EVALUATING THE SOCIAL COSTS OF FISHING ACTIVITIES IN A DELIBERATIVE PERSPECTIVE

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ABSTRACT

The ECOST project aims to develop a new approach for the evaluation of fishing activities and policies in order to contribute to a better management of aquatic resources which affect sustainable development in coastal zones around the world. It has to be seen from the wider perspective of equipping public decision-makers and society with the appropriate tools and methods needed to take into account, not only immediate economic and social profits, but also the costs engendered by fishing activities, which relate as much to ecosystems as to societies. The novelty and originality of the suggested approach doesn't rely on the concept chosen for the analysis, the social cost, but on the way it is built and mobilised to deliberate on the evaluation of fishing activities. As Fisheries activity is a complex system, characterized by reciprocal interactions between fisheries activity and the harvested resource, it is difficult to define the effects of such activities in the society. The social cost is thus defined as an articulation between the frontiers of what is feasible? and the assessment of members of the society concerning what will be judged desirable? (O'Connor 2004). We propose an evaluation process defining the performance issue related to fishery metiers, a set of indicators and a method to assess the social cost using the Kerbabel Deliberation Matrix framework.

Keywords: Social Cost, fisheries, Metiers, multicriteria and multi-actors evaluation, deliberation, Indicators

World-wide fishery resources continue to drift on the fringe of unsustainable situations, despite considerable effort in management and policy. In the past, biology, economics and sociology have each followed their own paths in analysing and advising fisheries management and policy, but have failed to be effective and helpful. Surely, multi-dimensional parameters characterise these situations, and the issues involved are themselves multiple, and cannot be reduced one to another, as are also multiple the views of the actors on this issues.

Acknowledging the past failures and the complexity of fishery resource management, research intends to introduce an integrated assessment method to the fishery area, with the ECOST European international cooperation research project (Ecost: Ecosystems, Societies, Consilience, Precautionary principle: Development of an assessment method of the societal cost for best fishing practices and efficient public policies).

The ECOST project is designed under the INCO-DEV Priority Research Area A.2.2. (Reconciling multiple demands on coastal zones). Adopting the logic of the Johannesburg Plan of Implementation (JPoI) to restore as much as possible marine ecosystems by 2015 and following the philosophy of the Code of Conduct for Responsible Fisheries (CCRF), the project aims to develop a new approach for the evaluation of fishing activities and policies in order to contribute to a better management of aquatic resources which affect sustainable development in coastal zones around the world. It has to be seen from the wider perspective of equipping public decision-makers and society with the appropriate tools and methods needed to take into account, not only immediate economic and social profits, but also the costs engendered by fishing activities, which relate as much to ecosystems as to societies.

The novelty and originality of the suggested approach doesn't rely on the concept chosen for the analysis, social cost, but on the way it is built and mobilised to deliberate on the evaluation of fishing activities. After having explained the concept of social cost in the ECOST project (section 1), we shall describe deliberation support tools used to assess the social cost and compare fishing activities (section 2). Section 3 offers an analysis of the evaluation and social learning process associated to those tools. Finally, section 4 provides an application of this evaluation approach in the two eco-regions chosen (Asia and West Africa).

Towards a new approach of evaluation of fishing activities: The concept of social cost

In the economic tradition, the concept of social cost is often associated to the approach of identifying additional costs that are not supported by private agents, or externalities. Are qualified as "externalities", in the strict sense, damages caused by an agent (or a group of agents) to another agent (or to another group of agents). Social cost is defined as all of the costs assumed for a given economic activity to be exercised. The existence of a social cost superior to the private cost has important consequences. Would then be objects of debate (1) the affectation of all the resources mobilised in the economic sector, and (2) the re-allocation of those resources to generate the same amount of benefits, without supporting previously generated costs. This new resource allocation would allow to keep at a constant level the global amount of benefits generated by all the economic activities together, but, at the same time, to diminish the global amount of costs induced by this same group of activities and, as a consequence, to increase collective well-being.

