

# Fisheries Subsidies That Contribute to OCOF: A review of key basic concepts and useful data

Key sources of data on the coverage of new rules

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Pew

# Decision-support tools

Subsidy explorer: <http://www.subsidyexplorer.org/>

Distant Water Fishing Atlas: <http://www.dwfsubsidyatlas.org/>

# Modeling Bioeconomic Impact of Removal of Harmful Subsidies

SubsidyExplorer

SUSTAINABLE FISHERIES GROUP UC SANTA BARBARA

emLab UC SANTA BARBARA

Eliminating harmful fisheries subsidies represents the single greatest collective action governments can take to restore the health of fish populations around the world.

SubsidyExplorer is a first-of-its-kind interactive toolkit that allows users to explore potential biological and economic impacts of fisheries subsidy reform scenarios. This tool supports the negotiations currently underway at the World Trade Organization (WTO).

If WTO members agree to eliminate all harmful subsidies, by 2050, it could result in increases of up to

- + 12.5 % in global fish biomass
- + 3.5 % in global fish catch per year

This would mean 35 million more tonnes of fish in the water, and 3 million more tonnes of fish being caught every year!

Learn How Subsidy Reform Could Help Fish ▶

Explore More About Fisheries Subsidies ▶

Discover How This Tool Was Made ▶

Millage KD, Saccomanno VR, Warham MM, Rubino LL, Schuhbauer A, et al. (2022) SubsidyExplorer: A decision-support tool to improve our understanding of the ecological and economic effects of reforming fisheries subsidies. PLOS ONE 17(6): e0265829.

<https://doi.org/10.1371/journal.pone.0265829>

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0265829>

# Data sources

Three primary data sources:

- Subsidies data: [Sumaila et al \(2019\)](#)
- Fleet characteristics and behavior: [Global Fishing Watch](#)
- Global fisheries landings: [FAO Global Capture Production Database](#)

Additional data sources:

- [World Bank WDI Database](#)
- [Ram Legacy Stock Assessment Database](#)
- [Combined IUU Fishing Vessel List](#)
- [Schuhbauer et al. \(2020\)](#) – small-scale vs. industrial subsidies
- [Costello et al. \(2016\)](#) – unassessed stock status estimates
- [Melnychuk et al. \(2017\)](#) – ex-vessel price reconstruction
- [Melnychuk et al. \(2017\)](#) – fisheries management indicators
- [Martini and Innes \(2018\)](#) – relative effects of fisheries supports

# Policy comparison portal

**SubsidyExplorer**

Explore Results 1

**Explore WTO Member Proposals**  
Select a pre-populated WTO Member proposal from the menu below to model it and compare it against the **Most Ambitious Scenario**.

Narrow Proposals by Category  
 IUU  OFOC  Other & Multiple  Overfished

Select a Proposal  
None

Model Selected WTO Proposal

**Design Your Own Policy**  
You can also design your own subsidy reform policy and plot how it affects biomass, fish catch, revenue, and fishing mortality over time.

Design Your Own Policy

**Scenario Results**

Plot: Biomass Resolution: Global Regional

Results to Show on Plot  Most ambitious scenario

(A)

**SubsidyExplorer**

Design Your Own Policy Scenario

1 Name Your Policy: Sample Policy

2 Select Discipline(s) Below  
You do NOT need to select from every category

a OPTIONAL Illegal, Unreported, and Unregulated DISCIPLINES  
 b OPTIONAL Overfished Stocks DISCIPLINES  
 c OPTIONAL Overcapacity and Overfishing DISCIPLINES

**DISCIPLINES:**  
Subsidies shall be prohibited to all Member-flagged vessels classified as IUU by a:  
 RFMO/A  
 coastal Member state  
 flag Member state  
 subsidizing Member state  
 port Member state  
 market Member state  
 Note: At present, no data exists on a global scale to identify vessels listed as having engaged in IUU fishing activities by coastal, flag, subsidizing Member, port, or market states.

**SCOPE:**  
IUU discipline(s) apply to:  
 All Members  
 Only some Members and/or type(s) of fishing activity

**S&DT:**  
Allow S&DT for IUU disciplines?  
 Yes  
 No

3 Review Policy Selections  
Ensure selections are correct

Name: Sample Policy  
**DISCIPLINES:** Subsidies shall be prohibited to all Member-flagged vessels classified as IUU by a:  
 • RFMO/A  
 • coastal Member state  
**SCOPE:** Disciplines apply to all Members & vessels.  
**S&DT:** None.  
**Overfished:**  
**DISCIPLINES:** None selected.  
**Overcapacity and Overfishing:**  
**DISCIPLINES:** None selected.  
**CAPTURE:** No.

4 Model Your Policy  
Clicking the button will redirect you

Run Model

(B)

**SubsidyExplorer**

Explore Results 1

**Explore WTO Member Proposals**  
Select a pre-populated WTO Member proposal from the menu below to model it and compare it against the **Most Ambitious Scenario**.

Narrow Proposals by Category  
 IUU  OFOC  Other & Multiple  Overfished

Select a Proposal  
Chair's text - Consolidated text (June 2021) [Sustainability scenario]

Model Selected WTO Proposal

**Formal Title**  
Scenario based on Chair's text - Consolidated text (June 2021) showing the highest sustainability outcome

**Summary**  
This communication aims to represent the progress made since the last consolidated text was released, and to provide some suggested compromises on remaining outstanding issues. As written, it still provides two possible options for S&DT for Article 5 prohibitions. For the purposes of modeling here, we use ALT 1.

