

## SUBSIDIES TO FISHERIES IN REGIONAL SEAS<sup>1</sup>

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### ABSTRACT

A summary is given of the approach that was used to compile a global database of government subsidies to fisheries. The estimates obtained were reasonable, as evidenced by their acceptance by the World Trade Organization and the World Bank. However, mapping these subsidies by Regional Sea is questionable, due to their large size, which results in subsidy intensities from socioeconomically disparate countries being pooled.

### INTRODUCTION

Fisheries subsidies are defined as government financial transfers to the fishing industry, which serve to reduce the cost of fishing (e.g., fuel subsidies), or programs that artificially increase revenue to fishing enterprises (e.g., price support schemes). Subsidies to the fishing industry for all maritime countries/political entities of the world are reported by Sumaila and Pauly (2006), and updated by Sumaila *et al.* (2010). The capacity-enhancing subsidies (bad) generate additional pressure on the Regional Seas, which may also be the case for the ambiguous (ugly) subsidies. In contrast, the beneficial subsidies may relieve pressure, or are neutral. Overall, subsidies impact fishing effort, and may be characterized as pressure indicators.

### MATERIAL AND METHODS

Government financial transfer (subsidy) data were obtained from a number of sources including international organizations such as the Organization for Economic Cooperation and Development (OECD) and national statistical agencies, and were augmented by information estimated by Sumaila *et al.* (2008)

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concerning fuel subsidies and Cullis-Suzuki and Pauly (2010), who estimated the costs of managing marine protected areas. Overall, the database of fisheries subsidies spans the years 1990-2009, with the year 2003 being covered best.

Both quantitative and qualitative data regarding government financial transfers was collected and categorized according to the information presented in Table 1. Where the information was qualitative (i.e., without supporting quantitative data), we treated subsidies values as missing rather than as zero, thus allowing estimation of missing data using a simple benefit-transfer approach (Sumaila *et al.*, 2010).

The subsidy estimates in Sumaila *et al.* (2010) for all maritime countries/political entities were then distributed over the  $\frac{1}{2}^\circ$  latitude/longitude cell sizes of the corresponding EEZ, then aggregated to Regional Seas (Appendix 12 and 14).

**Table 1.** Subsidy Types and categories identified in Sumaila *et al.* (2010).

Type	Category	Sub-category (if applicable)	
Beneficial (good)	Fishery management	Monitoring and control	
		Stock assessment Stock enhancement Other beneficial programs	
Capacity-enhancing (bad)	Research and Development		
	Marine protected areas (MPA)		
	Vessel construction and modernization	State fishery investments Subsidized loans Vessel modernization Other capacity-enhancing programs	
		Fishery Development Projects Development grants Institutional support	
Ambiguous (ugly)	Port and harbor expenditure		
	Marketing and processing support		
	Tax exemptions		
	Access agreements		
	Fuel price support		
	Fisher assistance programs	Income support Retraining initiatives Unemployment assistance Other worker assistance programs	
		Decommissioning schemes	Permit and license buybacks Vessel buyback programs Other decommissioning programs
		Rural community development programs	

## RESULTS AND DISCUSSION

Fisheries subsidies are an indicator of government involvement in the fisheries sector, and their effects can be assessed when, as is the case here, the subsidies are grouped into categories based on their assumed effect on the health of ocean fish populations. Presently, this database represents the most concise and complete collection of fisheries subsidies data available. There is, however, an opportunity for further work to flesh out the time element of the database, especially for years prior to 2000.

The fisheries subsidy database briefly described here continues to evolve, and forms the basis for several past (Sumaila *et al.*, 2008) and current contributions, including Sumaila *et al.* (2010), who estimated that fisheries subsidies total 25-30 billion USD per year or about a third of the global value of fisheries landings. Also, the content of the database is available at the website of the *Sea Around Us* ([www.seaaroundus.org](http://www.seaaroundus.org)), by country. It is also used to inform negotiations at the World Trade Organization, and for assessments by the World Bank.

Examination of a map (not shown) of subsidy intensity by Regional Seas suggested, however, that they might not represent an appropriate scale for economic data such as subsidies (and neither for employment data; see Teh and Sumaila, this volume). This is because Regional Seas, which are rather large, compared,

say, with Large Marine Ecosystems (Sherman and Hempel, 2008) include the coastal waters of economically very heterogeneous countries.

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#### REFERENCES

- Cullis-Suzuki, S., Pauly, D., 2010. Marine Protected Area Costs as 'Beneficial' Fisheries Subsidies: A Global Evaluation. *Coastal Management* 38(2), 113. doi:10.1080/08920751003633086.
- Sumaila, U. R., Pauly, D., 2006. *Catching more bait: a bottom-up re-estimation of global fisheries subsidies*. Fisheries Centre Research Reports 14(6). Fisheries Centre, UBC, Vancouver.
- Sumaila, U.R., Khan, A.J., Dyck, A., Watson, R., Munro, G., Peter Tyedmers, Pauly, D., 2010. A bottom-up re-estimation of global fisheries subsidies. *Journal of Bioeconomics* 12, 201–225.
- Sumaila, U. R., Teh, L., Watson, R., Tyedmers, P., Pauly, D., 2008. Fuel price increase, subsidies, overcapacity, and resource sustainability. *ICES Journal of Marine Science* 65(6), 832-840.