Within the ECOST project, two complementary approaches of social costs are envisioned. The first approach aims at taking into account to a larger extent the dimensions of sustainable development within the calculation of social cost in monetary terms using the ECOST Model (Failler et al., 2010). It results in the notion of societal cost. Its measuring aims at a better understanding of the impact in the production chain of different kinds of fisheries, in different ecoregions. The elaboration of societal cost of fishing is defined by the sum of social, economic and ecological costs. Social cost, not to be confused with the concept just mentioned before, is assessed on basis of the well-being theory in sociology, the economic cost is traced along the full production chain of fisheries that is from fish harvesting to processing and to marketing, and the ecological cost is calculated in two parts – fish population change and environmental impact. The social, economic and ecological costs are conceptually different and conventionally measured

in different metric - social cost in various types of relative indicators, economic cost in monetary term, and ecological cost in quantitative changes of species and environmental indicators.
We propose a second approach complementary to the first one. The aim is to draw the profile of fisheries activities in deliberative perspective. As Fisheries activity is a complex system, characterized by reciprocal interactions between fisheries activity and the harvested resource, it is difficult to define the effects of such activities in the society. Traditional concerns with productive efficiency, exploitation of resources, and technological progress have put the emphasis on getting on to the frontier of feasibility, and, going beyond, pushing the frontier of possibilities. The definition of the MSY (Maximum Sustainable Yield) constitutes a self-renewing source of problems that are intrinsically more complex than performance efficiency calculations that may have guided the initial actions. The definition of the social cost is thus constructed as an articulation between the frontiers of what is feasible? and the assessment of members of the society concerning what will be judged desirable? (O'Connor 2004). The analysis of the texts of the Johannesburg Plan of Implementation and Code of Conduct for Responsible Fisheries (CCRF) constitute six categories of preoccupation at the international level. These preoccupations can be considered as performance issues that should help in guiding actions (Bavinck et Monnereau, 2007):

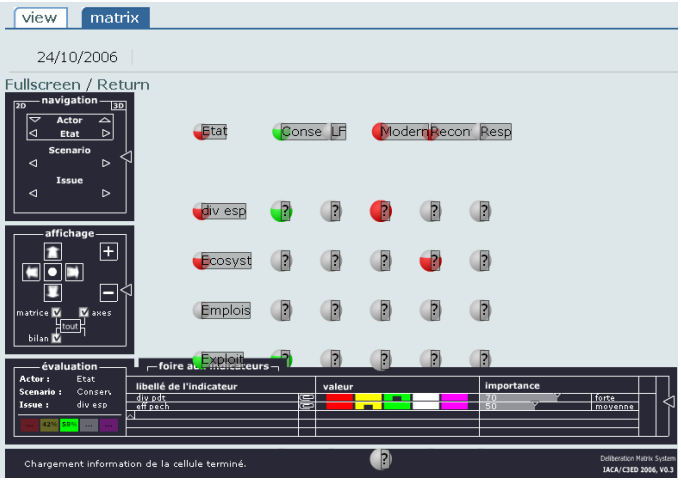
- Ecosystem health: To emphasize the impact of fishing activities on the conservation & restoration of species and ecosystems.
- Sustainable Livelihoods (employment, income, job satisfaction and gender: To focuse on poverty reduction, the creation of opportunities, access to assets, and developing an enabling environment.
- Social Justice (income distribution and equity): To refer to the distribution and use of income and resources. It is highly dependent on the fisheries national and international economic structure, and is closely related to the next issue (food security and sovereignty).
- Food (security, safety and sovereignty): To refer to the availability of people to food in sufficient quantity and quality, food sovereignty to the right of people to define their own food.
- Profitability: To measure the capacity of fishing equipment, techniques and people to generate enough profit to sustain economically their activities.
- Regulations and Policies: To refer to the elaboration, implementation and enforcement of legal rules, as well as voluntary mechanisms.

