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Fisheries Sustainability Indicators: The OECD experience.

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¹ Opinion and ideas pertaining to this document are those of the author and are not necessarily shared by OECD.

Fisheries Sustainability Indicators: The OECD Experience.

1- Introduction:

As highlighted during the WSSD held in Johannesburg in September/October this year, sustainable development issues need to receive further interest from policy makers. If there is little doubt about the overall willingness of implementing sustainable development oriented policies, some concerns yet remain when assessing the effect/efficiency of such policies. That is why identifying appropriate tools for measuring (integrated) policy aiming at sustainable ecosystem represent a major challenge.

After a brief presentation of the role of the OECD and its implication in sustainable development issues (2), this paper focus on the fisheries-related indicators used by the Organisation (3). As a conclusion, the scope and the relevance of the indicators are discussed.

2- OECD and fisheries sustainability indicators: general background

The OECD and the OECD Committee for Fisheries.

The OECD groups 30 member countries sharing a commitment to democratic government and the market economy. With active relationships with some 70 other countries, NGOs and civil society, it has a global reach. The OECD is helping governments tackle the economic, social and governance challenges of a globalised economy. The main activities of the OECD in the fisheries field is to provide a forum among OECD Member countries to deal with the challenges that policy makers and the fishing industry face dealing with fisheries as a unique natural renewable resource.

The monitoring of policy developments in fisheries involves a survey of developments in the fisheries sector and the results are published every two years in the Review of Fisheries. OECD countries report on regulatory initiatives and related policy developments and the survey seeks to assess policy impacts on fisheries resources and markets. The Review of Fisheries is complemented by key statistics on landings, trade, quota allocations, financial transfers, the fishing fleet and employment in OECD and selected non-OECD countries (e.g. Russia, Argentina), which are disseminated every year. Following the completion of a major study on the Transition to Responsible Fisheries -- Economic and Policy Implications, three main themes are currently being addressed by studies on fisheries management costs, market liberalisation and fisheries sustainability indicators.

Background

The pursuit of sustainable development as a policy objective has become increasingly important in recent years and policy makers are requiring more information on how to measure progress towards sustainable development goals. During the 2000-2001 period, the OECD participated actively in this move by completing important works². When OECD Ministers of Economics, Finance, and Environment met together at the OECD in May 2001, they recognised sustainable development as an overarching goal of OECD governments and the Organisation. In their Ministerial Communiqué, they emphasised that OECD countries bear a special responsibility for leadership on sustainable development worldwide, historically and because of the weight they continue to have in the global economy and environment. In particular

² See e.g.: OECD (2001c) "Sustainable development. Critical issues"; OECD (2002b) "Working Together Towards Sustainable Development: The OECD Experience".

Ministers asked the OECD to continue developing agreed indicators that measure progress across all three dimensions of sustainable development (economic, social and environmental).

In the fisheries sector, the use of biological indicators in the development of fisheries assessments and management plans has been standard practice in most OECD countries for many years. However, relatively little attention has been paid to the development of economic and social indicators that serve to assess progress on other aspects of sustainable development. In recognition of this information gap, the OECD Committee for Fisheries (COFI) launched in its 2000-02 Program of Work a study to examine economic and social sustainability indicators for fisheries (OECD, 2003). The project was given additional impetus through the 2001 OECD Council at Ministerial level. The overall goal for the study is to contribute to improvement in the measurement of economic and social dimensions of sustainable development of fisheries, and where possible, relate these to the resource and environmental dimensions. The study was based on case studies provided by OECD countries, supplemented by information obtained from international organisations. In particular, the Study focused on describing the fisheries-related indicators used within the OECD, whether it is in the COFI's or in other OECD Body context. The following is mainly based on this latter outcome of the study.

3- OECD Fisheries indicators:

3.1- definitions

What are indicators?

Indicators are data or combination of data collected and processed for a clearly defined analytical or policy purpose. That purpose should be explicitly specified and taken into account when interpreting the value of an indicator. Fisheries indicators should provide practical and cost-effective means for the evaluation of the state and the development of fisheries systems and the effects that policy changes have on those systems.

In considering the concept of indicators of sustainable development, a necessary first step is to define what is meant by sustainable development in the context of fisheries. Sustainable development is generally defined as being development that meets the needs of the current generation without compromising the ability of future generations to meet their own needs.

