Fresh fish vendors do dry fish processing as a side-business so as not to waste unsold fish, or when landings are big and prices get low. The dried fish business needs sun-drying space. In Seruthur they have received a drying machine from an NGO, but they prefer their traditional method of spreading the fish on the ground as the machine only lets the batch of one woman dry at a time and it gives an unpleasant smell.

The building of community by tradition and change

The population of Seruthur share the same religion – Hinduism – and they are of the same caste – they are Pattinavars. Pattinavar means people who are willing to go to sea. The fishermen marry Pattinavar women from neighboring fishing villages. In this way the wife, who moves to the village of her husband, will be skilled in the work related to fisheries.

A community is not built by its interdependent economic activities alone. For Seruthur to be as cohesive as it is, local institutions must be in place. The Panchyat is a centuries old fishing village council institution on the Tamil Nadu coast. Over time it has undergone transformation, and the position of the headman is no longer hereditary. Often the first settlers on a site would head the Panchyat as the *nattar*, the headman. Traditionally the Panchyat solves conflicts within the community and its perform-

ance rests on the core-values of honesty, autonomy, generosity, courage and unity. Members of a village are kin stake-holders; they share livelihood- and community concerns. Once it was at the time of marriage that a man became a community member with the rights and duties of such; now it is at the age of 18.[5]

In Seruthur the headman of the Panchyat is 32. His was chosen when 2-300 community members (men) came together in a meeting 1½ years ago. The most important properties of a headman and a Panchyat member are listed by Satya Murthi (36, Panchyat member) as:

1. To not drink
2. To serve the community
3. To have patience to hear and consider all view points

The accountant of the Panchyat of Seruthur on the steps of the Community hall (left). The books are out for public scrutiny every 6 month.

Although the Panchyat is an all-male institution women may also take their problems to the Panchyat for consideration, whether these concern domestic violence, problems with harassment during fish trade or the need of infrastructure for their business. Otherwise the Panchyat settles conflicts between community members and may impose and collect fines from offenders of community peace. If conflict occurs at sea, for example concerning cutting of nets, the Panchyat will send a delegation to seek compensation from the village of the vessel in question.

The Panchyat collects local tax to cater for the village institutions such as water-pumps, the community hall, the temple, the administration etc. The tax is levied on all economic activities and where activities interface between villages the respective Panchyats take turns in the taxation. This autonomous governmental institutional body has earned longstanding respect and trust within the community and its decisions are made with transparency.

Alongside the traditional Panchyat a democratically elected village council institution has evolved as part of the official Indian system of government bodies. The two institutions work together. While the Panchyat works with the internal organization of the community , the Village Council engages with the external environment of other governmental bodies. The Village Council has 12 members and one seat reserved for women. Satya's' wife Elaivani (25) ran for that seat and got elected. Together the couple now cooperates on serving the community both internally and externally.

Nattar (right) from the neighboring fishing village Kallaru.

In the rehabilitation after the tsunami the Panchyats in Tamil Nadu fishing communities played a major role. There is no distance between the leaders and the community members; all can bring their concerns to the attention of the leadership. This is an important factor for protection against extreme poverty and hunger, for improvement of the conditions for women, and also for environmental sustainability with regard to fish resources. The Tamil Nadu fishing villages have longstanding experience in solving community conflict and exercising authority in communal matters. Resource-management schemes could possibly be developed and implemented through the Panchyats.

Nagapattinam harbor – home of the mechanized fleet

On the fishing ground the OBMs from Seruthur compete with the mechanized fleet harbored in Nagapattinam. This is the local small-scale/large-scale conflict. It has been part of national fisheries policies to support a mechanization of the fisheries by subsidizing the building of a fleet that could go further to sea. The result of this policy, however, has been to disadvantage the small-scale fleet. From a European perspective the Nagapattinam mechanized fleet is also a small-scale fishing fleet. In its Tamil Nadu context it is NOT. The fishing villages lie

A part of the Nagapattinam harbor where non-export auctioning for local vendors takes place (photo: Eva Munk-Madsen)

as pearls on a thread all along the Coromandell coast and the people who live there carry out fishing with small open vessels. To the majority of the fishing population mechanized vessels are large-scale competitors. Seruthur is but one example of a small-scale fishing community in Nagapattinam District.

The small-scale OBMs can carry ice and stay at sea for several days. They are able to fish up to 50 nautical miles from the shore. In the mechanized fleet there is furthermore less equanimity between crew and owners. In some communities where boat-owners of mechanized vessels dominated the Panchyat, the small-scale fishermen had problems getting the Panchyat to apply for compensation for damage to their vessels after the tsunami. As mechanized boat-owners depend on crew they did not want too many independent small-scale boat-owners as this would create a shortage of crewmembers for their vessels.[6]

Although the mechanized fleet aims at fishing for export, it also still supplies local women vendors with fish. The non-export species are sold to local women fish traders, as are the poorer quality specimens of export species, which lack the required freshness. The busy Nagapattinam harbor furthermore offers employment to transporters, to fish-cleaners, to watchmen, to auctioneers and to vendors. The Dalits[7] –the lowest class and often the poorest – may find employment in the side businesses at the harbor.