**Illegal, Unreported, and Unregulated ASSUMPTIONS:**

- Final determinations are made by existing RFMO/A vessel lists, and by flag and coastal Member states.
- No publicly available data exist for most flag or coastal Members, so we assume 20% of fishing effort worldwide to be identified as IUU.
- No proportionality or the duration of prohibition is considered.

**S&DT:** None considered.

**Overfished ASSUMPTIONS:**

- There is uncertainty regarding the status of many fish stocks.
- For the purposes of modeling this proposal, we assume that subsidies to fishing on stocks identified as overfished ( $B/B_{msy} < 1$ ) in the RAM Legacy Stock Assessment Database are prohibited.
- The proportion of stocks identified as overfished in the RAM Legacy Stock Assessment Database likely underestimates the actual proportion of stocks that are overfished globally, but it is unclear whether enough evidence would exist to trigger this prohibition for stocks not included in this database.

The proposal is ambiguous about which reference point might be used to make an overfished determination, and we therefore note that this is only one possible interpretation of this text.

5. The definition for an overfished stock subsidy prohibition considered here is the more

**Scenario Results**

Plot: Biomass Resolution: Global Regional

Results to Show on Plot  Most ambitious scenario

(C)

**SubsidyExplorer**

Explore Results 1

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Model Selected WTO Proposal

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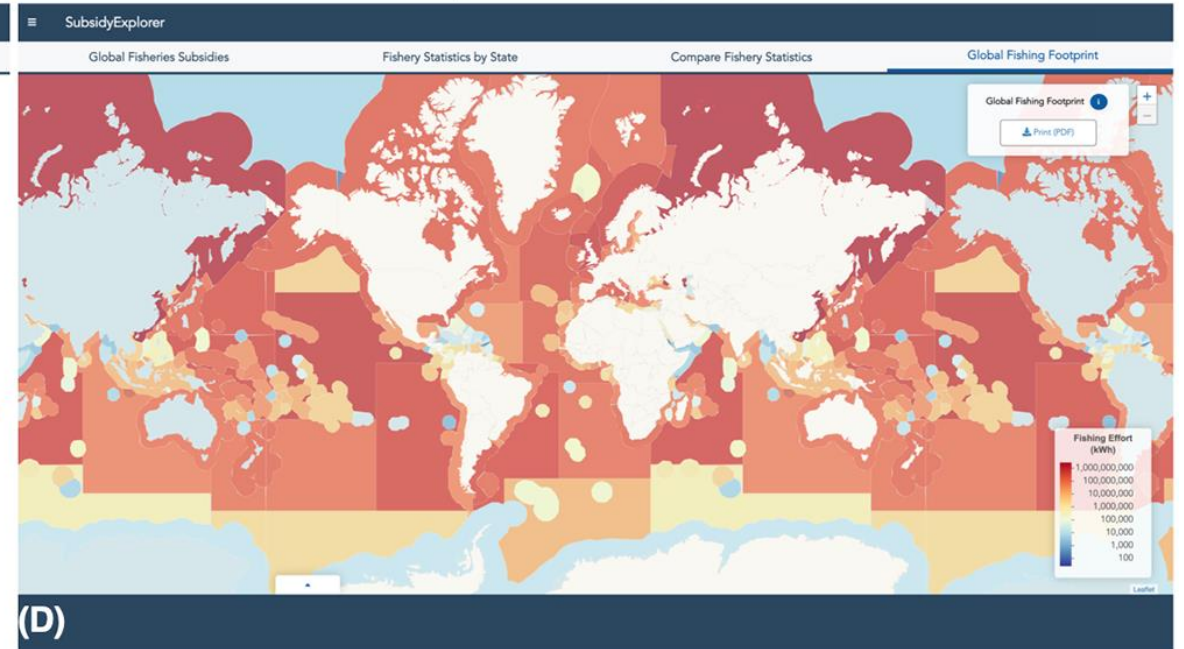
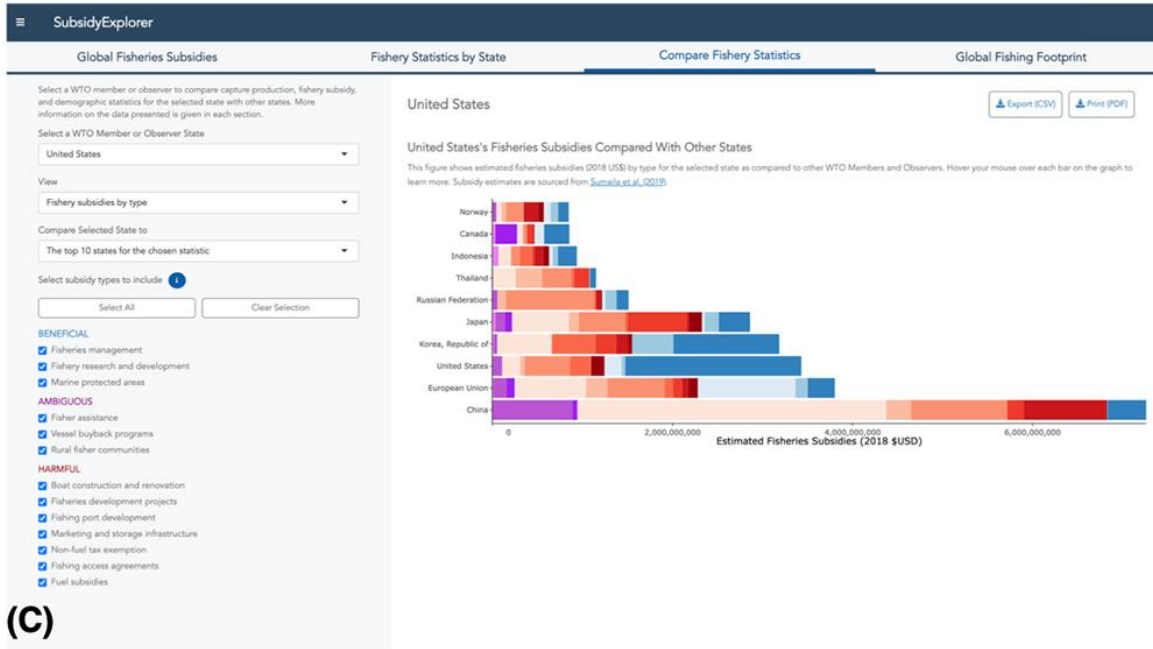
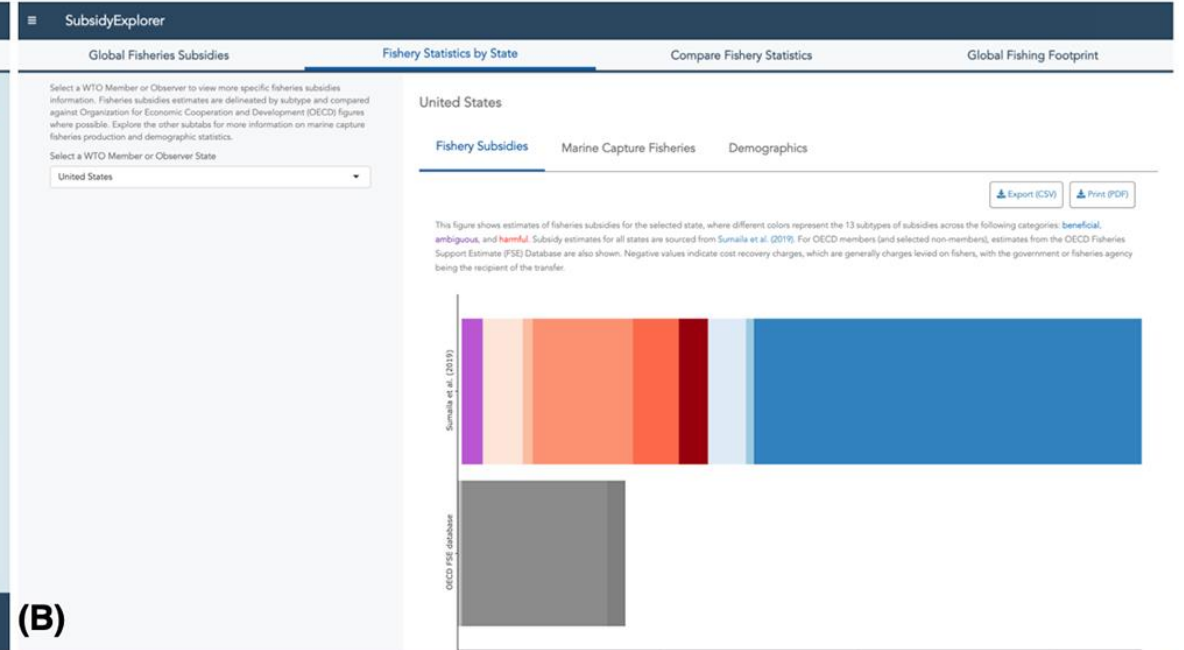
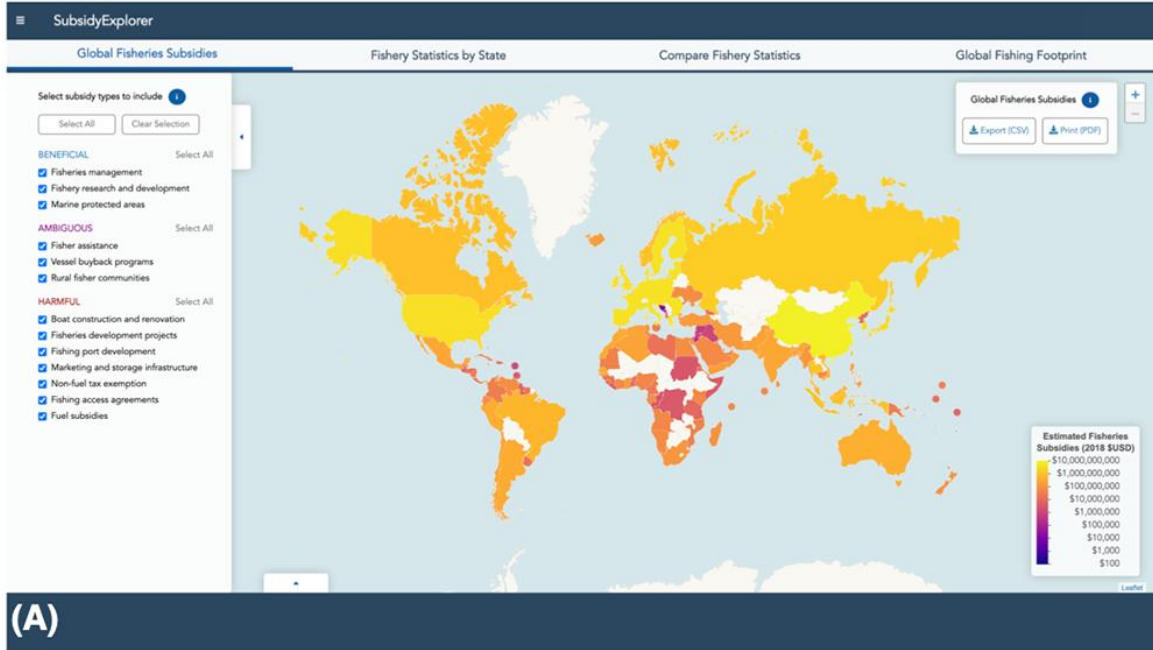
**Scenario Results**