The ECOST project proposes to use the « metier » concept to represent the multi-dimensionality of fishing activities. When several fishing fleets are present, with several fishing methods having different impacts on the resource, a classification of fishing actions is needed according to these impacts. Classes of this typology are usually called "métier" or "tactic" (see for example Laurec et al. 1991; Pech et al. 2001; Ulrich et al. 2001).
This linkage provides a concept comprising some aspects of the complexity of an activity which exerts pressures on the resource, and which is directly related to the organization of the fisheries supply chain (processing, transportation, final market). Taking into account the performance issues contributes to broadening the field of this evaluation.
The calculation of societal costs for different métier profiles allows us to compare different forms of fishing practices, taking into account not only the profitability of the métier, and of its economical (the fish chain from transformation to the market) as well as ecological distribution (the ecosystems). The development of such an approach is a way to separate responsible fishing practices from risky ones. The calculation of those costs raises the issues of acceptability and desirability of those métiers for members of society.
The challenge of establishing métiers profiles makes it necessary to provide a generic framework for evaluation, which takes into account the diversity of practices, of associated performance issues, and of stakeholders categories. In this article, we propose to use the Kerbabel^{TM} Deliberation Matrix framework to develop a multi-criteria and multi-actor evaluation.

Comparing a metier evaluation using the Kerbabel™ Deliberation Matrix

The evaluation approach of the metier in a deliberative perspective is not purely analytical. Rather, it is a social process that may have strong interactive and inter-subjective dimensions, opening up the possibility of 'emergent' properties. In this context, a social process of comparative evaluation of metiers can readily become a framework for (inter alia) assessing social costs.

Figure 1: Screen image from the KerBabel™ Deliberation Matrix
(Source: O'Connor 2006a, 2007a,b)

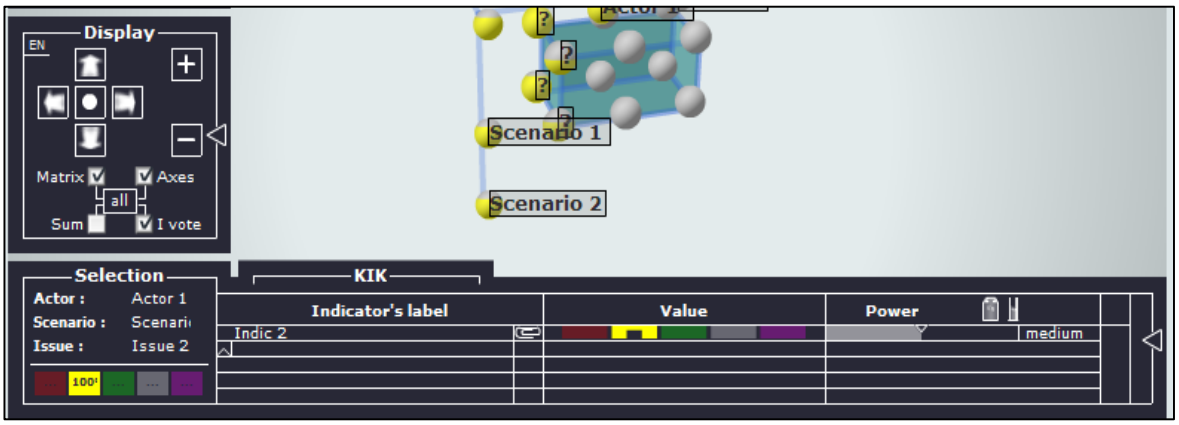


The Kerbabel™ 'Deliberation Matrix' (kerDST) (see O'Connor 2006a,b; O'Connor et al., 2007) provides a framework to carry out an indicator-supported multi-stakeholder multi-criteria assessment. With this evaluation tool, available on-line since 2006 at http://kerdst.c3ed.uvsq.fr/, the basic idea is that EACH STAKEHOLDER TYPE will make a judgement (good, fair, bad, etc.) about EACH METIER with reference to EACH PERFORMANCE CRITERION OR ISSUE. These judgments produce a composite picture, visualised on-screen as a 3-D array of "cells" somewhat akin to the well-known Rubik's Cube. For example, from one angle of observation, one obtains rectangular arrays of cells, each being a layer of the Matrix, within which each row represents the evaluations (issue by issue) provided by a given class of stakeholders for successive metiers (see Figure 2). Or, looked at from another angle, one gets the evaluations by each stakeholder, of a given metier. And so on.

