The Illegal, Unreported and Unregulated Fishing Index

JANUARY 2019

THE GLOBAL INITIATIVE
AGAINST TRANSNATIONAL
ORGANIZED CRIME

POSEIDON
AQUATIC RESOURCE MANAGEMENT

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Acronyms

AIS - Automatic identification systems

CCRF - Code of conduct for responsible fisheries

CMM - Conservation and management measure

CNCP - Cooperating non-contracting party

EEZ - Exclusive economic zone

EU - European Union

FAO - Food and Agriculture Organization (of the UN)

FMC - Fisheries monitoring centre

HSVAR - High seas vessel authorization record

IPOA - International plan of action (to prevent, deter and eliminate illegal, unreported and unregulated fishing)

IUU - Illegal, unreported and unregulated (fishing)

MCS - Monitoring, control and surveillance

MSC - Marine Stewardship Council

NOAA - National Oceanic and Atmospheric Administration

NPOA-IUU - National plan of action (to prevent deter and eliminate illegal, unreported and unregulated fishing)

PSMA - Port State Measures Agreement

RAV - Record of authorized vessels

RFMO - Regional fisheries management organization

SDG - Sustainable Development Goal

UNCLOS - United Nations Convention on the Law of the Sea

UNFSA - United Nations Fish Stocks Agreement

VMS - Vessel monitoring system

Acknowledgements

Citation

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Executive summary

About the IUU Fishing Index

Incentives for illegal, unreported and unregulated (IUU) fishing are considerable given the financial benefits that can accrue in both large- and small-scale fishing operations, and in developed and developing countries alike. IUU fishing is a major threat to the sustainable exploitation of the world's fisheries resources. The negative impacts of IUU fishing are environmental through its depleting effect on fish stocks; fisheries management is impacted by impairing scientific research; and it has profound social and economic impacts on communities, those working in the fisheries sector, and consumers.

Many actions have been taken at international, regional and national levels to reduce IUU fishing. Indicator 14.6.1 of the Sustainable Development Goals (SDGs), related to SDG 14 'Life Below Water', is dedicated to measuring achievements made towards the ambitious target of eliminating IUU fishing by 2020.

There are no reliable estimates of IUU fishing covering all countries and using a standardized methodology to generate comprehensive and reliable figures of volumes and values for IUU fish catches. Doing so would be impossible with any degree of reliability, given the clandestine nature of IUU fishing, the fact that one methodology may not fit all circumstances, and the multiple assumptions that would have to be made. However, the lack of a robust basis by which countries can be benchmarked – regarding both their exposure and response to IUU fishing – poses a problem for those in government, regional fisheries management organizations, donors and civil society in seeking to identify where interventions are most needed.

THE INDEX PROVIDES A MEASURE OF THE DEGREE TO WHICH 152 COASTAL STATES ARE EXPOSED TO AND EFFECTIVELY COMBAT IUU FISHING

This IUU Fishing Index has been developed to address this need. For all 152 coastal countries of the world, a score is calculated based on a suite of 40 indicators. These relate to the prevalence of IUU fishing in each country, and their vulnerability and response to it, drawing on various coastal, flag, port, and other state responsibilities. The scores do not indicate a measure of the volume or value of the IUU fish catch, but they do indicate a standardized measure of performance related to the 40 indicators included in the Index. The Index therefore provides a measure of the degree to which states are exposed to and effectively combat IUU fishing.

The scores allow for comparisons to be made between countries, regions and ocean basins, and serve to identify where action is most needed. The Index, being repeatable and updated in 2020, will allow for changes to be monitored over time.

A dedicated IUU Fishing Index website (IUUfishingindex.net) provides maps to visualize scores by indicator type and responsibility, country ranking data, and 152 individual country profiles which provide scores for each indicator for the country concerned, and show how the country's scores compare with the average scores for the region and the ocean basin(s) in which the country is located.

