



# Analyzing the resource impacts of fisheries subsidies and proposing sustainability criteria for fisheries subsidies

Jayasurya Kalakkal  
Environment and Trade Hub, UNEP  
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# What the Matrix analysis does

To analyze the impacts of eight major categories of fisheries subsidies on fisheries resources using a matrix approach

To provide an analytical tool to assist the design of new or improved disciplines on fisheries subsidies that will help protect fishery resources

# Limitations, not covered in this analysis are:

Other environmental impacts of fisheries subsidies – increased by-catch, marine pollution, and damage to habitats from certain fishing gear

Other non-resource effects of fishing subsidies, such as impacts on trade or on social welfare.

# What is the matrix approach

A systematic analysis of the resource implications of combinations of subsidy type and the two main parameters of the fishery:

- Degree of exploitation and
- Degree of effectiveness of management systems

	Effective Management	Catch Controls	Open Access
Overcapacity			
Full Capacity			
Less than full Capacity			

# Parameter 1: Degree of exploitation



Overcapacity: greater fleet capacity than sustainable catch level



Full capacity: fleet capacity equal to sustainable catch level



Less than full capacity: fleet capacity less than sustainable catch level

# Parameter 2: Management system effectiveness



Effective Management: appropriate quotas, adequate enforcement and incentives (ITQs or CBM) for sustainable fisheries



Catch Controls: imperfect quotas, inadequate/imperfect enforcement and monitoring, and no incentives



Open Access: no quotas, enforcement or incentives

# Major Categories of Fisheries Subsidies Analyzed

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Fisheries infrastructure

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Management services

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Subsidies for access to foreign countries' waters

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Decommissioning of vessels and license retirement

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Subsidies to capital costs

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Subsidies to variable costs

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Income support and unemployment insurance

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Price support subsidies

# Results of the analysis

	Effective Management			Catch Controls			Open Access		
	Over-capacity	Full capacity	Less than full	Over-capacity	Full capacity	Less than full	Over-capacity	Full capacity	Less than full
Fisheries Infrastructure	NH	NH	NH	H	H	NH	H	H	NH
Management Services	NH	NH	NH	NH	NH	NH	NH	NH	NH
Access to Foreign Waters	NH	NH	NH	H	H	NH	H	H	NH
Decommissioning	NH	NH	—	PH	PH	—	H	PH	—
Capital Costs	NH	NH	NH	H	H	H	H	H	H
Variable Costs	NH	NH	NH	H	PH	PH	H	H	PH
Income Supports	NH	NH	NH	NH	NH	NH	NH	NH	NH
Price Supports	NH	NH	NH	H	H	PH	H	H	PH

NH = Not Harmful

PH = Possibly or Probably Harmful

H = Harmful

— = Not Applicable



# Subsidies to Capital Costs

- Definition: subsidies to, e.g., vessel construction or modernization and fishing gear
- How they impact on resources: Overall fleet capacity increases, even when combined with decommissioning schemes

	Effective Management	Catch Controls	Open access
Overcapacity	Not harmful	Harmful	Harmful
Full Capacity	Not harmful	Harmful	Harmful
Less than full Capacity	Not harmful	Harmful	Harmful

# Subsidies to Variable Costs

- Definition: Subsidies for all recurrent or operational costs
- How they impact resources: Each fishing trip is less expensive, providing an incentive to increase fishing effort, and stimulating leaps in adoption of new fishing technology

	Effective Management	Catch Controls	Open access
Overcapacity	Not harmful	Harmful	Harmful
Full Capacity	Not harmful	Harmful	Harmful
Less than full Capacity	Not harmful	Probably harmful	Probably harmful

# Sustainability criteria for fisheries subsidies

Following from this analysis, UNEP and WWF have suggested three basic criteria for determining when subsidies can be provided without being harmful:

- Health of the fish stock = *can the stock withstand more fishing?*
- Fleet capacity = *does the fleet have “room to grow”?*
- Adequate Fisheries Management = *is the fishery adequately managed?*

# Thank you!

Jayasurya Kalakkal

[jayasurya.kalakkal1@un.org](mailto:jayasurya.kalakkal1@un.org)