Several variations for use of the kerDST are available, with increasing structure. The first and simplest variation is simply to colour the cells (stakeholder x Metier x performance issue) using an intuitive code such as [red = bad], [yellow = not so bad], [green = good], [white = no idea], [blue = don't care]. A second, slightly more sophisticated variant is 'colouring the cells of the Deliberation Matrix' while at the same time using a text box for adding an explanation or commentary to the judgement (colour) made.

Moving beyond this impressionistic evaluation process, a more 'objective' basis or motivation for the judgement (colour) proposed in each cell can be constructed through the selection, for each cell of the Deliberation Matrix, of a 'basket' of indicators that are chosen to characterise relevant attributes of the metier under scrutiny. With this procedure, the judgement at the cell level in the Matrix is obtained not by a simple choice of colour for the cell, but as a weighted "amalgam" of the qualitative judgements assigned to each indicator in the "basket". (In the case shown below, only one indicator has so far been put in the "basket", its colour code being YELLOW). In general, the colour (or composite) of each Matrix cell is a function of the relative weight and significance attributed to each indicator in the corresponding basket.

Figure 2: Screen image of the indicator basket in KerDST



Judgments and social learning processes

The kerDST evaluation process and outcome is thus built by several layers of judgements: the selection, from amongst the range of "candidate indicators" available in the Kerbabel™ Indicator Kiosk, of a set of (not more than 5) indicators for each basket; the interpretation (significance) to be attributed to each indicator in a basket; the relative or absolute importance (weight) of each indicator in relation to the others in the basket, for arriving at a synthetic judgement for the cell as a whole; the overall comparison, via the Deliberation Matrix, between metiers based on the multi-stakeholder multicriteria profile of each one. The underlying vision of collaborative learning is based on the hypothesis that individual reflection and/or exchanges of views between protagonists in a deliberation/negotiation process may lead to modifications at any or all or the steps of the choices and judgements leading up to an entry in a cell of the Matrix table. Those 'representing' stakeholders of one type may try to persuade stakeholders of another type to modify their criteria or relative weighting; and so on.

The indicator mobilisation process with kerDST has several successive cycles or components which can be pursued in a progressive way. This is the feature that allows, by design, a progressive initiation to evaluation considerations.

- It may well be that, to start with, the indicators selected for each 'basket' are simply declared, without their exact values being yet known, specified or estimated. In such a situation, the evaluation process is still qualitative and functions as an "alignment exercise", where indicators, through being placed in "baskets", are being linked (by or on behalf of different actors) to specified categories of performance or social values. In this sense a judgement is being made about the pertinence of the indicator or "fitness" for its evaluation function (Douguet et al., 2009).
- As indicators are identified in this way as pertinent, it becomes clear to those involved that it will be necessary to measure or estimate the values (qualitative or quantitative) for each nation/eco-region, metier (etc.), and also to specify Reference Values (RV) against which an indicator will be scored as good (green) or bad (red) etc. The process of RV specification (or debate!) reinforces the alignment exercise, through the focus being placed not on what indicators or what scores for the indicators, but rather on why (and by whom) this or that indicator is considered to signal something of societal importance.
- Thereafter, an iterative process can be developed, for as long as deemed interesting (within the available resources for the analysts and stakeholders concerned), of focusing analytical work (models, etc.) in order to improve estimates for high-pertinence indicators; of putting money values onto key indicators for that part of the appraisal that is deemed 'monetisable', of discussing RVs relative to community goals, and so on, etc. In this context, there will in general be uncertainties and controversies; and these fundamental issues of Knowledge Quality Assessment are thus mentioned plainly within the context of the evaluation or governance problem being appraised (Douguet et al., 2009).

