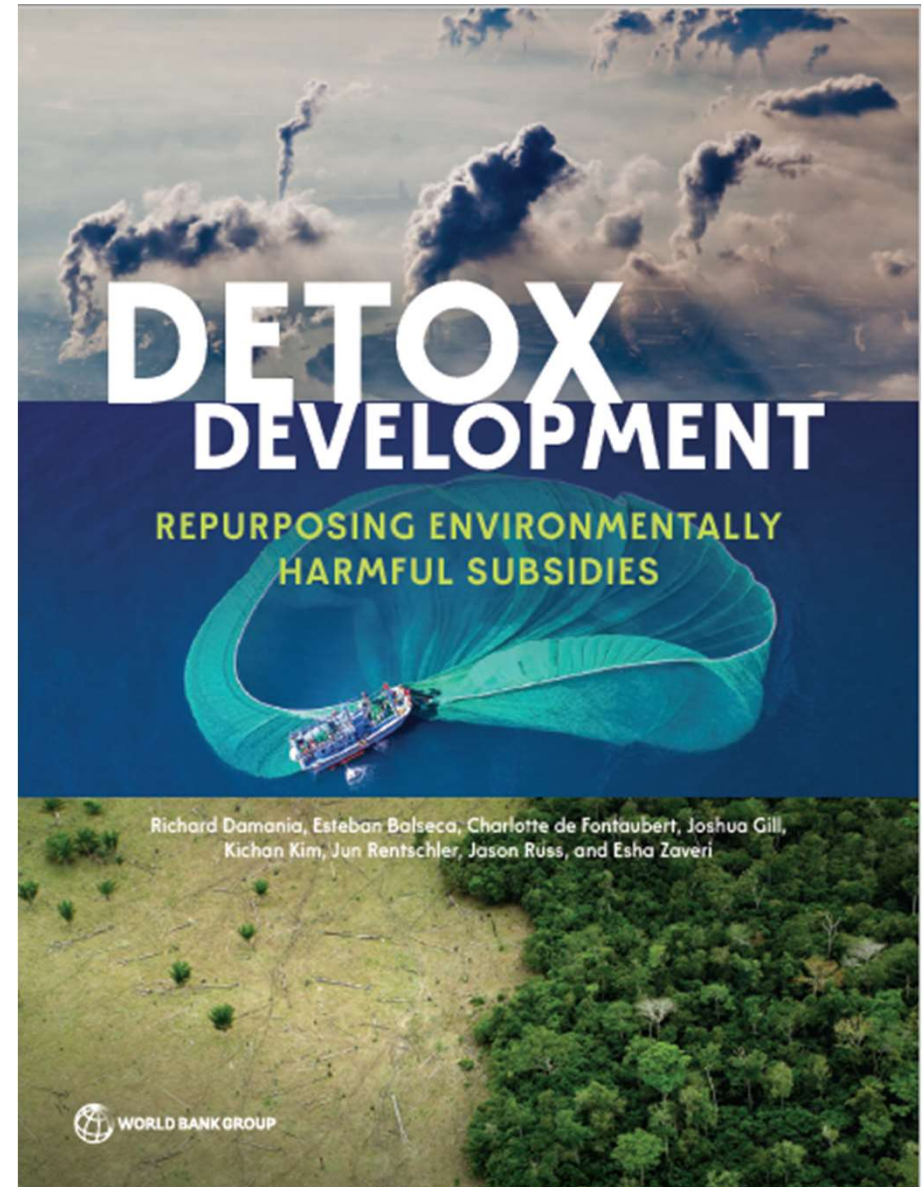


# Detox Development: Repurposing Harmful Subsidies

Economic, Social, and  
Environmental Impact of Harmful  
Fishery subsidies

Charlotte de Fontaubert  
Senior Fisheries Specialist  
The World Bank



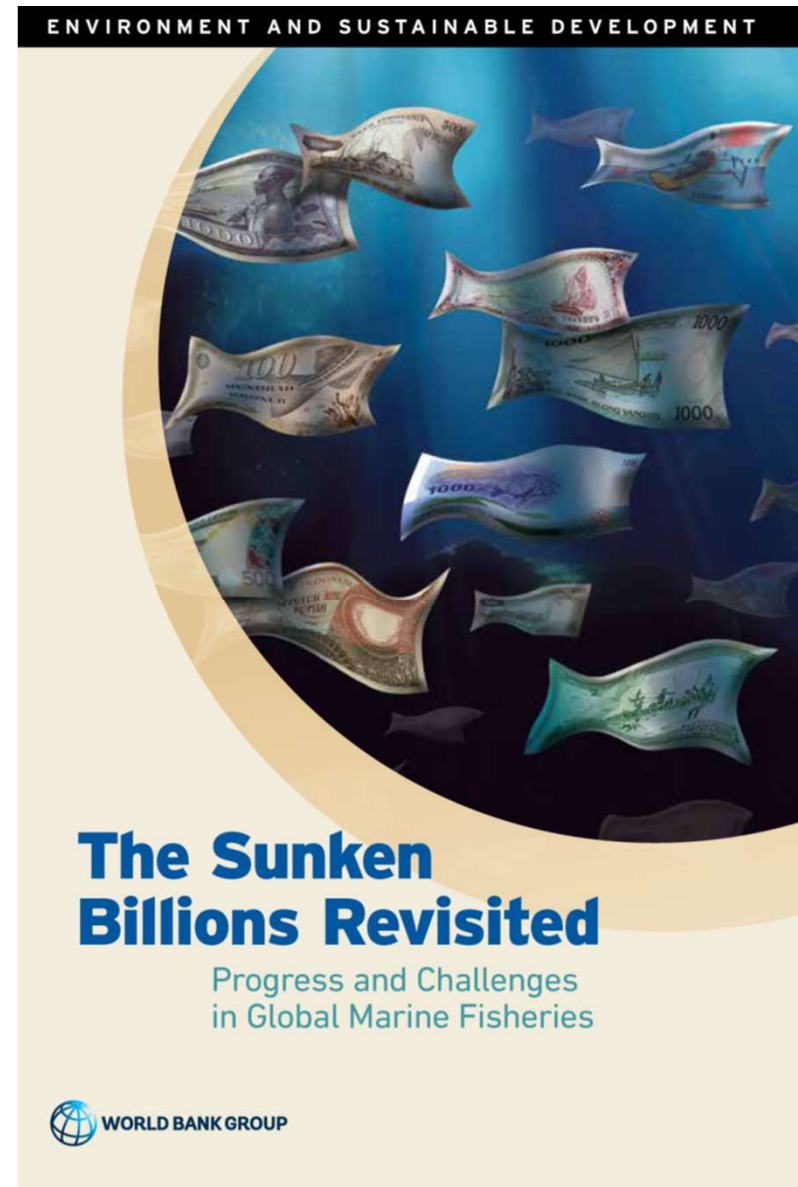
## Context is everything: why look at fishery subsidies?

- Need to look *at all harmful subsidies*
- Need to look at *how to reform all harmful subsidies* (unintended consequences vs. focus on poverty reduction)
- Need to look at *fishery subsidies in the global fish context*, and
- Cannot look at fishery subsidies in isolation, but *in context of other fundamental governance considerations*