Consultant, Economic and Trade Policy Unit

UN Environment Programme



**Stock- and Capacity-related Criteria** *(see additional details, Sections II.A.5 & II.B.5)*

	Examples of Possible Best Practices	Minimum Recommended Conditions	Minimum International Requirements
Stock-related Criteria	<p>Biomass is known quantitatively with high levels of confidence on the basis of assessments that include scientific surveys;</p> <p>Biomass is significantly above formal science-based precautionary threshold reference points below which additional limits on fishing would be imposed; and</p> <p>Biomass is stable or rising.</p>	<p>Science-based assessments reveal that the stock is “underexploited” (per FAO definition); and</p> <p>Bio-economic data for at least [three] previous years does not reveal any “red flag” trends, such as those listed on p. 13.</p>	<p>Science-based assessments reveal that the stock is “underexploited” (per FAO definition).</p> <p>(Absence of “red flag” bio-economic trends could also be incorporated into WTO rules)</p>

Example of minimum requirements of stock-based criteria for WTO rules: **Science-based assessments reveal that the stock is “underexploited” (per FAO definition)**

## Capacity related criterion

Capacity-related Criteria	<p>Capacity is known quantitatively with high levels of confidence on the basis of assessments that include direct scientific observations of fleet characteristics, fishing practices, and stock conditions;</p> <p>Capacity is far below full capacity (e.g., &lt;50 per cent); and</p> <p>Capacity has been flat or declining (or, in new or very underdeveloped fisheries, has been growing very slowly (e.g., 5 per cent per year) such that the 50 per cent threshold would not be breached during the economic life of the subsidies).</p>	<p>(Same as "best practices", with some possible relaxation of intensity of scientific data collecting)</p>	<p>(Same as "best practices" except that quantitative science-based assessments could rely on crude fleet inventories and indirect bio-economic indicators (see p. 18) rather than dedicated scientific surveys)</p> <p>(for a much weaker alternative, see discussion on p. 19)</p>
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Example: “minimum international requirements” could require total capacity in a target fishery to be quantified and to be far below full capacity, so that subsidized fishing entails little or no risk of causing overcapacity in the foreseeable future.

**Management-related Criteria** (see additional details, Section II.C.5)

	Examples of Possible Best Practices	Minimum Recommended Conditions	Minimum International Requirements
<b>Assessment</b>	<p>Scientific survey stock assessments to be conducted in all subsidized fisheries, supplementing fisheries-dependent assessments carried out on an ongoing basis;</p> <p>Direct measurement and calculation of capacity through scientific surveys of capacity to be carried out in every subsidized fishery.</p>	<p>Stock assessments to be supplemented wherever possible by scientific surveys and by investigations into ecosystem or coastal zone considerations, including changes in trophic levels of catches;</p> <p>Capacity assessments to be supplemented by scientific surveys and direct capacity assessment techniques.</p>	<p>Science-based stock assessments based on catch data or catch and effort data for at least three years prior to subsidization, and annually during the life of the subsidies;</p> <p>Science-based capacity assessments (may be based on crude inventories &amp; indirect indicators) resulting in quantitative estimates of total fleet capacity and trends in capacity for at least three years prior to subsidization, and annually during life of the subsidies.</p>
<b>Controls</b>	<p>In addition to "recommended" and "required" controls, legally binding reference points to include "threshold" reference points triggering restrictions on subsidies.</p>	<p>In addition to "required" controls, management plans to include ecosystem-based management and, where appropriate, coordination with integrated coastal zone management plans.</p>	<p>Formal management plan in place, including a capacity management plan consistent with the FAO International Plan of Action for the Management of Fishing Capacity;</p> <p>Legally binding precautionary target and limit reference points for both stocks and capacity based on science-based assessments, taking MSY equilibrium as the outer limit of acceptable limit for stock biomass;</p> <p>Pre-determined regulatory responses to be taken in the event target reference points are breached.</p>