Although the fleet is mechanized, the trade at the harbor is not. This is very important as the labor-intensity give employment to many people and thus an income, although small. Poverty in fish-related communities is not a result of underdeveloped fisheries – on the contrary. When many hands are engaged in handling the resources it secures that the value of them is shared – and India is rich in people so many hands are in need of employment. A technological and capital-demanding modernization of the trade could erode the labor intensity and thus the livelihood opportunities of many.

The Millennium Development Goals: The small-scale fisheries in Seruthur contribute significantly to local food security by providing vital protein to all fish worker families and to the coastal area and the hinterland. With very simple means a supply of various fresh and dried nutritious fish is made available for the wealthy as well as for the poor. It is women's work that secures the local supply at the coast and within a radius of up to 15 km inland. Some male vendors with mopeds doing door-to-door sale also share in local marketing of fresh fish. Every fishing and/or fish-trading family eats fish themselves almost daily. The dry fish processing performed by women is environmentally friendly as it uses only salt, sunshine, skill and labor. After drying, the fish has a long shelf-life and doesn't need resource-demanding cooling. Apart from some

Fishcleaners at Nagapattinam Harbor (photo:Eva Munk-Madsen)

dried shrimps all dried fish is consumed in India. Much of the dried fish is bought by whole-sellers for inter-state trade contributing to protein food security in a wider geographical area.

The export trade is a competitor to the local fish trade and orientates the fishing strategies towards targeting export species rather than sardines for example; the latter being a low-cost fish for local consumption. The demand for fish from export corporations may further pose a threat to the supply of fish for local trade and thus for women's employment as autonomous traders. As middlemen or agents from big export companies can offer credit for fuel and other expenses for fishermen, they in return get obliged to sell their catch to the same middleman or the agent. The local market would likely be able to consume more of the landings if the demand for export fish were halted by regulation giving competitive incentives to process and trade fish locally and nationally.

The financial threshold is low to participate in and gain a livelihood from fishing in Seruthur. All boys learn to fish as they grow up and are taken to sea with their relatives. There is open access to fish resources of the area for all men in Seruthur fishing is of open access nature to all men in Seruthur. Those who do not have capital to buy their own vessel will crew on someone else's. Fish trade is also openly accessible to all women. Yet not everybody can do it. It takes strength and health to carry a headload as women vendors must be able to and it also takes a starting capital, skills and confidence to sell in public places. Every fish vending woman has days with losses which the next days' sales must cover, thus a financial resilience is needed. This resilience in turn comes from the access to the fish trade and a web of credit transactions within family and social networks, supplemented by micro-credit schemes established by NGOs. To be an auctioneer or a fish cleaner are options for some. However, the demand is too low to employ many (in Seruthur 10 auctioneers, 2 cleaners). The poorest people in Seruthur are poor because they are NOT included in the fishing business in one way or the other.

On the government employment program offering 100 days of work a year at 100 INR per day on needed community work we meet only women. This shows that women's needs for employment and livelihood are not met as well as men's. Widows are vulnerable, as they are sole providers for their children. Re-marriage for a widow is against customary order and does not happen. The male export fish-trade is concentrating capital from fish resources in the hands of corporations outside the community. This prosperity derived from the local resources is then beyond reach of the community. Women fish traders on the contrary both supply food and spend their earning locally. They are especially keen to invest in the education of their children, in the home and in their business as well as in their husbands' vessels. Compared to many other communities the pattinavar fisherwomen exert a great deal of autonomy. They travel, trade and make economic decisions.

In a global perspective the small-scale fisheries in Seruthur score high in supporting the Millennium Development Goals. Women's autonomy in fish processing and fish trade provides them with an additional income, apparently crucial

"This is what my husband caught today"

for the aspirations of educating their children. Besides raising the standard of living for the family as a whole, women's income gives them decision-making power and raises their status. Goal 3 – empowerment of women and equal rights for women – is thus supported.

The small-scale fisheries do not make people wealthy, however they do provide a livelihood through which people can eat every day and live decently according to the local standard. 30 years ago fishing families in Nagapattinam rarely ate fish themselves; everything was sold (according to a qualitative study of the time).[8] This is not the case today. Even widows claim that they cook fish for the family almost daily. Furthermore they supply the hinterland with fish in all price classes. Goal 1 – eradication of hunger and extreme poverty – is thus supported.

The signs of overfishing reported by the fishermen raise a question about the sustainability of the fisheries in Nagapattinam District as a whole. It is, however, not the small-scale fleet that exerts the highest pressure on the resources; this pressure is exerted mainly by the mechanized fleet, which on the one hand has a higher capacity and on the other uses more destructive fishing methods like trawling which erodes the sea bottom, destroys corals and thus reduces the quality of the reproductive habitats for many fish species. As those who fish in the small-scale fleet all use passive fishing gear they are, by comparison, much more sustainable, and leave opportunities for fishing to future generations. Goal 7 is thus supported.