From the OECD angle, for the indicators to be effective and workable in assessing the economic and social performance of fisheries, they should:

- Have a clear **policy relevance** and in particular:
 - a) Provide balanced coverage of some of the key issues of **common concern** to OECD countries, and reflect changes over time;
 - b) Be easy to interpret (that is, movements in each indicator should have clear link to overall sustainability);
 - c) Allow **comparisons across countries**;
 - d) Lend themselves to being adapted to different **national contexts**, analysed at different levels of aggregation and linked to more detailed indicator sets.

- Be **analytically sound** in technical and scientific terms, based on internationally accepted standards and broadly accepted by stakeholders.
- Be based on **data that are available**, of known quality and regularly updated (OECD, 2001c, p.71).

What are indicators used for?

The main purpose in developing a set of sustainability indicators is to assist in assessing the performance of fisheries policy and management and to stimulate action to better pursue sustainability objectives. This can occur in a number of areas. For example, indicators can be used for: ex-post evaluations of the impacts of management initiatives; assessment of progress towards medium and/or long-term objectives; and assessment of the impacts of fisheries.

They can also enhance communication, transparency, effectiveness and accountability in fisheries management. In this regard, indicators can be developed and reported at various levels of aggregation — international, national, regional and local levels. Many of the environmental indicators for fisheries referred to above are focussed on the fishery level. Other aggregates that are regularly reported, such as the contribution of fisheries to exports, are reported at a national level. Yet others relate to fisheries that are managed regionally as straddling and/or highly migratory stocks.

3-2 Fisheries Indicators and data sources

The Review of Fisheries in OECD Countries

The annual *Review of Fisheries in OECD Countries* (see, for example, OECD 2000a) conducted within the OECD Committee of Fisheries (COFI) framework presents statistical information on:

- A- TAC, Quotas, by species,
- B- Quantity and value of landings, by species,
- C- Employment (total; full and part-time; male/female; capture fisheries/aquaculture/ processing industry)
- D- Fleet capacity (number of boats, by length or by GT/GRT),
- E- Quantity and value of aquaculture production by species,
- F- Recreational fisheries (estimates concerning the production and the number of people involved),
- G- Trade in fish and fish products (by main species and main partners).
- H- Government financial transfers relating to the marine capture, aquaculture and processing sectors³.

The key characteristics of these data are given in box 1 (for a P-S-R classification⁴, see Appendix 2).

³ Revenue enhancing market price support, Revenue enhancing direct payments, Cost reducing transfers, General Services. The main items covered are, inter alia: Fisheries infrastructure; Management, Research, enforcement and enhancement; Access to other countries' waters; Decommissioning of vessels and licence retirement; Investment and modernisation; Income support and unemployment insurance; Taxation exemptions, etc.

Box 1: key characteristics of the statistical data published in the *Review of Fisheries*

→ **Analysis scale:** This data provides extensive information about the basic economic and social characteristics of fisheries at a **national level**.

→ **Temporal Scale:** The collection has been underway for some years and provides a **time series** from which indicators related primarily to the economic aspects of fisheries can be developed.

→ **Source and consistence of the data:** The data are coming directly from OECD members. Before publication, they are examined and discussed by the Committee for Fisheries. The only exception concerns the trade data which is coming from the OECD Trade database (FTS). Before publication, the data are cross-checked with the data provided by member countries.

J- Status of fish stock:

Within the *Review of Fisheries* framework, Member countries are invited to describe any significant changes in the status of commercially important fish stocks (e.g., biomass size relative to management objectives) over the period covered by the *Review*. Countries are encouraged to submit such information in tabular form and to provide a brief summary of the reasons for the observed changes. Many countries provide this type of information, including (in 2002):

- Australia (35 Commonwealth stocks)
- EU (for the 12 species considered to be exploited outside safe biological limits).
- Norway: 14 most important stocks
- New Zealand: 45 species (290 separate fish stocks)
- USA: 959 stock surveyed (coming from Towards Rebuilding America's Marine Fisheries, 2001)

As for yet, as it is showed in Appendix 1, this information collection process is not totally uniform. The key characteristics of this information are given in box 2.

Box 2: key characteristics of the stock status information published in the *Review of Fisheries*

→ **Analysis scale: stock level.**

→ **Temporal Scale:** The collection has been underway for some years and could provide a **time series** for a few countries, but not for all.

→ **Source and consistence of the data:** The data are coming directly from OECD members.

⁴ In broad terms, the PSR framework aims to identify the *pressure* on the environment from human and economic activities, which lead to changes in the *state* or environmental conditions that prevail as a result of that pressure, and may provoke *responses* by society to change the pressures and the state of the environment.