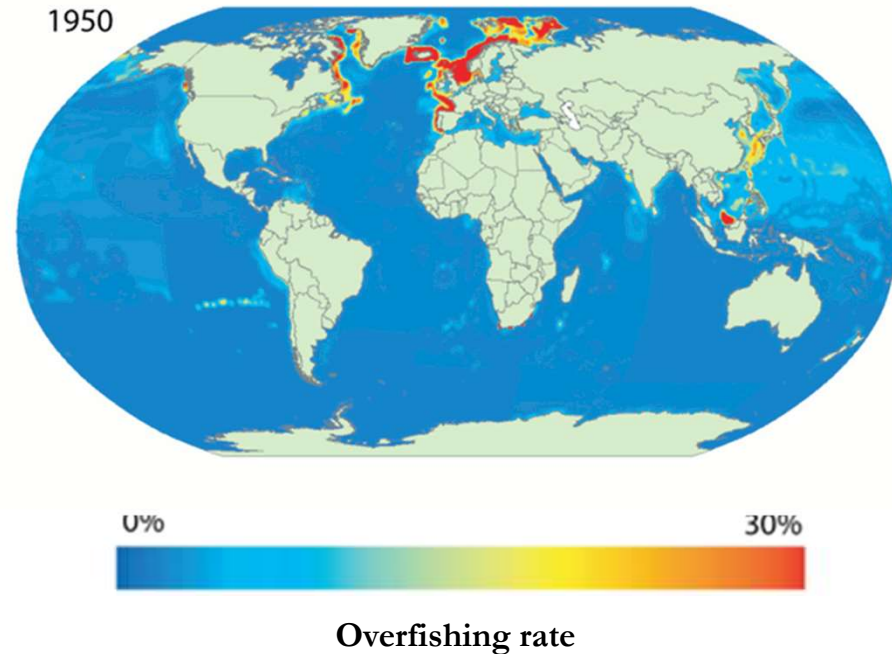
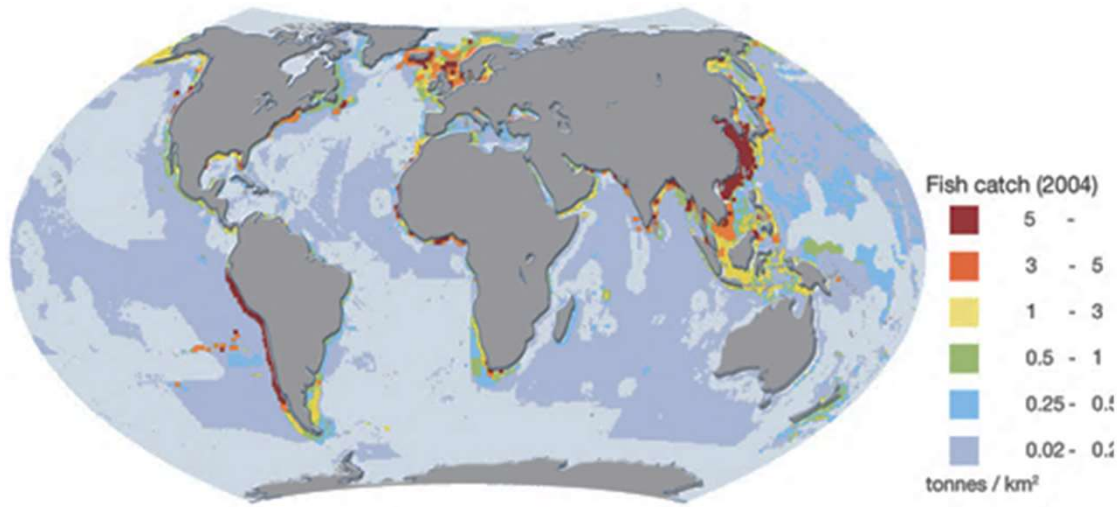
# The Sunken Billions Revisited

The World Bank, 2017



# Overfishing has become an increasing problem globally...

Overfishing was limited to Japan, Europe in 1950s. Currently parts of South East Asia, North and South American and Indian Ocean are also being overfished.

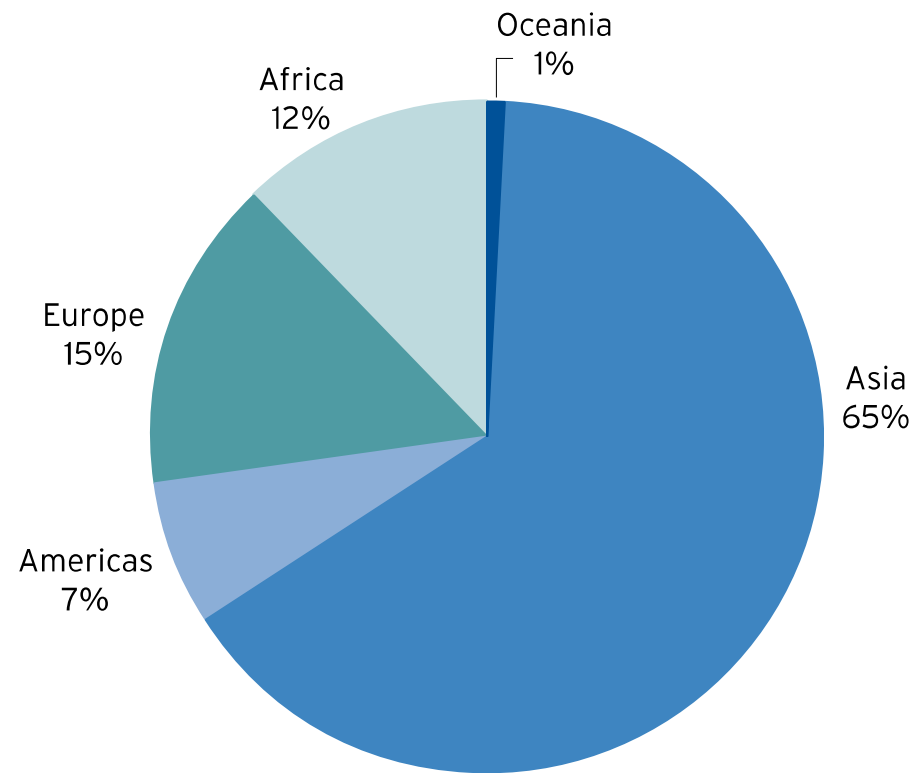


31.4% of fish stocks are overfished  
58.1% are fully-fished, and only  
10.5% are underfished

Source: FAO <http://www.fao.org/sustainable-development-goals/goals/goal-14/en/>

# Sunken Billions Revisited quantified global economic cost of overfishing: in excess of 80 billion dollars a year

Regional distribution of total sunken billions



Source: Model output.