The Deliberation Matrix framework for indicator-based evaluation thus highlights the information requirements for, on one hand, representing the metier and, on the other hand, making judgements about the metier (via a battery of indicators). More particularly, the DM provides a framework for a structured discussion and evaluation of the significance, for the performance issues being addressed, of the different forms of uncertainty that may be associated with the various classes of empirical information and modelling results being introduced into the deliberation.

Building ecoregion Metier Profiles

Metiers profiles were built for two eco-regions: Asia, gathering the case studies in China (CH), Vietnam (VN) and Thailand (TH), and West Africa, in Senegal (SE), Guinee Bissau (GB) and Guinee (GN). It relies on the use of the Kerbabel™ Deliberation Matrix, with the following three axes: metiers, performance issues and actors. The metiers defined at the country level, were grouped and named by eco-region for a better visibility. The evaluation realized within the ECOST project was conducted with different national experts for each country during the seminar in Can Tho, Vietnam, in September 2009. Practically, the exercise was done over two days of the seminar, in 3 hour sessions. It was conducted in 6 stages: Building the Kerbabel™ Indicator Kiosk (step 1), Building the axes and judgements in the KerDST (step 2), Appropriation of the KerDST by the actors (step 3), Interpretation of metier profiles for the ecoregions (step 4), Contextualizing the results (step 5) and Interpretation the evaluation process of social cost (step 6).

Step 1: Building the Indicator Kiosk

In the preparation phase, the facilitation team first gathered the indicators used within the ECOST project, through the production of the ECOST model and the existing ECOPATH model. The use of the Kerbabel™ Indicator Kiosk as a deliberation support tool designed to establish a dialogue on indicators, initiated a process for defining the pertinence of those indicators. It retained performance issues as one of the criteria for classifying the pertinence of the indicator. As most of the indicators were specific to one performance issue (Ecosystem health, Sustainable Livelihoods, Social Justice, Food (security, safety and sovereignty), Profitability, Regulations and Policies), they were labelled E01 to E21 for environmental health, S01 to S22 for social justice, and so forth. A complete description of each indicator is accessible in the Kerbabel™ Indicator Kiosk in KerDST. This didn't preclude however the possibility for an indicator to cross issues. A collection of a total of 114 indicators was produced.

Voters also had the option to create their own relevant indicators to support a vote. Any new indicator is available after creation to other voters. This particular proposal of 114 indicators then seemed a bit large to manage, as well as inductive, many indicators being specific. The facilitation team thus proceeded to the selection of a panel of representative indicators before the evaluation (See O'Connor & Spangenberg, 2007). It was in this way made clear that what is sought is not a full descriptive inventory of all system features or system changes, but rather a reflective appraisal of the most significant considerations from a plurality of points of view.

This approach in terms of representative diversity accepts pragmatically that, under the sorts of conditions of complexity and stakeholder diversity, (1) many significant evaluation concerns cannot be made the object of reliable quantification and (2) even when this quantification is available, the process of aggregation would tend to mask over key issues about what is to be sustained, why and for whom.

Although useful systems measurements and model-based quantifications can be obtained for a great variety of features, there is a need to work synthetically with an amalgam of qualitative as well as quantitative elements of description and judgment. For example, the generic indicator "species conservation" expresses usefully the meaning of more specific indicators as diverse as:

- Length / Frequency analysis of catches
- Existence of juveniles in sufficient proportion
- Gross efficiency of the catch (catch / net P.P.)
- The species is not impacted by gear, as a secondary involuntary catch, in any significant way.

The overall procedure of indicator selection, if done through multi-stakeholder dialogue, can be effective for the building and communication of shared meaning and purpose of the social costs evaluation with a relatively small number of indicators.