The database underpinning the IUU fishing scores contains 5 528 separate data entries, based on both publicly available data and expert opinion, with a high (95%) completion rate across all indicators and countries

The Index scores and their implications

The global score across all state responsibilities and types of indicators is 2.29, with individual country scores ranging from 3.93 (the worst) to 1.43 (the best). Sixty-four countries have a score that is worse than this global average, two have the exact same score, and 86 have a better score.

The table below highlights the worst-performing regions and ocean basins for different combinations of indicators related to state responsibilities and indicator types. It serves as a call to action in specific areas. Asia merits special attention given its overall poor rankings, and because it is a region where much progress can be made through positive action. It is the region with the highest scores for all four types of state responsibility indicators, and has the worst overall scores for indicators aggregated by responsibility and type. For the same reason, the Index scores imply the need for focus of action in both the Western Pacific and the East Indian Ocean basins.

Some areas, such as the Western Pacific, that have poor scores for prevalence, have relatively good scores for response, suggesting that there is recognition of the need for action and that high policy priority is given to fisheries by countries and regional institutions. Other regions, such as the Middle East, may have poor response scores because of the low importance attributed to the sector by countries, signalling weak policy focus on the fisheries sector.

Worst-performing regions and ocean basins by indicator group

		Type			
Responsibilities		**Vulnerability**	**Prevalence**	**Response**	**Overall**
	Coastal	• Oceania / Western Pacific	• Asia / Western Pacific	• Caribbean and Central America / East Indian Ocean	• Asia / Western Pacific
	Flag	• North America / Eastern Pacific	• Asia / Western Pacific	• Middle East / Western Pacific	• Asia / Western Pacific
	Port	• North America / East Indian Ocean	• Asia / Western Pacific	• Middle East / West Indian Ocean	• Asia / Western Pacific
	General	• Asia / East Indian Ocean	• Asia / East Indian Ocean	• Middle East / West Indian Ocean	• Asia / East Indian Ocean
	Overall	• N America / Western Pacific	• Asia / Western Pacific	• Middle East / West Indian Ocean	• Asia / Western Pacific

However, the aggregated scores for all countries in a region or ocean basin may obscure the need for action in and by specific countries. The table below shows the countries that have the worst score for different indicator groups. The maps, ranking tables and country profiles on the IUU Fishing Index website provide indicator scores for all individual countries for different combinations of indicator groups. China, Taiwan, Indonesia, Russia and Cambodia are all countries of particular concern.

Developing countries are often especially vulnerable to IUU fishing. In addition, these countries also often lack the resources to fully respond to the challenges of, or combat, IUU fishing. This means that mechanisms need to be established that support developing countries in their drive to combat IUU fishing across applicable state responsibilities. The vulnerability of island states also comes to the fore when ranking scores for both coastal and port state indicators in particular.

Nations operating distant-water fishing fleets that yield poor scores for both flag state/prevalence and flag state/response indicators may be considered as particularly problematic. Solving their poor performance would go a long way to help eliminate IUU fishing globally, and there is a pressing need to hold these countries to account for their actions (or lack thereof), to monitor progress and to take remedial action where appropriate.

The Index scores provide a strong indication that the SDG target – to eliminate IUU fishing by 2020 – will not be achieved, and that combating IUU fishing remains a huge global challenge. The Index can therefore be used to identify where action to address this challenge is most needed.

Updated on a regular basis, the Index can serve as a useful addition to the monitoring of indicator 14.6.1 by the United Nations. It will also be beneficial to those with management responsibilities in governments and regional fisheries-management organizations, those wishing to fund activities aimed at reducing IUU fishing, civil society and consumers, and others, such as seafood buyers, looking to ensure that their sourcing of product responds to an impetus to buy from sustainable sources.

