

EAFM for Leaders, Executives and Decision Makers (LEAD)



B1: Reference material

Common issues in fisheries

HOW TO USE THIS DOCUMENT

- It is to give some background to common issues
- It is intended to provide a menu of issues that, when taken together, would form the basis for developing EAFM management plan
- It is important to remember that EAFM will not address single issues, but is more effective in dealing with inter-linked issues, and combinations of issues.
- EAFM is a planning framework that provides the structure to understand the relationships between the issues and a risk and priority setting process to develop solutions.
- It is important that this information is “localized” into a country or sub-national context, and clearly not all of the issues will apply. This localization, will provide the specific country issues/challenge that EAFM could be applied to.
 - Overfishing: habitat degradation; loss of biodiversity/ecosystem changes; reduced catches of high value species; reduced profitability in some fishery segments; unsustainable livelihoods, might be linked to overcapacity in a particular gear; or use of a high impact gear
 - Gear related: by-catch of ETP; habitat impacts; loss of trade access
 - Conflicts between small and large scale fisheries: zonation; gear interactions; low profitability; IUU
 - Development of protected areas: exclusion of small scale fishers; MPA siting may not provide fishery benefits: shifting fishing effort to other areas;
 - Fuel subsidy policy: drives fishing effort; reduces costs but results in vessels fishing harder and declining catches; ecosystem level effects of over capacity; lack of investment in sustainable fishing; vessel maintenance deteriorates; obsolete vessels and no actual economic profitability;

Once the issues are framed as in the examples above, also indicate that for the issue, there is a vision, or a better state that should be targeted. It is important that the EAFM approach is indicated as providing the approach or process to develop an effective solution.

EXAMPLE

- Issue: Conflict between artisanal and industrial blue crab fishers in nearshore fishery
- Vision of what is the desirable state to achieve: “A well managed crab fishery can deliver sustainable benefits to artisanal crab fishers”
- How EAFM can help: “An EAFM process that uses zoning & MCS mechanisms that has been adopted through stakeholder engagement”

Here are some examples of how issues can be broken down to build a story on diverse impacts:

ISSUE	EAF LINKAGES
Overcapacity in a coastal trawl and light attracting purse seine fishery	<p><u>Human well-being</u></p> <p>Employment on commercial vessels and in processing plants, but low wages and low profitability</p> <p>Poor vessel maintenance and safety as sea issues</p> <p>Conflicts with small scale fishing sector</p>
	<p><u>Ecological well-being</u></p> <p>Overfishing</p> <p>Benthic impacts and impacts in nearshore zone</p> <p>Large amounts of low value small sized fish; capture of juveniles of commercial species</p>
	<p><u>Governance</u></p> <p>Encroachment of trawlers in to artisanal near shore exclusion zones</p> <p>Impacts to small scale fishing gears</p> <p>Use of illegal mesh sizes</p> <p>Can be driven by fuel, or other subsidies</p> <p>Foreign trade impacts</p>
Poor labour conditions in the fishery	<p><u>Human well-being</u></p> <p>Poor wages; unsafe working conditions, Abusive labour rights</p>
	<p><u>Ecological well-being</u></p> <p>High risk fishing behaviour and high fishing effort due to illegal or illegitimate nature of fishing activity</p> <p>Fishing is often IUU and vessels are unregulated, allowing destructive</p>

	<p>fishing or over-fishing and non compliance with existing management measures.</p>
	<p><u>Governance</u> Weak regulation of labour on board- poor coordination between labour Ministry and fisheries department (e.g. competent agencies) Poor coordination between Maritime Transport Department and Fisheries Department on controls on vessels safety and registration and licensing Also enabled by corruption and rent seeking Illegal migration</p>
<p>Coastal fishery overcapacity and population growth</p>	<p><u>Human well-being</u> Increasing numbers of fishers Stress on livelihoods and high coastal poverty in fishing communities</p> <p><u>Ecological well-being</u> Increasing fishing effort Overfishing effects, declining catches, Habitat effects</p> <p><u>Governance</u> Weak enforcement No effective fishing capacity or effort controls Poor participation by stakeholders and no allocation of exclusive fishing rights or effective zonation Supplementary and alternative livelihoods</p>
<p>IUU fishing</p>	<p><u>Human well-being</u> Declining profitability in fishery</p> <p><u>Ecological well-being</u> Impacts on fishery resources Habitat impacts</p> <p><u>Governance</u> Limited enforcement Poor regulation of fishing vessels and gears International EEZ boundary conflicts</p>
<p>Promotion of sustainable fishery management</p>	<p><u>Human well-being</u> Employment and sustainable livelihoods Needs income from fishing Address the needs of both small scale fishery and commercial fishery</p> <p><u>Ecological well-being</u> Requires sustainable management of both habitats and fishery</p>