## **By reducing global fishing effort by 40% we can achieve:**

- An increase in global fish biomass from 215 to 580 million tonnes
- Higher sustainable harvest levels achieved with far lower fishing effort (increase in maximum economic yield – MEY)
- Estimated average landing prices increasing by more than 24% (more of the larger fish, which fetch higher prices)
- An almost 30-fold increase in the net benefits that could be derived from sustainably managed global fisheries (\$86.3 billion versus \$3 billion in 2012) – due to combination of much lower fishing costs and higher harvest

## Modeling with UBC team: Modeling parameters

- Three very different contexts/ecosystems:
  - Mauritanian **EEZ** (foreign and artisanal fleets)
  - East China Sea
  - Northern South China Sea

**TABLE 10.1** Gross revenue, economic impact, and subsidy magnitude in three fisheries, 2018

Fishery specifics	Mauritanian EEZ	Northern South China Sea	East China Sea
Total fish catch (tonnes, millions)	1.5	11	5
Harmful subsidies (US\$, millions)	264	990	2,500
Gross revenue (US\$, millions)	1,500	16,000	8,000
Estimated economic impact (US\$, millions)	2,250	47,000	23,000

*Source:* Sumaila et al. 2021.

*Note:* Economic impact attempts to capture the multiplier effects of the fishery and is based on certain broad assumptions. EEZ = exclusive economic zone.

## Three different management policy scenarios

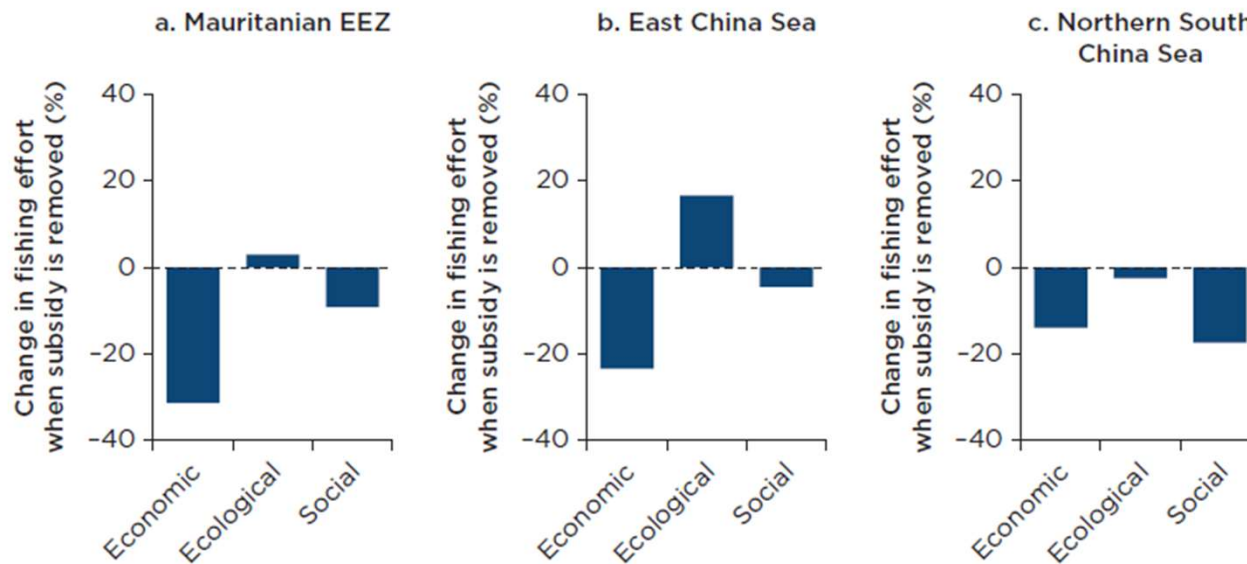
- **Economic optimization:** where economic rents are maximized. This scenario most closely resembles a system where a permit or tenure system or a similar form of restriction limits the total catch at the economically optimal level, effectively avoiding unmanaged or open-access fishery problems
- **Ecological optimization:** where the biomass of the ecosystem is maximized, and attempt is made to maximize the ecological fitness of the fishery by controlling harvests
- **Social objectives optimization (jobs growth):** where the aim is to expand employment and the fish catch in the short run (resembles management regimes where entry into the fishery is not managed to maximize either rents or ecological criteria and outcomes of a quasi open-access regime as conventionally defined)

All three scenarios are run both with and without subsidies in order to isolate the effects of harmful subsidies on several key indicators of a fishery, including fishing effort, biomass, economic rent, and catch.