Plot: Biomass Resolution: Global Regional

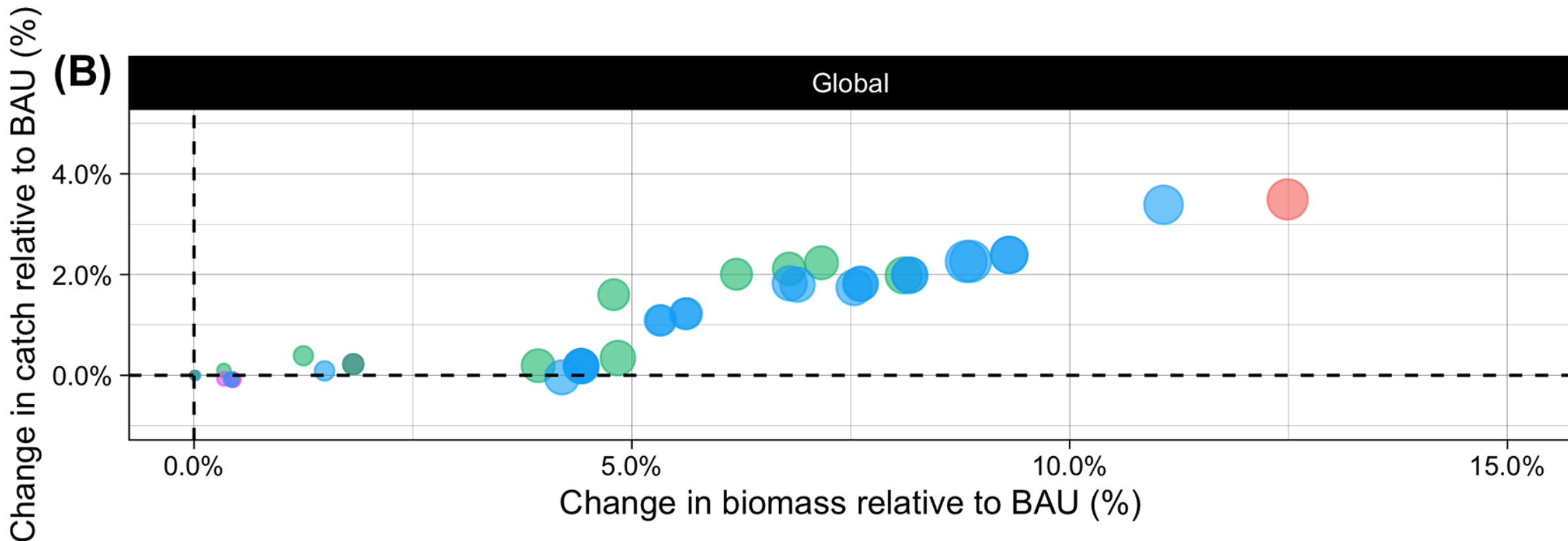
Results to Show on Plot  Most ambitious scenario  Chair's text - Consolidated text (June 2021) [Sustainability scenario]

(D)