Notes

1 NGO Coordination and Ressource Centre 2005
2 According to the census in 2005. Central Marine Fisheries Research Institute (2005)
3 Navdanya 1999
4 The notification G.O.Ms.No.40 dated 25.03.2000 issued by Animal Husbandry and Fisheries Department of Government of Tamil Nadu prohibits fishing by pair trawling or fishing with purse-seine nets by any fishing vessel/craft whether country craft or mechanized boat irrespective of their seize and power of the engine in the entire coastal areas of Tamil Nadu in the territorial waters. The notification was issued in exercise of the powers conferred by Clause (a) of Sub-Sec(1) of Section 5 of the Tamil Nadu Marine Fishing Regulation Act, 1983(Tamil Nadu Act 8 of 1983).
5 Gomathy 2006
6 Gomathy 2006
7 Those born outside – below – the hierarchical caste system in India.
8 Rosen 1988

Conclusion – the small-scale way forward

The first point of departure for the literature review and our case studies was to assess how fisheries may feed the hungry and alleviate poverty. Our case-studies of small-scale fisheries in India and Ghana have been studies of small-scale livelihood fisheries. They supply fish to the fishermen, to the male and female fish-workers on shore, to the fish processors and fishmongers and their families. Everybody involved in the web of the low-tech labor intensive harvest and post-harvest activities get to eat a share of the catch – and it is an important part of their diet. In that manner the fisheries we have studied target subsistence needs. There are both direct and indirect contributions to food security at the household level through the food and livelihood accrued from fishing, processing and trading.

It is evident that labor-intensity is a solution rather than a problem in the fisheries. We have seen both in India and in Ghana how the many hands employed in the travel of the fish from the beach to the plate secure that the value of the resource is shared by many. Everybody gets a small share of the catch. The numerical estimate from the literature that small-scale fishing employs 25 times as many fishermen as do large-scale fishing per tonne of fish caught only accounts for employment in the harvesting phase. This sharing of benefit is multiplied when the fish is landed. The Ghanaian estimate is that seven people and an un-accounted number of children get a livelihood per active small-scale fisher. The high-tech industrialized fish processing cannot compete in this respect, although some tuna is canned in Ghana giving some local employment. In the Indian case the fish sold for export from the mechanized as well as the small-scale fleet completely evades the shore-based web of processors and traders as it mainly leaves the district and the country as iced fish.

The sharing of benefits from fisheries is at the heart of FAOs guidelines for improving small-scale fisheries' contribution to poverty alleviation and food security.[1] The difference between large-scale and small-scale fisheries is very great indeed when it comes to sharing the value of the fish. Fish processed in factory freezers at sea don't compare to the sharing of benefits accruing to the beach-landed catches carried by head load to shore by teenage girls, sorted and sold by fisherwomen, transported by the socially most marginalized,[2] processed and traded by autonomous women, their daughters and daughters-in-law. Large-scale industrialized fisheries for export purpose do earn corporations and/or states profit in foreign exchange. There is, however, no built-in sharing of benefits from export which would address poor coastal populations living with food insecurity.

The small-scale fisheries provide small-scale livelihoods. FAO assesses fishing communities to be among the poorest in the developing world. Fishing and related activities rarely generate wealthy households and communities, they do, however, help people to sustain a livelihood and prevent them from falling deeper into deprivation. This is especially true for those who seasonally or part-time turn to subsistence fishing when other sources of income fail. Fishing may be a crucial component in a diverse livelihood. It is impossible to deny access to fisheries for people who live on the edge of survival without creating opportunities for alternative livelihoods and food sources for them.[3]

The poverty in fishing communities in Ghana is confirmed by the literature and by the fisherfolk themselves. In the Indian case from Tamil Nadu the small-scale fishing families were not wealthy; however they had a decent level of welfare and could educate their children. This may partly be a result of the national and international attention and rehabilitation effort after the tsunami which led to the transition from catamaran to OBM fishing and new and better housing. It is important to distinguish that fishing communities are not poor because they live from fisheries. On the contrary, as they don't have other resources or skills to work with, fishing is crucial for their survival.

Capital doesn't depend on a specific resource. Capital-intensive fisheries and fish-processing are pursued for profit rather than for livelihood; although those employed do gain their livelihood from it. Only corporations with massive financial capital can enter the industrialized fisheries sector; they can also invest elsewhere unlike the local fishing populations who dearly rely on their generational skills, their sea-bound culture, their community cohesiveness and their tiny accumulation of capital embedded in a social web of lending transactions. Their assets are tied to the place they live in and the fishing grounds they live from and cannot be transplanted like large-scale capital. To secure livelihoods small-scale is clearly the way forward.

Concerning food security the small-scale fisheries not only feed themselves but also the coastal areas and the hinterland with fresh or cured fish products. This postharvest sector is as important as the harvesting and has a clear gender dimension to it. The fisherwomen preserve the catch depending on simple means such as salting and sun-drying or smoking and frying. They do not rely on high-tech freezing technology. Some places the women fish-

mongers do have access to ice, however, fish is not wasted but processed if it gets too warm for too long. The range of fish-products is wide and even the poorest people may have opportunity to buy some valuable protein in the form of small cheap dried fish. While the quantity of fish eaten may be small in terms of its calories, it still adds important nutritional value to their meals in the form of protein, micronutrients and fatty acids not available in the cheapest staple foods.