	<p>resources</p> <p><u>Governance</u></p> <p>Required effective regulation of fishing vessels and gears in both small scale and commercial fisheries.</p> <p>Effective inter-agency coordination</p> <p>Consideration of fishing rights approach for small scale fisheries (or zones)</p> <p>Licensing and registration</p> <p>Build appropriate catch certification , traceability and hygiene assurance systems</p>
<p>Issue: Conflict between artisanal and industrial blue crab fishers in nearshore fishery</p>	<p><u>Human well-being</u></p> <p>Conflict disadvantages artisanal fishers , which are typically the majority of the fleet and also the production/catch</p> <p>Impacts income and opportunity of those fishers with no other source of income (commercial fleet has other gears and target species options)</p> <p><u>Ecological well-being</u></p> <p>Due to intensity of conflict, juveniles are increasingly caught and retained as catches decline leading to impacts on recruitment and status of the resource.</p> <p><u>Governance</u></p> <p>Conflict reduces the effectiveness of fishery management planning and undermines conservation measures</p> <p>Tendency towards IUU</p>

1.) Human well-being threats and issues

Population and economic growth

- High population growth rates have resulted in an increasing food requirement in the Asia-Pacific region and this includes demand for fish. This demand, and the increasing export pull from developed countries, is putting enormous pressure on the region's fisheries and coastal and marine resources.
- Economic development and improving lifestyles also result in increased demand. It also means that there is an increasing tendency towards using migratory labour in fisheries across the region. This is partly because fishing is becoming an increasingly unattractive livelihood in many areas and also because of reduced returns from degraded fisheries. Therefore, vessel operators try to reduce labour costs by using cheaper, foreign labour. This results in problems with migrants, poor labour conditions and uncertain short-term perspectives on resource use.

Fishing is increasingly unprofitable

- Economic development and declining catches mean that coastal fishers progressively need to increase fishing effort to sustain fish catches and incomes.

Food security

- There is a high level of dependence upon fishery production in coastal communities, often involving large numbers of people.
- These communities often have few viable livelihood alternatives to fishing or fishing related activities
- Capture fisheries have for the most part reached their limits, and left unmanaged, it is not reasonable to expect more production volume, yet human population and demand continues to rise and increased production targets are set in a number of countries.
- In the drive for increased fish production, against a backdrop of generally weak management, coastal fishing has reached high intensity (especially in the trawl sector), and this has caused significant fishing down of the food web to lower trophic levels and size classes. The consequence is that the quality and acceptability of fish landed is now reduced and a significant proportion of capture fishery production is being redirected into aquaculture feeds (both for fish feed and conversion to fish meal). This has impacts on fish for food in small-scale fisheries, as well as broader ecosystem impacts that affect the quality and resilience of the fishery at large.

Poor health infrastructure and vulnerability to HIV/AIDS

- Due to their physical and socio-economic isolation, many fishing communities often lack adequate sanitation, clean water and health care. The rates of HIV infection in

fishing communities in Southeast Asia can be five to ten times higher than those in the general population. In Thailand, 20 percent of workers employed on fishing boats are HIV-positive, while the general rate in the population is 1.5 percent. Premature death robs fishing communities of the knowledge gained by experience and reduces incentives for longer-term and inter-generational stewardship of resources.

Gender

- Women play a prominent role in processing and marketing fish and are often highly engaged in reef gleaning and collecting of nearshore and aquatic fishery resources.
- Management actions which are introduced may impact on women's livelihoods and ability to provide income for their families/households.
- Women's views are important for achieving support for fisheries management planning and may be a strong force for advocating sustainable fishing and compliance with management actions.

Conflicts

- Ever increasing fishing effort results in conflicts between resource users over the declining harvestable stock and these conflicts are very pronounced between small-scale fishers and large-scale industrial fishing operations.
- Conflict among small-scale fishers is not uncommon. The clashes are not restricted to these groups and conflicts between and among various marine resource users (tourism, navigation, mariculture, coastal development, etc.) and jurisdictional authorities are becoming more frequent.
- There are also conflicts between local and migrant fishers, and between national and foreign vessels.
- Development of non-fishery Marine Protected Areas or marine managed areas. This can involve fishery stakeholders, but in many cases fisheries may be excluded from decision making. EAFM processes can ensure more equitable representation and also improve the performance of MPAs by taking fishery management measures into consideration.