Worst-performing countries by indicator group

		Type			
		Vulnerability	**Prevalence**	**Response**	**Overall**

Responsibilities	**Coastal**	• Japan
		• Kiribati
		• Seychelles
			• Ecuador
			  Philippines
			• Sierra Leone
			  (+ 3 others)
				• Timor-Leste
				• Cambodia
				• Cameroon
				  (+ 6 others)
					• Cambodia
					• Somalia
					• Vietnam

	Flag	• China • France • Japan (+ 4 others)	• China • Taiwan • Panama	• Singapore • China • Libya/Russia	• China • Taiwan • Panama

	Port	• Canada
		• China
		• France
		  (+ 9 others)
			• China
			• Taiwan
			• Vietnam
				• Bahrain
				• Benin
				• Brunei
				  (+ 19 others)
					• China
					• Russia
					• Cambodia

	General	• India • Vietnam • Indonesia	• Thailand • Vietnam • Mexico	• Singapore • Grenada • Yemen	• Viet Nam • Comoros • Cambodia
	Overall	• China • Japan • Russia	• China • Taiwan • Vietnam	• Singapore • Cambodia • Yemen	• China • Taiwan • Cambodia

Notes: Countries with the same scores in rankings are listed alphabetically. Where more countries than shown in the table have the same score, the number of additional countries is provided in brackets.

Introduction

1

1. Introduction

1.1 Background

Annual global production from capture fisheries has remained largely stable for several years at around 90 million tonnes,[1] with 79.3 million tonnes being produced from marine fisheries and 11.6 million tonnes from inland fisheries in 2016. The fishing sector is a multi-billion-dollar business, with around 40 million people employed in capture fishing, plus many millions more in upstream businesses supplying inputs, and downstream marketing and processing. Activities range from individual entrepreneurs operating small, unmotorized dugout canoes, mainly for subsistence or sales of product locally, to huge, vertically integrated fishing companies, with single vessels valued at over US$30 million that move between the fishing zones of several countries. Such companies have millions of dollars invested in processing plants and trade in globalized markets.

Fish is a highly traded commodity and one of the most traded segments of the world food sector. Around 35% of fish harvested (by live weight equivalent) is exported, and in 2016 the value of world exports of fish and fish products was US$143 billion [2]. Different fish species have very different unit values, with some individual tuna selling for tens of thousands of dollars to sashimi markets, while small pelagic species, such as sardine and mackerel destined for canneries, may be sold for as little as US$100–200 per tonne. But, even taking into account these low-value species, the large volumes of fish caught mean the value of fish landed from a single fishing trip can run into hundreds of thousands of dollars.

THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOAL 14, LIFE BELOW WATER, HAS A TARGET TO END IUU FISHING BY 2020

These figures show that the incentives for illegal fishing in the sector are considerable given the financial benefits that can accrue. These incentives exist both in large-scale and small-scale fishing operations, and illegal fishing represents a major threat to the sustainable exploitation of the world's fisheries resources. The negative impacts of IUU fishing are not just environmental: they can also have profound social and economic impacts on communities, those working in the fisheries sector and consumers.

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1. FAO, 2018: State of the Worlds Fisheries and Aquaculture 2016, http://www.fao.org/3/i9942t/I9942T.pdf .
2. Ibid.

Many actions have been taken, mainly since the mid-1990s and the following decade, at international, regional, national and local levels to reduce levels of IUU fishing. These have included international and regional agreements, improvements in monitoring, control and surveillance (MCS), sharing of intelligence and innovative use of technologies to identify and track illegal activity.

Indicator 14.6.1 of the Sustainable Development Goals (SDGs), related to SDG 14 'Life Below Water', is dedicated to measuring achievements made towards the ambitious target of eliminating IUU fishing by 2020.

Despite these actions, however, the prevalence of IUU fishing remains a significant problem. But just how significant is not clear.