FAO estimates the small-scale fisheries to supply 50% of the fish food globally speaking.[4] The ETC-group estimates that small-scale fishers together with peasant farmers, hunters and gatherers provide 70% of the food consumed by humanity, while they comprise 50% of the human population. The remaining 30% of the food production is done by industrialized farming and fishing.[5] For people living with food insecurity it is, however, the small-scale fishing industry that delivers supply they may be able to afford and have access to, not the high-tech industrialized sector.[6]

The second point of departure for our investigation was to see how fisheries can promote gender equality and empower women. Here the post-harvesting sector is of major importance. In many cases women make up 90% of the workers in the post-harvest sector and it may be their only opportunity of employment and income generation.[7]

Low-tech processing and trade call for small investments only and that is what keeps the entrance level low so that many women can participate. This supports their position in the economy of the fishing communities. We found small-scale fisheries in Ghana and India giving opportunities for women in autonomous processing and trade and economic decision-making. Profit in the hands of women is sure to be invested in child- and household welfare, as these are women's primary responsibilities. Women intertwine their household chores and their fish work by the help of each other and of children; a web that sustains a socio-cultural-economic cohesiveness in their extended families and neighborly relations. Compared to the industrialized large-scale sector where women are marginalized, the non-industrialized post-harvesting sector of small-scale fisheries in developing countries provides a successful example of a structure that empowers women. The work they do is a crucial contribution to the family economy as well as to the core of local food security. In return their work gives them autonomy to travel, trade, capitalize and invest locally – acting as a multiplying factor for local development. The Indian case also showed that entrepreneurial fish-trading women involved themselves in a multitude of small-scale organizational and economical activities, knitting a security net for lean seasons in the fisheries. Thus alternative livelihood options can stabilize family income from the fluctuations that naturally occur in fish landings.

Our third point of departure was the issue of ensuring environmental sustainability in fisheries. Signs of overfishing prevail in the Asian as well as in the African case, though most seriously reported in Ghana. Small-scale fishers need to go further out to sea, stay at sea more days, use more gear and sometimes resort to illegal or destructive measures to keep up sufficient catches. The experienced results of overfishing do not necessarily arise from their own fishing practices; other vessels fish on the same resources. The mechanized fishing fleet in India and the large-scale industrialized fleet in Ghana exert a high fishing pressure that influences the resource availability for the small-scale fleet.

In Ghana the fishing pressure of the large-scale fleet is neither sufficiently measured, nor controlled as part of the landings may go directly to Europe or Asia. What the fishermen experience is that the sardines don't come close to shore anymore as they are taken by purse seiners and trawlers operating further out. African countries may be importing low-value species like sardines taken in their own waters by foreign vessels, while their own small-scale fishing fleet suffers from lack of resources. In Tamil Nadu the fishermen have achieved a ban on pair-trawling and purse-seining, a power the small-scale fishermen of Ghana have not been able to exercise. Traditional small-scale fisheries use selective and non-destructive passive gear while the mechanized and industrial fleet mostly applies non-selective gear and/or destructive bottom-trawling. The small-scale fishers both experience clashes where their gear is destroyed and they are aware of the consequences for fish reproduction from non-selective and destructive gear.

While there seems to be a basis for improving fisheries management in the small-scale sector based on agreements within the fishing communities themselves, no major improvement in resource restoration may occur without limiting the large-scale industrial and the mechanized fisheries. In Dixcove in Ghana the fishermen themselves had agreed on alternating fishing days to save costs of fuel and in Tamil Nadu the long tradition of community management through Panchyats which already are engaged in fisheries issues lay a foundation for expanding their responsibility to include resource management. Community-based fisheries management gives a chance for the poor to stay included as beneficiaries of the resources.

The small-scale fisheries in the developing world can contribute to the eradication of extreme poverty and hunger, to the promotion of gender equity and women's empowerment, and to environmental sustainability, but to enhance this contribution in the future the following steps need to be taken:

- Securing open access for subsistence fishers
- Reserving most fish resources for local small-scale fisheries
- Giving priority to local fish processing and fish trade – women's in particular
- Limiting global fish trade (by regulation) and distant water fishing (by removal of ALL subsidies)
- A ban on all destructive fishing methods such as trawling and other unselective methods
-

The Millennium Development Goals targeting the developing countries and their fisheries have been at the center of our investigation. However, just like small-scale fisheries are affected by the resource extraction and performance of large-scale fisheries, developing countries are affected by the resource extraction and performance of industrialized countries. It is evidently contrary to achieving the Millennium Development Goals to export overcapacity of industrialized large-scale fishing vessels to the waters and fishing grounds of poor fishing nations who have no chance to control their performance let alone monitor their own resources.