Step 2: Building the axes and the judgments in the KerDST
Once the indicators are entered in the KIK part of the KerDST, the next step is to build the axes of the Kerbabel^{TM} Deliberation Matrix. Three axes were identified for each of the two ecoregions : (1) Stakeholders categories (represented in this exercise only by scientists and experts), (2) Performance issues (Ecosystem health, Sustainable Livelihoods, Social Justice, Food (security, safety and sovereignty), Profitability, Regulations and Policies), and (3) Metiers (by country).
Judgements are built in KerDST at every crossing of the Metiers and Performance issues axes. Users mobilize 1 to 5 indicators to express their judgment (see section 2 of this article). These indicators are arguments for building up judgments and for the evaluation process. The conjunction of all the judgments on a given metier reflects the desirability level according to the viewpoints of the stakeholder category.
Among the array of 114 indicators proposed, almost half of those seemed meaningful to the country teams for the metiers evaluation. Others didn't seem meaningful, often because they seemed too technical. Some country experts asked for time to refer to their country colleagues, experts in specific issues. Some comments were delivered in the KerDST, to explain the votes made on the judgment.
Such an evaluation approach relies on a multi-criteria and multi-actor approach, mobilizing a relatively large group of indicators. Comparison of metiers is not based on the comparison of results for the chosen indicators, but on the judgments provided but the different category of stakeholders. This evaluation relates the different forms of fishing practices with their acceptability and desirability, according to different points of view. The calculation of monetary costs is an information which represents a performance issue or a group of issues. In no case do they allow to give meaning to the effects of those metiers on society.

Step 3: Appropriation of the KerDST by the actors
The objective of the exercise was to facilitate the appropriation of the Kerbabel^{TM} Deliberation Matrix as a multi-actor deliberation tool by country experts. This was done during the Can Tho seminar, where the teams from different countries could discuss, modify and complete the issues and indicators proposed by the facilitation team. The types of metier were chosen at the beginning of the project.
Filling the deliberation process during a group seminar proved to be a fruitful method, as it allowed the facilitation team to explain the methodology, and the experts to question the performance issues as well as the choice of indicators, suggesting a few new ones. As a result, the Ker-DST gives a vision of which indicators were used more than others in the different eco-regions by country experts, and also their particular vision of the performance issues and their important facets. The Ker-DST tool can thus be viewed as a specific tool enabling a participatory form of research-action.
For example, the "social justice" performance issue was defined in a general manner by the facilitation team as related to power and poverty, and indirectly to resource conservation, while reflecting on the cultural relativity of this notion. The discussion about this issue with the country experts allowed them to specify the meaning of this issue for their region, and to suggest other specific means of measuring social justice, such as distribution of income along the supply chain, income opportunities given to women, etc.

Step 4-1: Results interpretation: the West Africa ecoregion
The fisheries sector in West Africa plays an important part in national economies of the three coastal states involved in this study, through the promotion of exports, the creation of jobs and the satisfaction of food needed by the rural and urban populations. Their performance issues are however diversified in terms of impact on food security, social balance and above all ecological balance.
The screenshot below shows the Kerbabel^{TM} Deliberation Matrix for West Africa. The Profile line indicates the codes of all the 15 metiers identified in the three African countries. SE stands for Senegal, GN for Guinea and GB for Guinea Bissau.

The performance issues are in the first column. The intersection of the lines and the columns indicates the evaluation of a particular performance issue for a particular metier. Negative evaluations are in bright red, positive in green, with intermediary hue and filling.
The spheres in the first column are results from the evaluation of performance issues for all the metiers in West Africa, the spheres in the first line results from the evaluation of all performance issues for a given metier. Those aggregated results are less meaningful than the particular results for each metier and each performance issue. Nevertheless, the Kerbabel^{TM} Deliberation Matrix gives a global picture of the evaluation of metiers in the ecoregion.