Sustainable livelihoods

- Despite the widespread decline in fishery, many fishing households and communities remain dependent on fishery as their main livelihood. This is often due to the fact that they do not have alternative or supplementary livelihoods that are sustainable. The problems include:
 - limited access to needed resources, including microfinance and other financial services to start up;
 - inadequate skills, knowledge and adaptive capacity for other possible livelihoods, and the lack of long-term institutional support or market systems.
 - In some areas, people whose main livelihoods are not related to fishery may

also turn to small-scale fishing as a way to survive, making it difficult to reduce pressure on local fisheries.

- Livelihood enhancement by moving up the value chain or value addition and diversification within the fishery sector or into other sectors through capacity building and accessible resources could contribute to solving the problems.

Equity

- Access and allocation to fishery resources and distribution of benefits are often not equal and fair among different fishery dependent groups. Those who are socially or economically disadvantaged (for example women, poorer people, indigenous people, older generations, and migrants) are most vulnerable. Natural resource management and conservation, and institutions responsible for their governance, need to apply social safeguards to support more equitable distribution of benefits across different groups.

Cultural integrity and heritage

- For many people and fishing communities, fishing is a way of life and an occupational identity they take pride in. Cultural characteristics in small-scale fishing communities have been developed over many generations. Importance of fishing cannot be assessed only on economic grounds or as an income generating activity.

Climate related threats to resilience and vulnerability to natural disasters

- Coastal communities are vulnerable to natural disasters (storms/cyclones, tsunamis, etc.) and longer-term climate change and variability (e.g. sea level rise, ocean acidification, changes in sea circulation patterns, impacts on coastal infrastructure; changing agricultural production and water supplies) that could have significant long-term destabilizing impacts on socio-economic systems.
- Broader climate variability issues related to this include: destabilization of rural populations, increased migration and access to freshwater.

2) Ecological well-being threats and issues

Impacts on the fishery resources

- There is significant over capacity in the fisheries of Asia and excess fishing effort in many fisheries of the Asia-Pacific region.
- Overfishing often leads to the reduction, or even disappearance, of economically and culturally valuable target fishery stocks or groups of species.

- The overfishing of larger, long-lived high trophic level species (groupers, snappers, tunas, barracudas, sharks), has the consequence of driving the fishery towards smaller, faster recruiting species (small demersal and pelagic species, such as anchovies, sardines, scads, crustaceans, squids, etc.).
- Declining quality and hence economic or cultural value of catch (typically in trawl fisheries) leads to increasing quantities of low value or undesirable fish being caught. In some areas, bycatch fish are often discarded, but in the Asia-Pacific region there is strong demand for their use as aquaculture feed or conversion to fishmeal. Trawl fisheries, in particular, may rely on this component of the catch to remain profitable.

Impacts on the ecosystem

- Issues relating to changes in the structure or composition of fish species in an ecosystem as a result of fishing are described above.
- Bycatch issues that result from the fishery are the capture of non-target species that may be highly vulnerable. Regional examples of these are sea turtles, shark and ray species and marine mammals (e.g. dolphin and dugong entanglement in set gears). In the case of sharks and rays, these may be target species and especially valuable for the fin trade fishery. Often collectors will incentivise local fishers to provide these and this can drive targeting.
- Habitat damage (use of explosives; use of heavy contacting gears, such as pushnets and bottom trawls) also changes the ability to sustain the original diversity of species and may lead to changes in the structure and function of the ecosystem and the ability of the ecosystem to provide services to society. Trawling can physically damage seabed habitats in ways that shift the composition of the bottom dwelling species towards fast growing invertebrates and fast recruiting fish species that can survive in these altered habitats. In many cases trawl gears are used with very small mesh sizes increasing impacts.
- Light attracting gear used in shallow waters may attract juvenile fish off the seabed and reefs and can be a highly effective fishing method. This can however lead to serious depletion of fish.
- Pushnets are highly contentious because they are typically operated in shallow, more sensitive, nearshore habitats. These gears often create conflict with artisanal fishers because they may use small mesh sizes and often catch juveniles of commercial species. They are contacting gears and their use in shallow waters can impact seagrass bed habitats which are important for some commercial nearshore species (e.g. some shrimp species).
- Marine ecosystems, once significantly impacted, may not have the capacity or resilience to return to their original state. This might be considered if the ecosystems are providing other ecosystem goods and services desired by coastal communities and with the application of actions that seek to reduce impact or ensure a higher degree of sustainability of the altered habitats and fish stocks.