There are other lessons to be drawn from small-scale artisanal fisheries too, pertaining to the small-scale/large-scale conflicts in industrialized fishing nations. Here too, the sharing of benefits is overlooked completely by fisheries management operating in the name of efficiency. There was a time (not too long ago) when fishing communities in Europe were as vibrant as those we have studied in India and Africa. Men, women and children gained their livelihood through a labor intensive web of sea- and shore-based production. When fisheries turn away from a performance of fishing as a livelihood activity to a performance of it on purely business-terms, there are no people left to defend the long-term perspective in the fishery. A fishery that takes future generations into account depends on living fishing communities that have young people participating at the beach and in the harbor - sons and daughters to inherit the culture and production skills from their parents. Corporations, however, take only profit into account. The industrialized countries may end up with a fleet of super-vessels roaming the oceans like ghosts, not belonging anywhere or with anybody. That won't feed the poor, empower women or ensure environmental sustainability.

Notes

1 FAO 2005
2 India: Dalits
3 FAO 2005
4 4 ibid.
5 ETC-group (action group on erosion, technology and concentration) 2009
6 In the Gambia in 1999 mackerel canned in Japan was for sale everywhere in tins marked 'gift – not allowed for sale'. It is another subsidy to the large-scale industrial sector to use their catches as food aid.
7 FAO 2005

Dansk Sammendrag

Indledning og definitioner:

I år 2000 opstillede verdens ledere i FN otte udviklingsmål for at udrydde sult og ekstrem fattigdom i verden – de kaldes populært for 'fattigdomsmålene'. I 2015 skulle andelen af mennesker på Jorden, der lever for under 1 dollar om dagen være halveret. Vores undersøgelse fokuserer på, hvordan fiskeriet globalt set enten kan bidrage positivt eller negativt til at opfylde især tre af målene:

- Udrydde ekstrem fattigdom og sult
- Fremme kønnenes ligestilling og styrke kvinders position
- Sikre miljømæssig bæredygtighed

Vi er mest optagede af fordeling og fødevaresikkerhed (fattigdom og sult), men det hænger sammen med miljøproblemer i de forskellige fiskeriformer og med kvinders muligheder for at brødføde deres børn.

Man kan drive fiskeri for at skaffe fisk at spise i sin egen husholdning, for at have et levebrød eller for at skabe profit. Vi skelner mellem småskala fiskeri og storskalafiskeri som to forskellige fiskeriformer for at se, hvilke bidrag de giver til opfyldelsen af målene. Subsistensfiskeriet er i den mindste ende af skalaen, mens profitfiskeriet er i den største. I den lave ende af skalaen finder vi også det meste levebrødsfiskeri.

Det er især småskala fiskeriet i udviklingslandene, vi fokuserer på, fordi det er her, fiskeriet har mest direkte indflydelse på fattigdom, fødevaresikkerhed og kvinders position. Småskala fiskeri i de industrialiserede lande bliver betragtet som storskalafiskeri i udviklingslandene. Det, vi kender som storskalafiskeri på vore breddegrader, er gigant-skala i udviklingslandenes perspektiv.

Overfiskeri og reguleringer:

80% af havenes fiskebestande bliver regnet for enten at være fuldt udnyttede eller overudnyttede.

Der bliver gjort store anstrengelser for at regulere fiskeriindsatsen, men de ser ikke ud til at virke. FN har vedtaget en lov (UNCLOS) i 1977 om at give kyststater suverænitet i en afstand af 200 sømil fra kysten. 90% af verdens fiskerimæssigt produktive havområder ligger således indenfor national jurisdiktion. Kun 10% er 'frie' havområder, som reguleres af internationale instanser med historiske fiskeriinteresser i disse områder.

Biologer og økonomer har udviklet teoretiske redskaber til at regulere fiskeriindsatsen i de industrialiserede landes havområder. Deres anbefalinger bliver genstand for politisk forhandling. For at sikre, at fiskerireguleringerne overholdes, kræves et almægtigt kontrolapparat – eller yderst samarbejdsvillige og loyale fiskere, der ser reguleringerne som deres egne. Udviklingslandene har hverken penge til at holde øje med udviklingen i deres fiskeribestande eller til at kontrollere fiskeriindsatsen. Industrilandene gør store og dyre anstrengelser i egne havområder – alle fiskere ved, at reguleringer omgås. Kystfiskeri kan til en vis grad kontrolleres, det profit-orienterede fjernfiskeri er umuligt at kontrollere.

Der er en bestemt teori 'almindingens tragedie'[1], som har fået stor indflydelse på fiskireguleringerne i de industrialiserede lande. Ud fra tiltro til, at man bedre kan regulere fiskeriet, når ressourcerne er

privatejendom end når de er fællesskabs-ejendom, har mange lande indført individuelle omsættelige kvoter (ITQ). Det er en voldsom drejning af fiskeriet fra en levebrødsorientering til en profitorientering. Overalt, hvor ITQ er indført, er der sket en koncentration af fiskerettighederne på færre hænder. Nu er det først og fremmest kapital, der kræves for at drive fiskeri - tradition og kyndighed er underordnet. I stedet for, at mennesker i kystsamfund deles om at fiske på fælles ressourcer, opkøbes al fisken på forhånd, for at den kan blive fanget af kapitalstærke virksomheder.