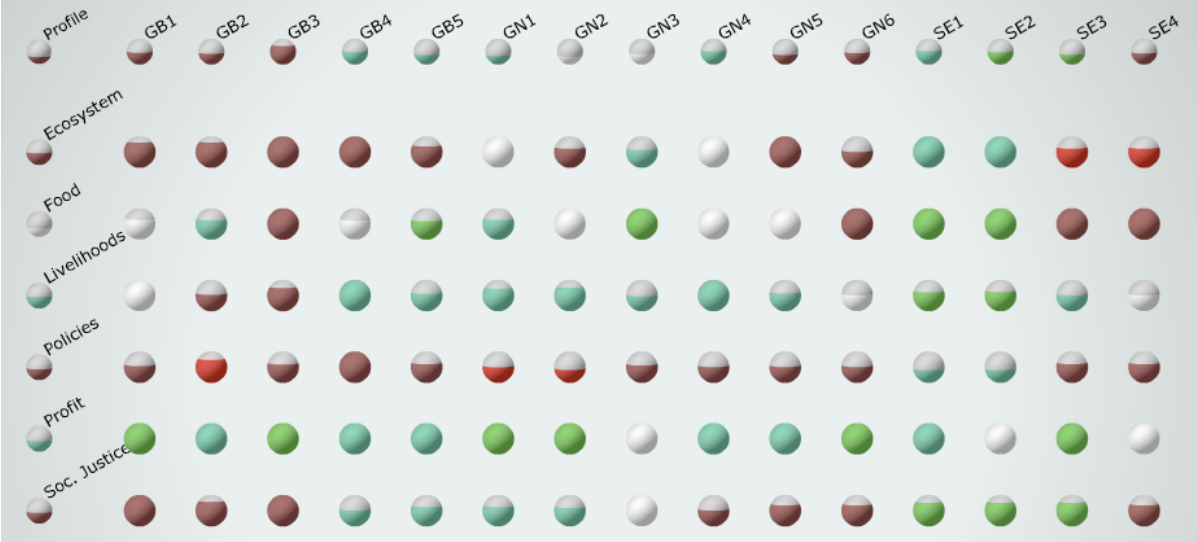


Figure3: Profile of metiers in West Africa

The evaluation exercise shows that metiers in the ecoregion can be grossly grouped into a domestic small-scale sector, with small ships (canoes and salans) and light gear, such as different types of gillnets or handlines (GB2, GB4 and GB5, GN1 to GN4, SE1 to SE3), and an industrial export-oriented sector equipped with trawlers (SE4, GN5 and GN6, GB1 and GB3). Globally, the performance of small-scale metiers were evaluated as more positive regarding a variety of issues, from social justice to livelihoods, as the provide income, revenues, including for women (in processing) and food security to local populations. Though more profitable, metiers related to trawling provide less local revenues and food security. They also have an almost systematic negative impact on ecosystems, both on fish stocks on sea bottoms. This low evaluation of performances of trawlers on the ecosystem doesn't imply other metiers all have higher evaluations.
Low evaluation of performance issues of some artisanal metiers are related to inadequate conservation techniques by the local population (smoking fish with wood from the mangrove, as in GB2 and GB4) or fishing highly valued species for exportation (croackers, emperors and snapers in Guinea – GN4). Policies in the ecoregion don't receive a good evaluation, and should thus be adjusted to the situation.

Step 4-2: Interpretation of metiers profiles for the Asia ecoregion
As in many other parts of the world, fishing is a very popular and ancient activity in the South Asian estuaries involved in the Ecost project, and metiers are diversified.

Figure 4: Profile of metiers in Asia

The evaluation in the region makes two groups of metiers stand out: a small-scale sector, with small ships (purse seiners or canoes) and light gear (CH3 to CH5, TH2, VN2), and an industrial sector equipped with trawlers (CH1 and CH2, TH1, VN1 and VN3).
Small-scale boats focus on species that contribute to food security, but also on exports, as for anchovies. Pressures on several resources are high, as captures also target juveniles, despite the legislation. In China legislation is better enforced, and also in Vietnam, for open sea shrimps. Fishing globally provides good employment, but the distribution of revenues is often evaluated as unfair in the case of larger vessels, such as trawlers, or wherever fishermen receive wages rather than being independent. Here also, trawlers are poorly evaluated in the environmental sphere. As in West Africa, women are involved in processing of local species to a variable extend, depending on the country.