The Transition to Responsible Fisheries Study

The OECD report, *Transition to Responsible Fisheries - Economic and Policy Implications* (OECD 2000b) presents the modelling approach being used for annualising a cross section of fisheries (groundfish, small pelagic and invertebrates) from OECD member countries (Australia, Canada, Germany, Iceland, Japan and New Zealand) and the results of the case studies. A further set of case studies was presented using various other analytical approaches for fisheries in the European Community, Korea, Norway, Mexico, and the United States of America. The first set of case studies consisted of an annual historical, current and projected status of the fisheries with respect to biological, economic, social and administrative targets.

The non-biological performance elements are shown in Table 1 (see below). For each of the economic, social and administrative model components in Table 1, two or three indicators measure the performance of the **fishery** within the modelling framework. This approach makes it possible to compare the modelling performance with the specified policy objectives. For a further description of the modelling approach of the Transition study see *A Model Approach for Analysis of Fishery Transition*; in OECD (2000d). The key characteristics of this information are given in box 3.

Table 1. Performance Measures by Model Components (from *The Transition to Responsible Fisheries*)

<i>Model Component</i>	<i>Description</i>	<i>Performance Output and Specified Objectives</i>
<i>Economic</i>	Annual <i>pro forma</i> operating performance by harvesting gear type and processing sector; gear type performance is described for an average vessel	1. Annual Profit Statement 2. Annual Cash Calculation 3. Annual Balance Sheet
<i>Social</i>	Annual analysis of workforce demographics for harvesting and processing; annual employment and unemployment based on catch information	1. Level of employment (harvesting, processing) 2. Labour earnings
<i>Administrative</i>	Annual harvesting and processing administrative costs for fisheries management, fees, licenses; costs associated with administrative functions, e.g., dockside monitoring, observers, quota transactions costs	1. Number of administrative personnel 2. Annual administrative costs

Source: OECD (2000b)

Box 3: key characteristics of the indicators provided for the *Transition to responsible Fisheries Study*

→ **Analysis scale: fishery level.**

→ **Temporal Scale: Due to the high resource costs in maintaining such modelling frameworks, this approach has not been pursued to date within the OECD.**

→ **Source and consistence of the data:** The data are coming directly from OECD members.

In addition to the work conducted within the COFI context, fishery-related indicators had been proposed – but not necessarily developed - by other OECD Bodies. The following presents some of them.

Environmental Indicators

There has been extensive work done within the OECD in recent years in developing environmental indicators as well as efforts to link environmental indicators to sustainable development goals. The recent report on **Key Environmental Indicators** (OECD 2001a) presents ten sets of key environmental indicators, including a set relating to fish resources. These indicators were primarily based on *catches as a percentage of world catches and changes* in total catches since 1980. In assessing the measurability concerns about indicators for fish resources, the report notes that, while catch and production data are available for most OECD countries at a significant level of detail, *more work needs to be done to better reflect the composition of the landings and its trophic structure*. In addition it is observed that additional efforts should be made to relate fish harvest to available fish resources

The recent OECD work on sustainable development generated additional indicators on fish resources. The report **Towards Sustainable Development: Environmental Indicators 2001** (OECD 2001b) reported on *fish consumption per capita* as an indirect pressure indicator on fish resources. However, this indicator was not integrated with the existing indicators on fish catches⁵.

In a related report, **Sustainable Development - Critical Issues** (OECD 2001c), the long term trend in the *price of fish meal* is presented as a partial indicator of resource scarcity when discussing natural resource management in the context of sustainable development.

In May 2001, the OECD Council at Ministerial level requested that the OECD undertake the task of developing agreed indicators to measure progress across all three dimensions of sustainable development. This included indicators that can measure the **decoupling of economic growth from environmental degradation**. The report from this process noted that “[t]he decoupling concept cannot easily be applied to the fisheries sector and the lack of pertinent data makes it difficult to present a wholly adequate decoupling indicator for the fishery sector’ (OECD 2002a, p. 56)”. However, further work is carrying on to analyse how the fishing industry can contribute to sustainable development within this analytical framework.

Territorial Indicators

The Territorial Development Policy Committee’s Working Party on Territorial Indicators has proposed a set of core indicators for assessing the socio-economic performance and impact of territorial policies. These indicators are intended to provide, firstly, a coherent set of economic, social and environmental criteria as *a basis for comparing any region of an OECD Member country with any other such region* and, secondly, to evaluate territorial *disparities in Member countries based on this set of multidimensional criteria*. The paper *Core Indicators: Proposed List and Theoretical Framework* discusses possible territorial indicators in addition to those already analysed in *Territorial Outlook* (per capita GDP, unemployment rate, employment and population).