I udviklingslandene er det endnu mere prekært at begrænse adgangen til fiskeri på denne måde. Det er at tage brødet ud af munden på de sultne. Selvom der også er overfiskeri i nogle af de kystnære områder, burde man ikke kunne udelukke de mindste og fattigste fiskere og fiskeforabejdere. Fiskeri og fiskehandel kan nemlig være deres eneste udvej for at overleve. For at fiskeri kan støtte op om fattigdomsmålene, må fiskerireguleringerne skifte paradigme fra maksimering af økonomisk profit, til maksimering af fordeling og lokal udvikling.

Beskæftigelse og kvinder:

FAO estimerer, at ca. 9 % af jordens befolkning er helt eller delvist afhængige af fiskeri og akvakultur. Langt de fleste bor i Asien (85,5 %). Afrika har den næststørste andel (9,3 %), mens Europa kun er hjemsted for 1,4 % af den fiskeriafhængige befolkning.

90 % af dem, der er beskæftiget i fiskerisektoren (fiskeri og tilknyttede aktiviteter med fartøjer, redskaber, forarbejdning, transport og salg), arbejder med småskalafiskeri og produktion. Halvdelen af verdens fiskearbejdere er kvinder, og 95 % af disse kvinder bor i udviklingslandene. Det vil sige, at småskalasektoren genererer 90 % af levebrødet i verdens fiskeri og at kvinder i udviklingslandene har stor betydning for denne sektor og vice versa.

Hvis man kun ser på antallet af fiskere til søs, så er det globale estimat, at småskalasektoren beskæftiger 25 gange flere mennesker per ton fanget fisk end storskalasektoren. Småskalafiskeriet er arbejdsintensivt, mens storskalafiskeriet er kapitalintensivt. Jo flere der er beskæftiget i sektoren, jo flere får en andel i fiskeressourcernes værdi, så når man ser på fordeling, så er arbejdsintensitivitet ikke et problem - det er en effektiv fordelingsmekanisme.

I det traditionelle ikke industrialiserede fiskeri spiller kvinder en central rolle til lands og en mindre rolle til vands. Forarbejdning og omsætning af fisk lokalt er i de fleste udviklingslande kvindedominerede virksomheder. Når fangsten er landet på stranden, overgår den i kvinders hænder. Der bæres, renses, ryges, saltes, steges, tørres eller ises og ikke mindst – sælges den. Det er kvinder, der sidder på markederne dagen land og forsyner lokalbefolkningen ved kysten og i baglandet med fersk eller forarbejdet fisk. Ofte skifter fisken hænder mange gange, før den lander på et middagsbord – det er effektiv fordeling af profit; maksimering af profitfordeling. De fleste kvindelige fiskehandlere er selvstændige, men får hjælp af andre kvinder og børn (døtre og svigerdøtre). For dem, der ikke har kapital til at købe fisk på stranden, kan der blive arbejde med fiskerensning eller forarbejdning for andre kvinder. At fiskehandlen er kvindedomineret, har særlig betydning for fattigdomsmålene. Der er en tydelig tendens til, at profit i kvinders hænder bliver investeret i børns uddannelse og familiens

velfærd frem for i tobak og spiritus. Jo større økonomisk uafhængighed en fiskeriform skaber for kvinder, desto sikrere er grundlaget for fødevareforsyning og lokal udvikling. I den voksende eksportorientering af udviklingslandenes fiskerisektorer, overgår megen fiskehandel fra kvinders til mænds hænder, fordi profitmargenen, startkapitalen og de kulturelle barrierer er større.

Fiskehandel og ulovligt fiskeri:

I dag er fisk den mest globalt handlede fødevare. Det er ikke nok, at fjernfiskerfartøjer sejler det halve af kloden rundt for at fange fisk. Efter fisken er bragt i land, kan den blive transporteret over endnu større afstande, før den bliver spist. Fiskeforbruget er steget globalt, men ikke lige meget. Det er særlig i de rige lande, det er steget og nu kommer megen af den fisk, vi spiser, fra udviklingslandenes havområder. Også lande med meget lav indkomst og fødevareunderskud eksporterer fisk til de rige lande, hvor forbrugerne har råd til at vælge og vrage.

Traditionelt set har fisk været en vigtig proteinkilde for fattige mennesker, fordi små fisk er billige – og de kan let tørres og holde sig længe. Fisken betyder ikke lige så meget kaloriemæssigt, som ernæringsmæssigt. Det er fiskens indhold af protein, fedtsyrer og mineralske sporstoffer, der er essentielt for mennesker, der lever i fødevareusikkerhed; dvs. som enten lever af billige kulhydrater alene eller simpelthen får for lidt mad. Eksporthandlen er ofte baseret på høj-værdi fisk, men en eksportorientering af fangsterne sikrer ikke den lokale forsyning, tværtimod: Når bifangster kasseres i det eksportorienterede fiskeri, kan det ligefrem være med til at underminere ressourcetilførslen til de lokale markeder.

Det er først og fremmest storskalafiskeri, der leverer fangster til den globale fiskehandel, men også småskalafiskeriernes fangster af eksport-arter er mål for mellemmænd og agenter fra eksportfirmaerne. Når efterspørgselen blandt de velbeslåede forbrugere i industrilandene stiger, øger det interessen for at investere i storskalafiskeri. Men fiskeriindsatsen i industrilandenes havområder er allerede for stor, og adgangen er reguleret.