Step 5: Interpretation of the results in their contexts - Effectiveness of public policies
With regard to the policy performance of the fishery sector in the two eco-regions that provided results (i.e. South-East Asia and West Africa), the overall picture is that regulations are not always well designed or innovative. Although the rule of law ensures a good preservation of several threatened species in Asia, more juridical innovation is needed to enhance the regulatory effectiveness in specific cases. Such cases are represented by bottom trawling, mangrove depletion and threats to food security, since species that might be consumed locally are, instead, massively exported or depleted. A very common issue in the regulatory domain is the distortion that oil subsidies and detaxes on equipment by the government induces on the lack of internalization of societal costs. Above all, oil subsidies continue to encourage unsustainable forms of fishing (such as trawling of depleted species) even were metiers are profitable.
However, the adoption of new laws and regulations does not seem to constitute the weakest point of public policies for fisheries in the two eco-regions. For example, China has completely revised the national legislative framework ruling marine affairs, incorporated the principle of sustainable development in new acts (Fisheries Law 2000 and Marine Environmental Protection Law 1999), and responded to international legal provisions for input and output controls, as well as marine protected areas. Similarly, in Senegal, the Sate is upgrading the legal framework. Here, legal provisions related to

licenses, quotas, and marine protected areas are present either in the Code for Marine Fisheries of 1998 or in further legislative instruments, and will be enhanced by a new text of the Code (forthcoming).
Changes to existing policies are usually watered down during the execution and enforcement of new rules (i.e. policy implementation), when the change appears more visible to the affected stakeholders and their opposition more intense and problematic for policy makers. The putative acceptance and rhetorical commitment of politicians to the conservation of natural resources is rather easy; what is difficult is the practical acceptance and commitment to political action, which is the only way to produce actual change. Yet, governments are likely to avoid political actions, through concrete implementation, that may cause high conflicts with those State and societal actors who wish to consolidate their power and follow the path of economic growth.
Where adequate policies to protect species under threat and their juveniles are in place, and enforcement activities are effective, fish stocks are kept at good levels. This happens, for example, in China for small pelagic and estuarine species. By contrast, weak enforcement generates a more critical situation for anchovies and other species in the Gulf of Thailand. Infringement of legislation results even more frequent in West Africa. Here, participants observe that regulations are not well enforced either because of scarce financial resources or weak political will. Finally, both eco-regions must still find adequate forms to manage the frequent conflicts that emerge among fishing zones (e.g., Thailand) or fishing gears (e.g., Senegal).

Step 6: Interpretation of the evaluation process of the social cost
Identifying additional costs that are not supported by private agents, or externalities, is an approach which has led to many studies, particularly for the evaluation of those externalities. This focus includes the calculation of societal costs (Failler et al., 2010). This article suggests a complementary approach questioning the elements to take into account within the evaluation of externalities, be it at the level of measurement, particularly through the choice of indicators or the attribution of a meaning to the results provided (according to what point of view?). This evaluation process puts into evidence the problems of coexistence between the different issues (Ecosystem health, Sustainable Livelihoods, Social Justice, Food security, safety and sovereignty, Profitability, Regulations and Policies), thus casting light on the issue of social choice (O'Connor, 2002). The Kerbabel™ Deliberation Matrix gathers the different metiers to evaluate all the possible resource allocations associated to practices and fisheries chain, and thus allows the experts to deliberate on the acceptability of those metiers. The current exercise was limited to mobilizing the experts for each of the ecoregions' sites. An extension to other categories of stakeholders will provide a variety of points of view, thus reinforcing the evaluation approach.
However, the analysis of societal costs shows its calculation doesn't obey to one unique formula. It underlines the existence of a variety of debates concerning the compromises that can be found for each of the sites and ecoregions studied. This shows the issues and the meaning of risk distribution, the economic opportunities associated to each metier, and the efficiency of the different regulation modes.

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