# Data exploration portal



# Global simulation model results



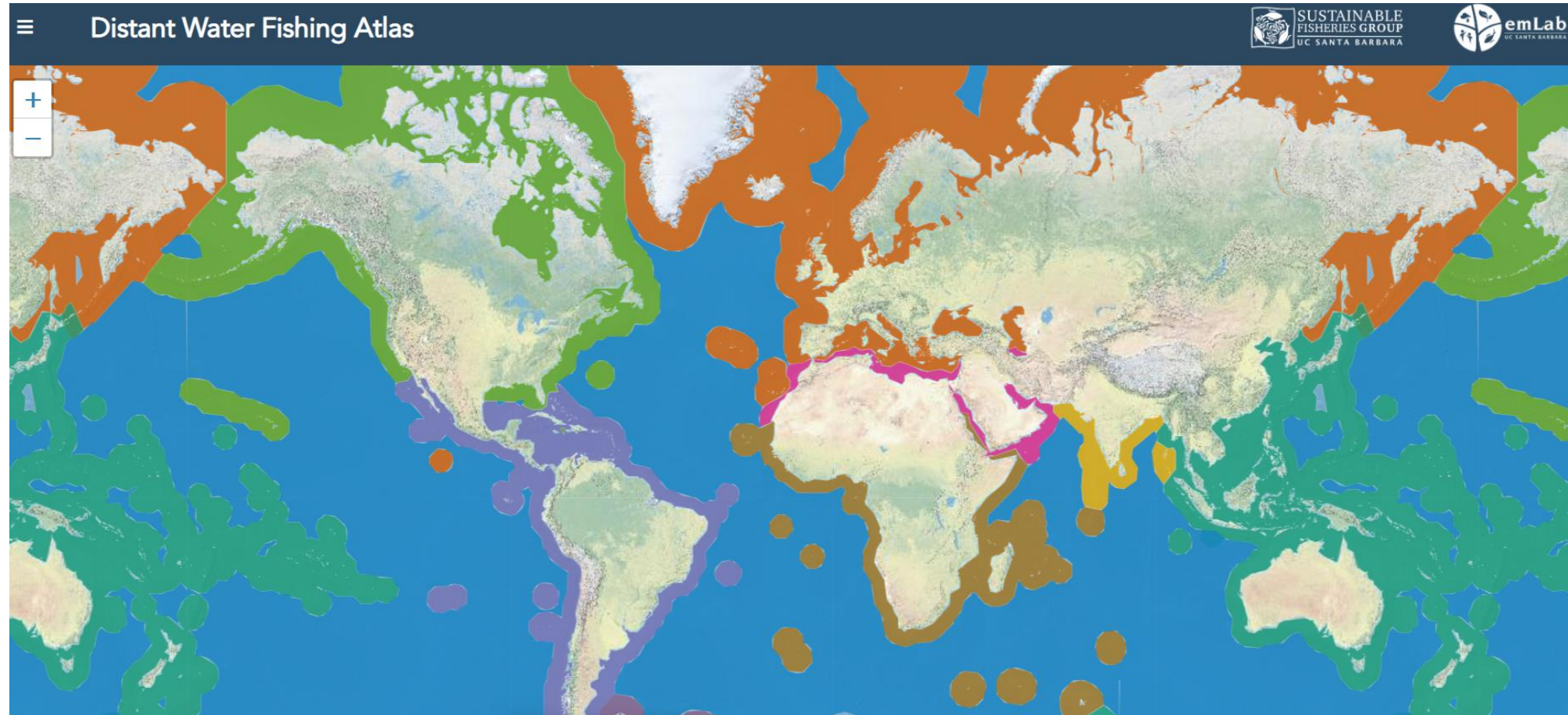
Change in fishing mortality relative to BAU (%)

● -0.08   ● -0.06   ● -0.04   ● -0.02

Scenario Type   ● Ambitious Reform   ● IUU   ● OFOC   ● Other & Multiple   ● Overfished