Technological advances

- Technological advances, such as the introduction of more fuel efficient and easy to maintain engines, improved materials such as monofilament nets, cell phones and use of satellite technology, have enabled fishers to exploit inshore and offshore fisheries more intensively than was ever imagined a few decades ago.
- These advances have led to increased conflicts between large and small-scale fishers as larger boats, using more advanced technologies, can overfish nearshore waters.
- The use of fish finders and bright lights enable larger boats to find and attract more fish, to the detriment of small-scale fishing operations.

Other impacts that will affect the fishery and the ecosystem

- Climate change and climate variability and ocean acidification are already leading to changes in marine and coastal ecosystems and these changes are projected to increase in the coming years and decades. One of the most obvious examples of climate change impacts is modification of habitats by coral bleaching caused by ocean warming.
- Other slow onset climate effects are changing salinity regimes in deltas and estuaries, or the changing of the carbonate chemistry (i.e. ocean acidification) which will also lead to significant ecological changes in marine ecosystems. The various climate change effects will lead to changes in the biodiversity, abundance and distribution of fisheries resources and habitats in the ecosystem with associated changes in socio-economic benefits provided to coastal communities.
- Fish migration patterns may change and species can shift their ranges in response to changing temperature (tuna, sardines and squid are excellent examples of this). As a result, fishing areas may shift as fishers follow these stocks; or fishers and/or markets may need to change their fishery targets.
- Habitat loss in coastal areas as a result of agricultural or urban development is common. Less obvious are impacts, such as coastal development that lead to increasing nutrient run-off or impacts on beach habitats (e.g. sea turtle nesting sites).
- There is growing interest in offshore mining (although tin and copper mining and dredging and coral mining have a long history in the Asia-Pacific region). This can affect sediment loads and, in the case of tin and copper dredging, the release of heavy metals, resulting in the disruption of coastal habitats.
- Increasing pollution and organic run-off results from intensification of agriculture (fertilizer use) and increasing coastal populations (sewage).
- This nutrient pollution or oversupply is one of the main causes of harmful algal blooms, oxygen depletion and the development of hypoxic or dead zones in the ocean.

3) Governance threats and issues

Open access regimes

- Many coastal fisheries in the Asia-Pacific region are open access fisheries and there are few, if any, limitations on entry to these fisheries. However, most developed countries have moved to limited access to conserve the fishery resources.

Sustainable management conflicts with production promotion and revenue generation

- Local governments generate revenue based on trade and production, so their policies tend to support and drive greater production.
- This often results in decreased desire to limit or constrain fishing effort, which is usually in direct conflict with the longer-term sustainability of fisheries.

Decentralization of management of natural resources

- Many countries in the Asia-Pacific region have gone through or are going through decentralization processes, but for fisheries management these processes have often been poorly planned or ad hoc, and many important governance linkages have not been established.
- Although local governments have now become responsible for fishery and coastal resource management, they often do not have a broader vision and may not have the institutional and human capacity or be able to address issues that are external to their jurisdictions (e.g. fishing across boundaries, migratory stocks, climate change impacts).

Political and institutional planning horizons are short-term

- Fishery management plans, stock recovery efforts, legal/institutional changes often take several years before tangible results are achieved. Any failures in commitment or changing priorities can undermine these plans before they have sufficient time to achieve success.

Unintended negative consequences of subsidies

- Short-term fluctuations in cost of fuel or availability of fish stocks may lead to calls from the fishery for support to cope with the crisis. These “crises” are often a result of the fishery operating very close to a financial breakeven point.
- Since there is considerable employment and infrastructure linked to the larger-scale industrial fishing, governments often provide the support to help the fishery survive a short-term crisis.
- Unfortunately, this support may be sustained well beyond the original problem and thus often contributes directly to supporting overfishing or overcapacity of the fishing fleet or infrastructure. Fuel subsidies are possibly the most prevalent example of this. Other indirect subsidies include welfare schemes or infrastructure development that, once in place, support the argument for sustaining higher levels of fishing capacity or effort than the ecosystem can support.

Weak resource management

- Under decentralization policies, local governments often have responsibility for managing coastal natural resources and fisheries. In many cases, local government fishery offices may not have the technical skills or financial resources needed to plan and manage these fisheries adequately.
- Local fishery management may tend to be reactive, rather than proactive, meaning that problems are often resolved using short-term solutions that do not address the underlying causes.
- Fisheries statistical systems (in particular recording of fish catch/landings and effort and related documentation and analysis) are often weak and unreliable, so that this information is of little or no use in resource management.