## Management-related Criteria (continued)

	Examples of Possible Best Practices	Minimum Recommended Conditions	Minimum International Requirements
Enforcement	In addition to "recommended" and "required" conditions, enforcement procedures to include independent public review of enforcement actions and effectiveness thereof.	In addition to "required" conditions, enforcement procedures to include a public record of enforcement actions.	<p>Procedures sufficient to permit reasonably effective action against illegal fishing activities in the target fishery, and to prevent significant patterns of illegal fishing therein;</p> <p>Mandatory withdrawal and repayment of subsidies to any vessel once engaged in (non <i>de minimis</i>) illegal fishing activities.</p>
MCS Administrative Infrastructure	<p>In addition to all "required" and "recommended" conditions:</p> <p>Vessel registry information to include "additional" information sought by the HSVAR database;</p> <p>Full on-board observer coverage of all vessels active in target fisheries.</p>	<p>In addition to all "required" conditions:</p> <p>Vessel registry information to include all "optional" information sought by the HSVAR database;</p> <p>Mandatory reporting of catches (including all discards), to be verified by at least partial observer coverage in target fisheries.</p>	<p>Mandatory registration of all active vessels, providing "mandatory" information required by the HSVAR database, and provision of all requisite information to any applicable international registry system;</p> <p>Mandatory licensing of all vessels/ fishers, detailing authorization to fish and license information kept in a public license registry;</p> <p>Mandatory reporting of catches or landings (and effort, where applicable).</p>
Rapid Evaluation (per Appendix 2)	(Used in context of overall detailed evaluation).	Structured use of these or similar benchmarks as ongoing evaluation of fishery.	Rapid evaluation questions could provide additional information during rules implementation.



Characteristics of the fishery for resource <u>A</u> over the last decade	Yes (Green)	Maybe/partially (Yellow)	No (Red)
<b>OUTPUTS</b>			
1) Landings are still <u>above</u> 50 per cent of the average for the best three years landings on record (FAO Statistics)?			
2) Landings <u>have not</u> continued to decline significantly over the last 5 years?			
3) Catch rates <u>have not</u> declined significantly over the last 5 years (by standard vessel category)?			
4) The fleet capacity utilizing the resource <u>has not</u> grown by more than 10-15 per cent since the second of the best three years landings on record?			
5) Prices for the product on the domestic market of the coastal state <u>have not</u> grown by more than 25 per cent over the last 5 years?			
6) Biological data <u>are</u> collected in port, <u>OR</u> in-port interviews <u>are</u> carried out, <u>OR</u> copies of catch log books <u>are</u> completed and collected by port officials?			
7) The capture of protected species <u>is</u> actively discouraged?			
8) The diversity of resources/habitats <u>is</u> being actively maintained and protected?			
9) Illegal or unreported fishing is being kept under strict control by active at-sea surveillance?			

Characteristics of the fishery for resource <u>A</u> over the last decade	Yes (Green)	Maybe/partially (Yellow)	No (Red)
<b>INPUTS</b>			
10) Research vessel surveys <u>are</u> carried out at regular intervals?			
11) There <u>is</u> a limited license system in operation that covers all vessels fishing the resource, and an up-to-date registry of active fishing vessels and their characteristics is maintained?			
12) There <u>is</u> a formal system of licence transfers on vessel replacement that ensures that fleet capacity is not increasing?			
13) There <u>is</u> a system of at-sea surveillance of the fleet operation or on-board observers ?			
14) Biologists <u>are</u> employed to evaluate the fishery with at least Masters in Science education ?			
15) A management plan exists for the fishery?			
16) Closed areas or MPAs are in effect? Such areas within the stock range are still un-fished or form refugia, nursery areas or spawning areas?			
17) For shared, straddling and highly migratory stocks, there are fisheries agreements or negotiations in course with other users of the resource?			
18) The government fisheries agency meets regularly with local community or fishing industry representatives?			
19) Sports fishing or diving activities are revenue earners on the fishing grounds for the resource?			
20) If there are foreign access agreements, do these specify avoidance of national fishing areas/resources, and are these provisions policed?			
21) Are the provisions of ecosystem management/biodiversity conservation applied?			
22) Is there an integrated coastal area management plan in effect, protecting coastal resources from pollution/unwise developments?			

# Conclusion

- Effective rules may require a “mix and match” approach that draws on the strengths of multiple criteria.
- Transparency in the administration of rules is key.
- Other UNEP resources that were produced around that same time and may be useful to consult:
  - [Towards sustainable fisheries access agreements](#)
  - [Reflecting Sustainable Development and Special and Differential Treatment for Developing Countries in the Context of New WTO Fisheries Subsidies Rules](#)
  - [Artisanal Fishing: Promoting Poverty Reduction and Community Development Through New WTO Rules on Fisheries Subsidies - An Issue and Options Paper](#)