# Results of the modeling: impact on fishing effort

**FIGURE 10.5** Changes in fishing effort with subsidy removed in three select areas, by management scenario



Source: Sumaila et al. 2022.

Note: EEZ = exclusive economic zone.

## Results of the modeling: impact on biomass

**TABLE B10.5.1** Effects of harmful subsidies on biomass in three select areas, by management scenario  
*net % change in biomass “without” relative to “with” harmful subsidies*

Location	Optimizing economic rent		Optimizing jobs		Optimizing ecology	
	Invertebrates	Fish	Invertebrates	Fish	Invertebrates	Fish
Mauritanian EEZ	+2	+1	+6	+7	-0	-0
Northern South China Sea	-5	+27	-1	+8	-0	-1.2
East China Sea	+4	-2	+4	+13	-0	-0

Source: Sumaila et al. 2022.

Note: EEZ = exclusive economic zone.

## Results of the modeling: impact on rent

**TABLE 10.2** Effects of harmful subsidies on economic rent in three select areas, by management scenario

*net % change in economic rent “without” relative to “with” harmful subsidies*

Location	Optimizing economic rent	Optimizing Jobs	Optimizing ecology
Mauritanian EEZ	+10	+52	+7
Northern South China Sea	+213	-3	+27
East China Sea	+9	+49	-5

*Source:* Sumaila et al. 2022.

*Note:* EEZ = exclusive economic zone.

# Distributional Impact of subsidy reform

**TABLE 10.3** Impact of removing harmful subsidies for all three sectors in the Mauritanian exclusive economic zone, by fishing sector

net % change "without" relative to "with" subsidies

Management objective	Artisanal	Demersal	Pelagic
<i>Optimizing economic rent</i>			
Relative rent without subsidies	-62	28	6
Relative fishing effort without subsidies	-75	-7	-6
<i>Optimizing jobs</i>			
Relative rent without subsidies	14	3	25
Relative fishing effort without subsidies	-7	-6	-29
<i>Optimizing ecology</i>			
Relative rent without subsidies	57	3	8
Relative fishing effort without subsidies	46	-6	-2

Source: Sumaila et al. 2022.

**TABLE 10.4** Impact of removing harmful subsidies only for demersal and pelagic fleets in the Mauritanian exclusive economic zone, by fishing sector

net % change "without" relative to "with" subsidies

Management objective	Artisanal	Demersal	Pelagic
<i>Optimizing economic rent</i>			
Relative rent	22	8	6
Relative effort	16	-15	-6
<i>Optimizing jobs</i>			
Relative rent	3	-22	7
Relative effort	-0	-3	-0
<i>Optimizing ecology</i>			
Relative rent	18	-11	7
Relative effort	17	-19	-1

Source: Sumaila et al. 2022.

Note: Subsidies are retained only for the artisanal fleet.

## Take home lessons

- Allowing for differences in ecology and the effectiveness of management measures currently in place, removing harmful subsidies could reduce fishing effort and overfishing—but not uniformly so.
- Neither is subsidy removal necessarily sufficient.
- Subsidy removal is most effective in a scenario when the objective is “optimizing for economic rent.”
- Management regimes are key and, while subsidy reform and repurposing are necessary to bring fishing to within reasonable limits, they alone cannot compensate for the complete absence of fishery management measures

## **Moving forward: proceed with caution**

- In open-access fisheries, subsidies are especially harmful by promoting overfishing and a race to the bottom. When open-access regimes are closed or limited, the impacts are much diminished, unless the resource is degraded so heavily that recovery is slow and uncertain.
- Report confirms something important that we knew: impacts of subsidies are poorly understood, including by those who enact them, and they tend to benefit the rich the most.
- BUT, the withdrawal of subsidies can have unintended consequences for the poor, and reform of artisanal fisheries needs to be done with great caution and only after an assessment of the possible impacts on poverty and other excluded groups