# Distant Water Fishing Atlas

Harmful subsidies enable unprofitable activity

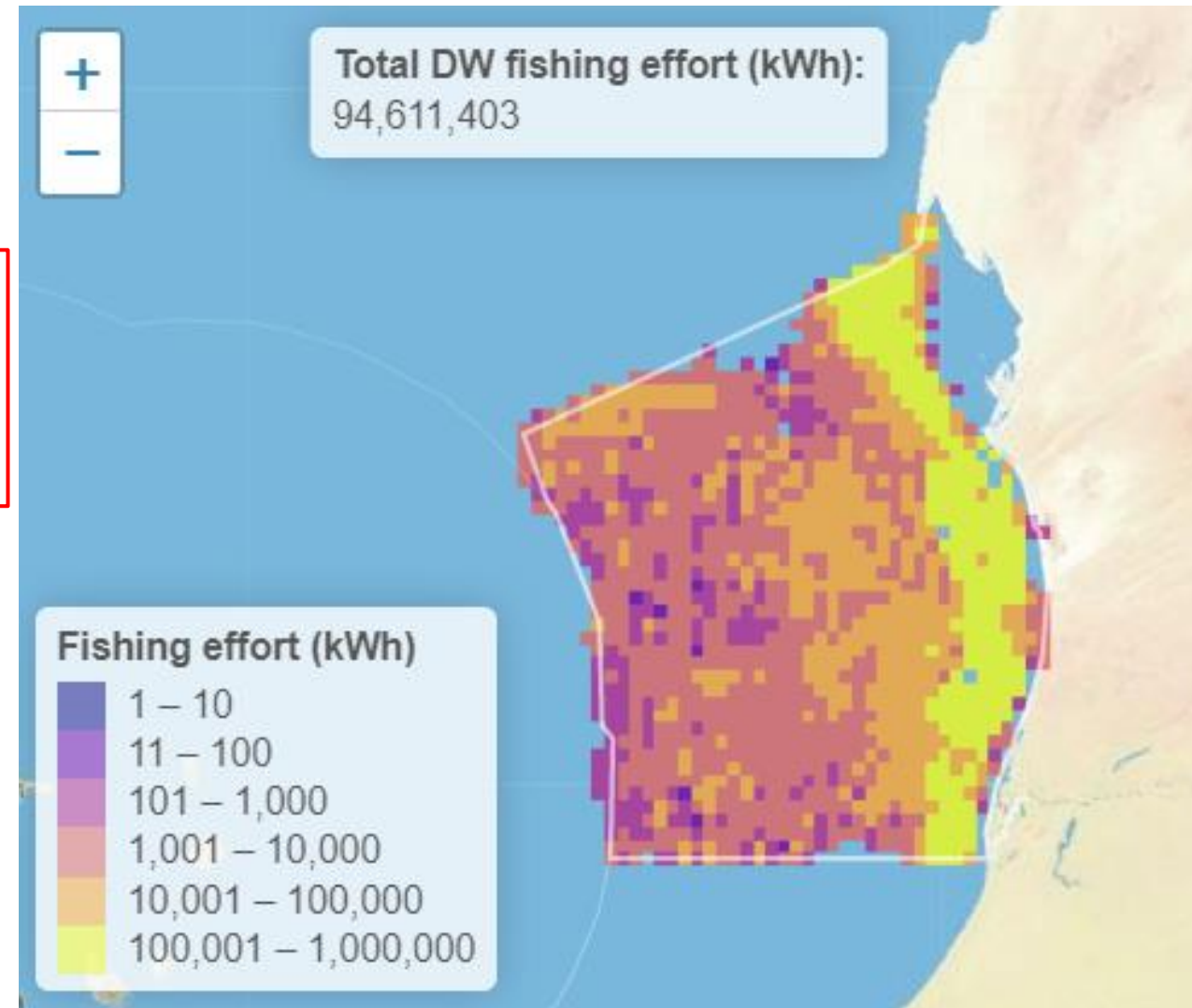


[www.dwfsubsidyatlas.org](http://www.dwfsubsidyatlas.org)



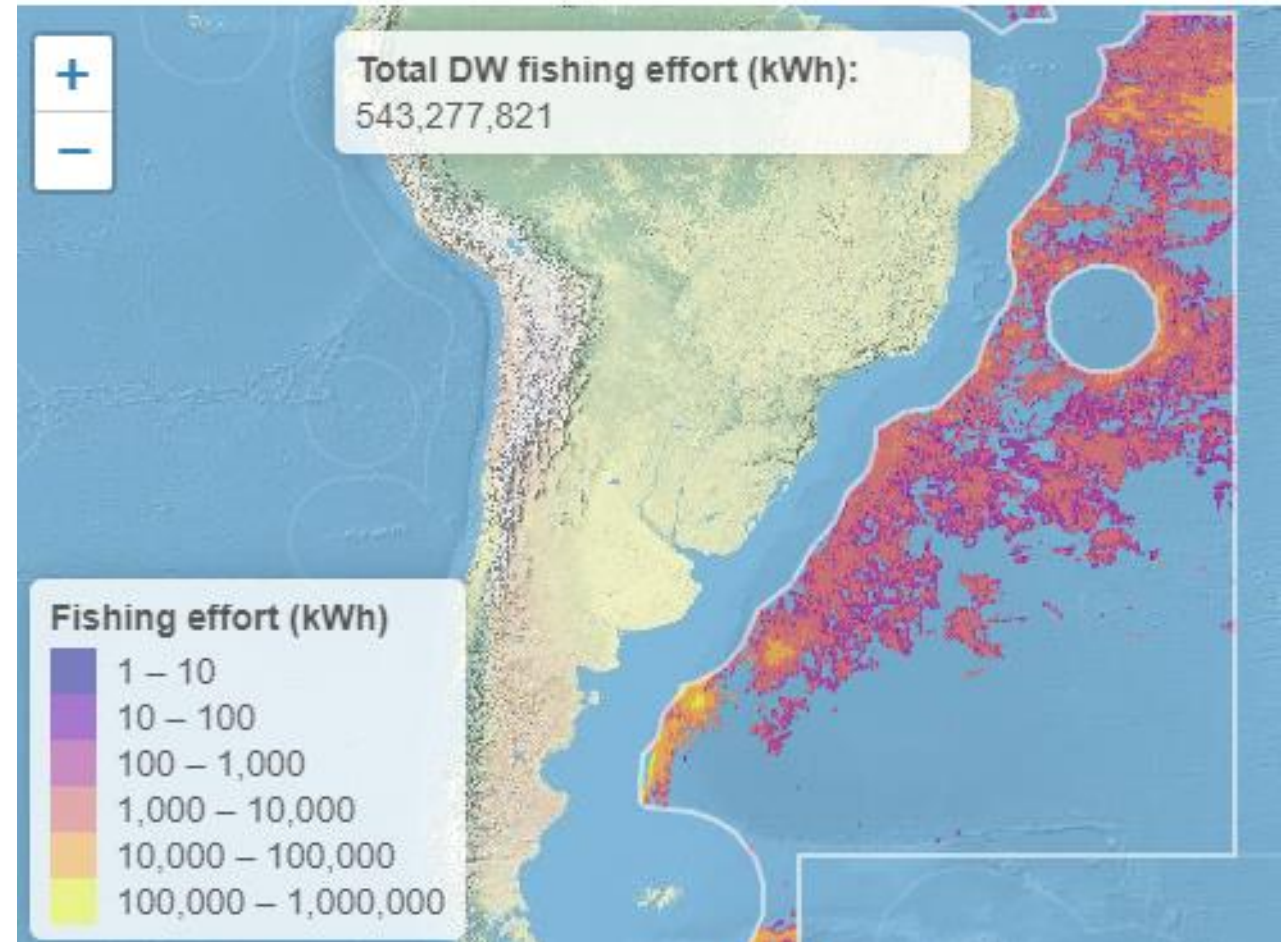
# Mauritania EEZ

Flag state	# DW vessels	Effort (hours)	Effort (kW hours)	Subsidies (2018 \$US)	% subsidies
Spain	45	81520	35858125	33751522	30.6
China	26	46128	28985808	31470500	28.5
Indonesia	2	3166	728808	21326820	19.3
Japan	12	5694	3857173	5346912	4.8
Russia	8	1668	8447199	3203709	2.9
Others	42	15323	16734289	15371326	13.9
<b>Total</b>	<b>135</b>	<b>153499</b>	<b>94611402</b>	<b>110470789</b>	<b>100.0</b>