For at slippe af med noget af overkapaciteten og fiskepresset i hjemlige farvande har mange industrialiserede fiskerinationer opkøbt fiskerettigheder i udviklingslandenes havområder. Her fisker industrielle gigant-fartøjer om kap med små traditionelle fartøjer, der må være ude længere tid og længere til havs for at være med, hvor fisken fanges – en højst ulige konkurrence. Og dertil kommer mulighederne for urent trav.

IUU fiskeri er et begreb, der betyder illegalt, ureguleret eller urapporteret fiskeri, og det foregår i stor stil på verdenshavene – særlig i udviklingslandenes havområder og i 'høj sø' – det vil sige områder udenfor national jurisdiktion.
Alle fartøjer tilhører en 'flagstat', dvs. er underlagt regler og kontrol af den nation, hvis flag de sejler under. Store fiskerfartøjer sejler nu under bekvemmelighedsflag for at undgå kontrol med deres fangster og fiskeriadfærd. Udviklingslandene har hverken finansiel eller institutionel kapacitet til at kontrollere de fremmede fartøjers adfærd og fangster, og flagstaterne sender ikke inspektion med i pakken. Hvad, der tilsyneladende er reguleret, er således i praksis delvist ureguleret, urapporteret og illegalt.
Hertil kommer det decideret ureguleredе, urapporterede og illegale fiskeri, hvor store fartøjer simpelthen tager for sig af fiskefadet udenfor enhver aftale og omlader fangsten til søs, så de heller ikke kan kontrolleres i havn.

Piratproblemerne i somalisk farvand startede med, at lokale fiskere forsvarede deres fiskegrunde mod invaderende industrielle fartøjer, der strømmede til, mens landet var uden fungerede regeringsmagt. Efterhånden, som pirateriet udviklede sig til sin egen lukrative forretning løsrevet fra fiskeriet, har handelsflåden nu fået international opmærksomhed og militær beskyttelse; en indsats lokale småskalafiskere må kigge langt efter stillet overfor indtrængende ulovligt storskalafiskeri. Så tragisk og omvendt er situationen, at to indiske fiskere mistede livet så sent som februar 2012 – skudt af militærbevogtning på et handelsskib, der fejlagtigt antog dem for at være pirater.

Eksempler: Ghana og Indien:

Vores to case-studier februar/marts 2012 fra henholdsvis Central- og Vest-regionen i Ghana, samt Tamil Nadu i Indien giver sikre retningsvisere for fiskeriformer, der støtter fattigdomsmålene.

I Ghana oplever kystfiskerne alvorlig nedgang i deres fiskeressourcer. De fisker med traditionelle 'canoes' med påhængsmotor. Nogle 'canoes' er små og bemandet med kun to mand, mens andre er store med en besætning på op til 20 mand. Ude til havs møder de dagligt store industrielle fartøjer, der trawler, fisker tun, eller bruger not. Kystfiskerne er ikke i tvivl om, at det er den hårde konkurrence med de store fartøjer, der har forringet deres fiskeri. Før kom der mange sardiner ind til kysten, nu bliver de fanget, før de når så langt.

For at opretholde fangsten er en hel del kystfiskerne selv begyndt at bruge lysblus om natten, selvom det er forbudt. Også dynamit-fiskeri forekommer. Fiskerne ved godt, det er destruktivt, men siger de ikke har andre muligheder for at tjene et levebrød. I Dixcove, en fiskerlandsby i Vest-regionen, er fiskerne blevet enige om at dele havdagene mellem sig. Der er ikke fisk nok til alle, så hvorfor bruge dyrt brændstof på at kæmpe om pladsen? Hver anden dag sejler det halve af flåden på fiskeri, og hver anden dag fisker den anden halvdel. Nogen virkelig bedring i ressourcesituationen bliver der dog kun, hvis trawlfiskeriet ophører, siger fiskerne.

Fangsten fra kystfiskeriet bliver solgt og spist lokalt. Der er desuden en lille traditionel eksport af forarbejdet fisk til nabolande. Forarbejdning i form af rygning, stegning og tørring er kvinders område; det er også dem, der handler fisken. Mange mennesker er involveret, før sardinerne når frem til madfadene, og alle, der er involveret, får en lille smule af fangsten. Således er den lokale fiske-

forarbejdning og fiskehandel fordelingseffektiv. Der kunne med stor sandsynlighed omsættes mere fisk lokalt, ikke kun sardiner, men også de arter der fanges til eksport – tun f.eks. Tidligere kom der også tun ind til kysten. Det er heller ikke tilfældet længere. Når der er overskud af fisk i forhold til, hvad kvinderne kan sælge fersk – forarbejder de det, så holdbarheden øges. Udviklings potentialet i kvinders lokale fiskesalg er langt fra udtømt, men det kræver, at ressourceforvaltningen til havs forbedres. Da fiskersamfundene er meget fattige og helt fiskeriafhængige, er favorisering af kystfiskeri frem for storskalafiskeri og infrastruktur for kvinders fiskehandel åbenbare muligheder for at støtte alle de tre fattigdomsmål, vi har fokuseret på.