Corruption and rent seeking

- Demands for illegal payments for fishing licenses, permits or access rights by authorities are probably the most pervasive form of alleged corruption in the fishery sector.
- Corrupt practices, such as permitting illegal fishing practices to occur and permitting illegally caught fish to be sold in the market, are also common.
- Some forms are more subtle, such as influencing the passing of laws and ordinances or government policies to benefit the vested interests of influential persons with fishing operations or companies.

Stakeholder participation in decision making

- Fishery and coastal resource management decision-making may not adequately involve fishers or other stakeholders, which often leads to lack of support for the management actions developed. These actions may be fishery focused (e.g. gear measures, spatial measures, etc.) or focused more generally on other ecological goals (e.g. biodiversity conservation, protection of critical habitats or species, etc.).

Structure of fishery management arrangements

- The Asia-Pacific region has a huge workforce in its fisheries/aquaculture agencies and research institutes that could be mobilized to provide better fisheries management.
- Unfortunately, in many areas this workforce and resources are being used mainly to provide welfare and subsidies and to resolve conflicts, rather than for pro-active planning and management.

Alignment of science with fisheries management needs

- A significant amount of research related to fisheries is not directly of use to fishery and coastal resource management stakeholders. Many researchers are not

effectively linked to the fishery management systems and academic research may be poorly targeted.

- Lack of scientific integrity or independence in fishery research can result in a lack of trust by fisheries stakeholders.

Co-management

- With rapid decentralization taking place in the Asia-Pacific region, national governments have relinquished authority to “communities” where resource conflicts often exist.
- Conflict management goes hand in hand with co-management.

Compliance and enforcement

- Weak or lacking enforcement often undermines many initiatives and emphasizes the importance of having local government support to assist in enforcement (both within jurisdictions and between adjacent jurisdictions).
- Community-based and local (e.g. district level) management actions may be recognized under the authority of decentralized natural resource management, but do not have legal authority. This means that there may not be an effective system for enforcement and compliance, or even an ability to punish offenders.

Fishing rights

- A well-defined and appropriate system of access rights in a fishery produces many essential benefits, most importantly ensuring that fishing effort is commensurate with the productivity of the resource and providing the fishers and fishing communities with longer-term security that enables and encourages them to view the fishery resources as an asset to be sustainably managed through responsible stewardship.
- Basing fishing rights only on economic efficiency in resource use is not typically an acceptable approach in developing countries, since it often results in negative social impacts, particularly to livelihoods in the small-scale fisheries sector.
- For small-scale fisheries, the main tool to assure rights and support more effective management may be a system of community rights. These protect the rights of access by poor small-scale fishers and offer a degree of protection from the impacts of larger-scale commercial fishing.
- Equally, larger-scale commercial fishing operators who may have significant capital investments must have clear rights to operate, providing they are compliant with management actions and regulations.
- There are several different types of use rights.
 - Territorial use rights (TURFs) assign rights to fish to individuals or groups in certain localities.

- Limited-entry systems allow only a certain number of individuals or vessels to take part in a fishery, with entry being granted by way of a license or other form of permit.
- Alternatively, entry may be regulated through a system of effort rights (input rights – e.g. fishing days) or by setting catch controls (output rights). In the latter case, the total allowable catch (TAC) is split into quotas and the quotas are allocated to authorized users (noting that these can be difficult to implement where there are large numbers of fishers).
- These rights allocation systems are rare in the region, although some countries are trying to close new entry to segments of the fisheries and most countries have forms of zoning that allocate fishing areas to particular segments of the fishery.
 - For example, a near-shore artisanal fishing zone may exclude larger-scale gears (and vessels), such as trawls and seine nets.
 - Compliance with these actions remains a significant obstacle to their effectiveness.
- Each type of use(r) right has its own properties, advantages and disadvantages and the ecological, social, economic and political environment varies from place to place and fishery to fishery. Therefore, no single system of use rights will work under all circumstances.
 - It is necessary to devise a system that best suits the general objectives and context for each case and this system may well include two or more types of use rights within an EAFM plan for a geographic area.
 - For example, a fishery that includes artisanal and commercial fishers could make use of TURFs (fishing zones), effort controls (fishing days and seasonal closures) and catch quotas to regulate access in the different segments of the fishery.
 - Input and output controls could be combined in a way that suits the nature of each and gives due attention to the productivity of the resources.
- Under decentralized government, local authorities may have the authority to legally recognize a fishery management plan, but this may not extend to excluding the right of others to fish in an area, merely that they must comply with the management actions of that area.