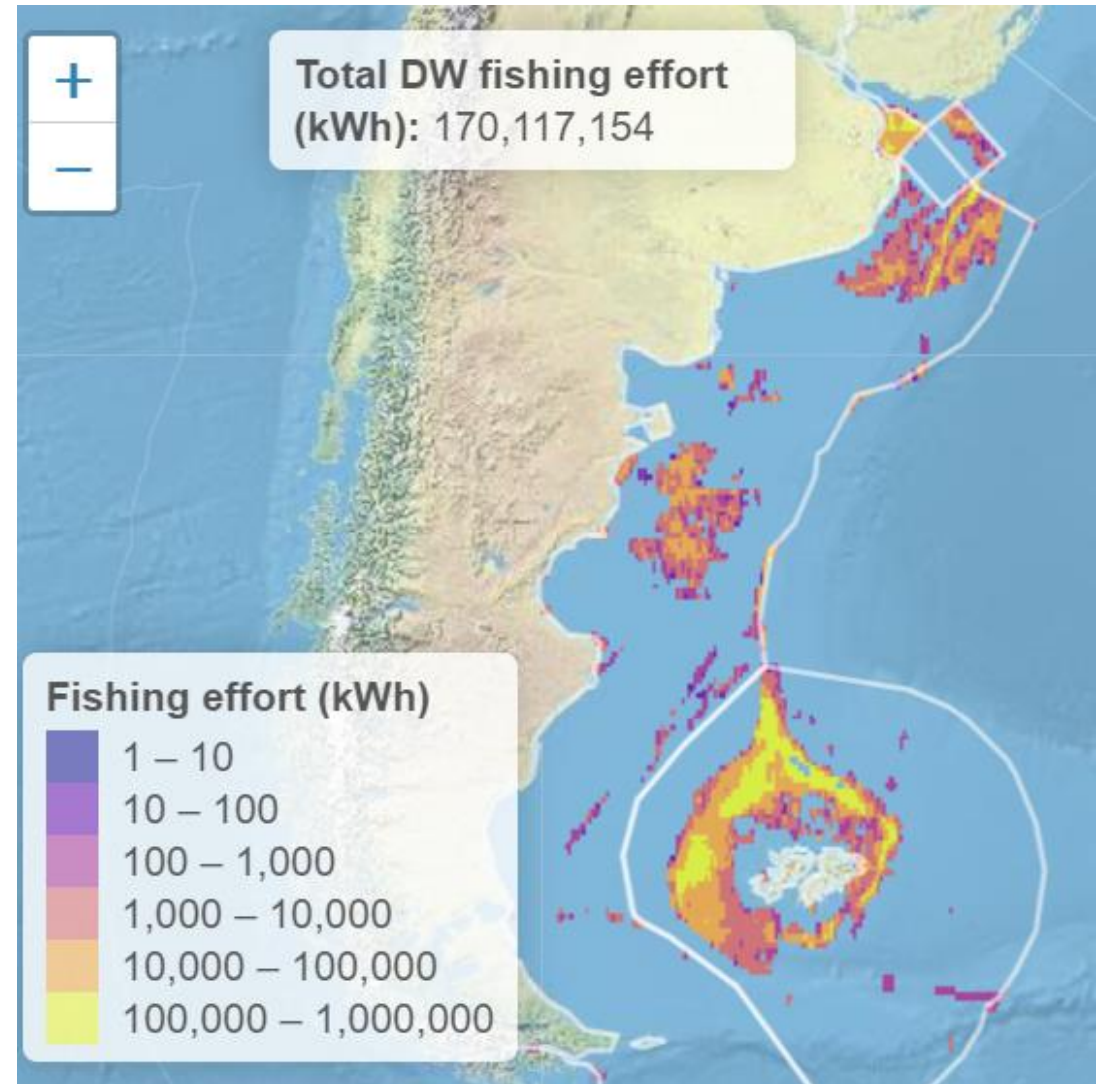
# High Seas Area 41: Southwestern Atlantic Ocean

Flag state	# DW vessels	Effort (hours)	Effort (kW hours)	Subsidies (2018 \$US)	%
China	283	215,736	294,854,529	320,129,751	62.1
South Korea	33	37,687	51,786,360	71,409,642	13.8
Spain	55	73,080	58,226,378	54,805,678	10.6
Chinese Taipei	111	87,094	83,970,816	24,927,574	4.8
Brazil	12	11,736	4,912,553	15,739,552	3.1
Chile	4	3,055	5,226,690	7,497,516	1.5
Argentina	26	513	813,003	375,344	0.1
Others	53	36,361	43,487,489	20,893,914	4.1
<b>Total</b>	<b>577</b>	<b>465,262</b>	<b>543,277,818</b>	<b>515,778,971</b>	<b>100</b>