I Indien oplever småskalafiskerne også, at de må længere til havs og blive til havs i flere dage for at opretholde deres fangster. Deres konkurrenter til ressourcerne er ikke store udenlandske industrielle fartøjer, men mindre mekaniserede fartøjer, der også er lokalt forankret. Småskalafartøjerne er åbne både med påhængsmotorer, der fisker med garn og lander deres fangst på stranden. De mekaniserede fartøjer er dæksbåde med indenbords-motorer og hydrauliske garnspil eller trawl. I Tamil Nadu er der siden år 2000 forbud både mod par-trawling og mod not, fordi disse fiskeriformer er undergravende for ressourcebevaringen. Det er fiskernes organisationer der har sikret forbuddet. Småskala garnfiskerne er dog bekymrede for det omfangsrige trawlfiskeri, den mekaniserede flåde bedriver, og der er mange konflikter omkring ødelagte redskaber.

Mens småskalafiskeriet er lokalt orienteret, er det mekaniserede fiskeri eksport orienteret. De meste af småskalafangsten går til kvinders lokale handel, mens det meste af den mekaniserede flådes fangst går til eksport. Det er den lokale fiskehandel, der giver beskæftigelse og fødevaresikkerhed. Når de små både lander på stranden, er det bådejerens kone, der bærer fisken op til markedspladsen, hvor hun auktionerer fangsten eller hyrer en anden kvinde til det. Fisk til lokalt konsum købes af lokale kvinder til forarbejdning eller sælges fersk. Eksportfiskehandlen er mandsdomineret. Traditionelt aflever manden sin hyre til konen, der giver lommepenge retur og forsørger familien med resten af hyren suppleret med den profit, hun kan lave gennem forarbejdning og fiskehandel.

I Tamil Nadu, som i Ghana, er den kvindedrevne forarbejdning og handel en arbejdsintensiv sektor, hvor mange hænder beskæftiges, også ved små mængder fisk; fordelingseffektiviteten er høj. De kvinder, der ikke har mod, tid, evner eller kapital til at købe og sælge fisk på gader og markeder, kan arbejde for andre kvinder med at rense fisk eller med forarbejdning. Også mænd kan få arbejde for fiskehandlerne med transport af varer. Børns uddannelse har højest prioritet, når kvinderne tjener penge.

Konklusion:

Småskalafiskeri bidrager til lokal fødevaresikkerhed. Det er med til at udrydde sult. For at alle kan blive mætte, er det ikke nok at lande store mængder fisk – de skal fordeles. Arbejdsintensiteten er en yderst fordelingseffektiv faktor. Særlig forarbejdning og salg i småskalasektoren giver beskæftigelse til rigtig mange mennesker og overvejende kvinder. Dette er vigtigt både for at sikre og forbedre kvinders position i familie og samfund, og fordi kvinders primære ansvar for børn betyder, at de investerer deres profit i familiens velfærd.

Småskalafiskeri giver små levebrød, men de fleste fiskerisamfund har ikke andre beskæftigelsesmuligheder og fiskeriet og de tilknyttede aktiviteter bygger på overleveret viden og kundskab, som ikke kan erhverves i en håndevending. Både i Ghana og Indien er fiskerkvinder og –mænd født ind erhvervet.

Småskalafiskeri kan godt føre til overfiskeri, og destruktive metoder kan tages i anvendelse. I det store puslespil er det dog minimal ødelæggelse, de små garnfiskere kan påføre bestande og havmiljø i forhold til det industrielle storskalafiskeri. Reduktioner i storskalafiskeriet vil have større miljømæssig gunstig effekt uden at fjerne overlevelsesgrundlaget for de mange og fattige småskalafiskerfamilier.

Med fattigdomsmålene som ledesnor viser småskalafiskeri vejen frem. For at dette kan udfolde sig bedre i fremtiden, er der brug for følgende tiltag:

- Sikre åben adgang til subsistensfiskeri
- Reservere de fleste fiskeressourcer til lokalt småskalafiskeri
- Give prioritet til lokal fiskehandel og forarbejdning – særlig kvinders
- Begrænse global fiskehandel ved regulering og fjernfiskeri ved at fjerne ALLE subsidier
- Forbyde destruktive fiskerimetoder såsom trawlfiskeri og andre ikke-selektive fiskeriformer.

Det strider åbenlyst mod opnåelsen af fattigdomsmålene, at de industrialiserede lande eksporterer deres over-kapacitet til udviklingslandenes havområder. Deres traditionelle fiskerfartøjer er i stand til selv at fange ressourcerne.

Der er endnu en lektie for industrilandene at lære fra småskalafiskeriet i udviklingslandene. Vi har set, hvordan arbejdsintensiteten skaber liv i de små fiskersamfund. I den økonomiske effektivitets navn er vi ved at lægge havne og fiskerlandsbyer øde overalt i Europa. Det profitorienterede fiskeri, løsrevet fra kultur og lokalitet, ender med at blive til en flåde af spøgelsesfartøjer, der besejler de syv verdenshave uden tilhørsforhold til nogen eller noget, dirigeret af finansinteresser fjernt fra havet og fra verdens kystbefolkninger.

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