⁵ This information is routinely collected in the context of the *Review of fisheries*, as Member countries are asked to provide information on recent trends in domestic consumption of fish and fish products, by major product category, and estimates of per-capita consumption.

4) Points to discuss: National vs. Fishery level Indicators

- Most of the indicators collected and used by the OECD COFI are defined at the national level. Thus, such indicators allow comparisons across countries, and are policy relevant when dealing with, inter alia, overall pressure on and status of resource stocks (total catches, GFTs, etc.); overall incentives to invest in / to leave the fishery sector...
- However, as emphasised by the case studies provided by the Member countries, the relevant scale of analysis from the sustainable development angle in the fishing industry is often the fishery. Furthermore, as most of the OECD fisheries present similar characteristics, e.g.:
 - Large scale groundfish trawling fishery
 - Small scale sedentary shellfish fisheries (dredging/diving)
 - Small scale potting crustacean fisheries, etc...

it could be interesting to compare the outcomes/performances of such similar fisheries against the 3 sustainable development pillars (biological, economic, social) in order to assess the management system in place (i.e. to try and identify the most “preferable”). To this aim, indicators proposed by Member countries during the *Transition to Responsible Fisheries Study* could be used.

- One relevant move could thus consist in adopting an approach similar to the Territorial Development Policy Committee’s one, i.e. focusing at fisheries/regional level. However:
 - As mentioned previously, such an approach is “resource consuming”. Member countries thus face an explicit trade-off between the need to get more relevant information in order to improve the sustainable management of the fisheries and the associated cost.
 - Due to the specificity of the fisheries, it is not necessary relevant to compare fisheries performances across countries (e.g., to compare the large scale Icelandic groundfish fishery to the Australian inshore shellfish fishery).

Appendix 1: Example of information on stock status provided within the Review of Fisheries context.

Example 1: Australia.

Stock Status and Reported Landings for the Main Target Species Fished in Commonwealth Fisheries 1997 – 2000^a.

UF – Under fished. FF – Fully fished. OF – Overfished. U – Uncertain. S – Status not assessed.

<i>Commonwealth Fishery</i>	<i>Common name</i>	<i>Stock Status</i>				<i>Reported Landings 1999/00 (Tonnes)</i>	<i>Reported Landings 2000/01 (Tonnes)</i>
		<i>97</i>	<i>98</i>	<i>99</i>	<i>00</i>		
Bass Strait Central Zone Scallop Fishery	Southern scallop	U	U	OF	OF	0	0
Eastern Tuna and Billfish Fishery	Albacore	U	U	U	U	363	398
Eastern Tuna and Billfish Fishery	Bigeye tuna	U	U	U	U	678	998
.... To continue							

Source: BRS Fishery Status Report 2002 (*in press*)

Example 2: Denmark

Status for the most important species in Norwegian fisheries.

<i>Species</i>	<i>Spawning stock biomass (1000 tons)</i>		<i>Spawning stock reference point (B_{pa}) (1000 tons)</i>	<i>Estimated Fishing mortality</i>		<i>Fishing mortality reference point (F_{pa})</i>
	<i>2000</i>	<i>2001</i>		<i>2000</i>	<i>2001</i>	
<i>Groundfish species</i>						
North-East Arctic Cod	223	300	500	0,91	0,66	0,42
North Sea Cod	54	55	150	0,83	0,83	0,65
North-East Arctic Haddock	70	79	80	0,46	0,67	0,35
Blue Whiting	2 086	1 514	2 250	0,92	0,86	0,32
.... To continue						

Appendix 2: Classification of some indicators following the PSR framework.

According to the pressure-state-response (PSR) framework that has been developed and used extensively within OECD (see OECD 1998 2000c, 2001c), the above indicators can be classified as follow:

Dimensions	Pressure	State	Response
Ecosystem (resource and environment)	- Total catch - fish consumption	Stocks status	TAC and quotas
Social	- Fishing effort - Number of vessels - Growth rate of number of fishers	Number of fishers	
Economic	- Subsidies - Excess fishing capacity - Profitability	- Profitability - Sector employment	Economic incentives & disincentives (e.g. subsidies, taxes, buy-back)

Source: “Economic and Social Sustainability Indicators for Fisheries” Study

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