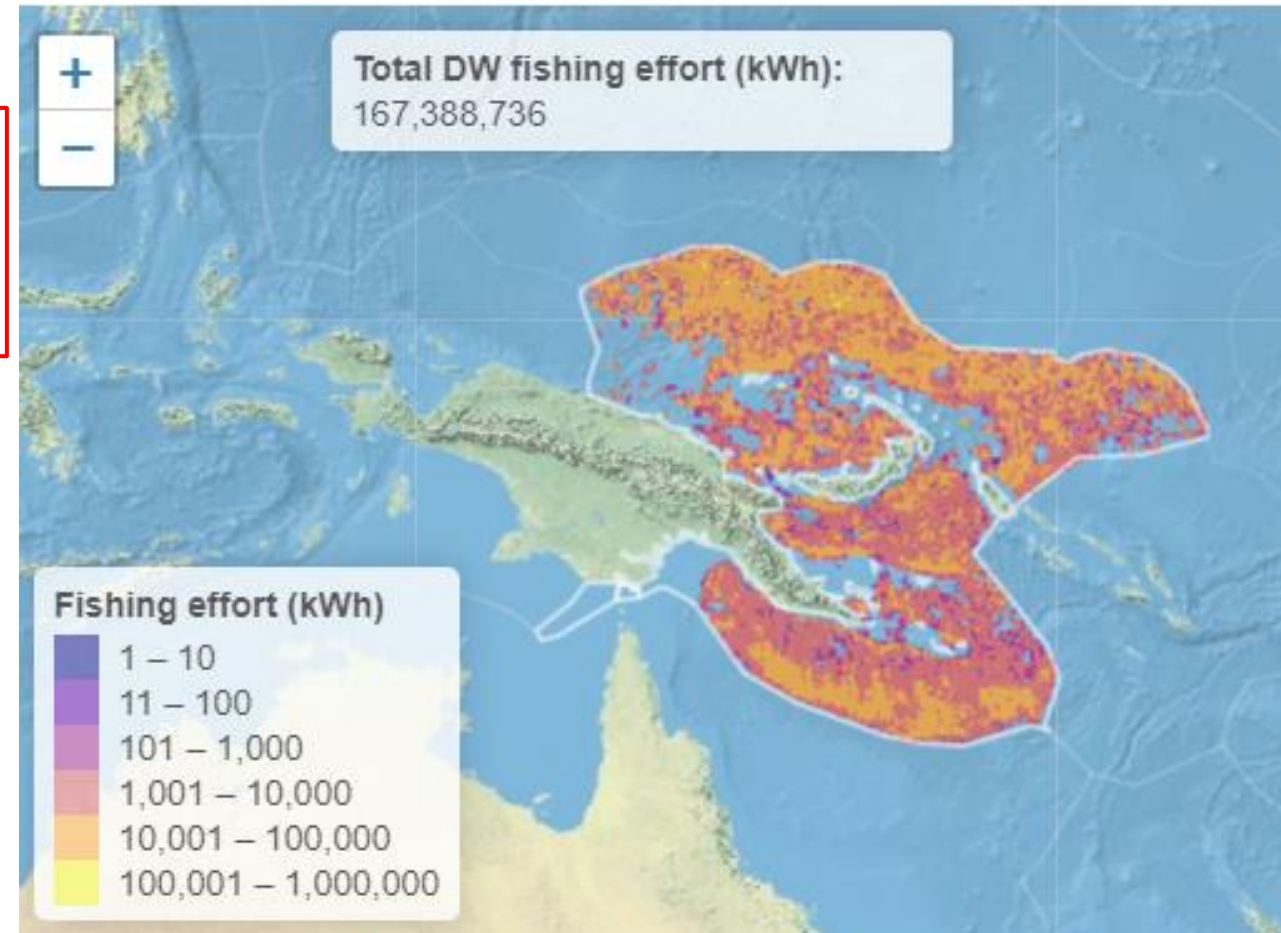
# Argentina EEZ

Flag state	# DW vessels	Effort (hours)	Effort (kW hours)	Subsidies (2018 \$US)	%
Spain	28	31,287	42,811,127	40,296,046	42.4
South Korea	32	16,815	21,506,675	29,656,148	31.2
Chinese Taipei	60	35,757	73,576,933	21,842,046	23.0
Nigeria	1	2,338	2,963,553	991,066	1.0
Russia	1	726	1,455,601	552,056	0.6
China	60	331	447,885	486,278	0.5
Others	60	37,863	27,355,380	1,200,770	1.3
<b>Total</b>	<b>242</b>	<b>125,117</b>	<b>170,117,154</b>	<b>95,024,410</b>	<b>100</b>



# Papua New Guinea EEZ

Flag state	# DW vessels	Effort (hours)	Effort (kW hours)	Subsidies (2018 \$US)	% subsidies
Philippines	17	7829	19128099	107362651	42.8
Japan	46	55877	61301163	84977245	33.8
China	17	26573	22309029	24221381	9.6
South Korea	14	2453	8508416	11732490	4.7
United States	12	4554	10244327	11512773	4.6
Chinese Taipei	33	27848	28401260	8431197	3.4
Micronesia	12	3554	9203969	1224482	0.5
Solomon Islands	3	138	377577	850129	0.3
Vanuatu	3	7931	7041981	403674	0.2
Kiribati	2	115	326349	249307	0.1
Marshall Islands	2	202	541204	165288	0.1
Russia	2	3	3048	1156	0.0
Australia	1	7	2313	374	0.0
<b>Total</b>	<b>164</b>	<b>137084</b>	<b>167388735</b>	<b>251132147</b>	<b>100.0</b>



# DWF effort and subsidies: Key Takeaways

- The largest subsidizers are also most engaged in DWF effort
- Harmful subsidies are known contributors to overfishing, overcapacity, IUU and DWF
- Foreign vessels encroach onto coasts of the countries they visit, competing with the domestic effort
- Eliminating subsidies to distant-water fleets impacting high seas and foreign EEZs must be a significant objective of the second round of negotiations

# THANK YOU

[pewtrusts.org/reducing-harmful-fisheries-subsidies](https://pewtrusts.org/reducing-harmful-fisheries-subsidies)

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**Any questions?**