1.2 Why have an IUU Fishing Index?

Given the persistent concerns surrounding IUU fishing, several studies in recent years have attempted to measure and report on the extent of the problem. Perhaps the most widely quoted is a study from 2009, 'Estimating the worldwide extent of illegal fishing',[3] which estimated that the volume of IUU-caught fish in 2003 was equivalent to between 11% and 19% of reported catches, or 10 to 26 million tonnes of fish, with a value of between US$10 billion and US$23 billion. However, the age of that study (and its use of 2005 data), the wide range between the upper and lower estimates, the lack of country-specific estimates and concerns over the raising factors used to generate the global estimate mean that it is of little practical use beyond the fact that it provides an alarming set of figures regarding the magnitude of the problem. More recent studies of IUU fishing in specific regions, countries or fisheries are often of low quality, use different methodologies, are patchy in terms of geographical coverage and their focus is often limited to particular fisheries. Consequently, they do not provide the basis for a global estimate or allow for a meaningful comparison of different countries.

At present, there are therefore no reliable estimates of IUU fishing at an aggregated global level that enable comparison between countries using a consistent methodology, and there is no simple way to track changes in IUU fishing dynamics – or to measure progress in reducing it over time.

This leaves those advocating for reduced levels of IUU fishing, those with management responsibilities in governments and regional fisheries management organizations (RFMOs), those wishing to fund actions aimed at reducing it and others, such as seafood buyers looking to ensure sustainable sourcing, all clutching at piecemeal, often unreliable, inconsistent and incomparable data. The lack of a solid basis by which countries can be benchmarked against one another poses a problem for those seeking to identify where interventions are most needed, and for countries themselves in understanding where policy focus should occur, or how their performance compares with others.

This index benchmarks countries according to both their exposure and response to IUU fishing. It measures and maps the prevalence of IUU fishing in 152 coastal states, and the capacity to respond to or counter the threat of IUU fishing, as well as their vulnerability to its exposure. It also compares the degree to which states are combating IUU fishing in four key 'responsibility' domains: coastal, flag, port and general responsibilities. Each maritime state has its own strengths, weaknesses, challenges and vulnerabilities when it comes to the threat posed by IUU fishing. Therefore, by combining these indicators into one comprehensive, comparative global index, practitioners and policymakers can use it as a tool to identify where interventions need to be prioritized. In this sense it fills a critical gap in allowing benchmarking of countries' exposure to, and performance in combating, IUU fishing. The Index, being repeatable and updatable at periodic intervals, will allow for changes to be monitored over time.

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3. DJ Agnew et al, 2009: Estimating the Worldwide Extent of Illegal Fishing. PLOS ONE 4(2): e4570, doi:10.1371/ journal. pone.0004570.

1.3 Methodology

The IUU Fishing Index comprises 40 indicators, with each indicator applied globally to 152 countries with a maritime coastline. The suite of indicators provides a reliable and robust basis for an Index of IUU fishing and for assigning scores to countries.

The scores provide the basis for comparison between countries, regions and ocean basins, and serve to identify where action to combat IUU fishing is most needed.

For each country, a score is provided between 1 and 5 (1 = good/strong; 5 = bad/weak) comprised of weighted indicators belonging to different 'indicator groups'. Indicator groups relate to:

I. RESPONSIBILITIES

Coastal – indicators related to things states should do and their obligations in relation to IUU fishing that are specific to managing their exclusive economic zone (EEZ).

Flag – indicators related to things states should do and their obligations in relation to IUU fishing that are specific to vessels they flag (i.e. that are on their vessel register).

Port – indicators related to things states should do and their obligations in relation to IUU fishing that are specific to managing their ports.

'General' – these are indicators that are not specific to flag, coastal or port state responsibilities, including market-related indicators, and indicators applicable to the sector as a whole.

II. TYPES

Vulnerability – indicators that relate to risks that IUU fishing may occur.

Prevalence – indicators that relate to known/suspected IUU incidents.

Response – indicators that relate to actions setting out to reduce IUU fishing.
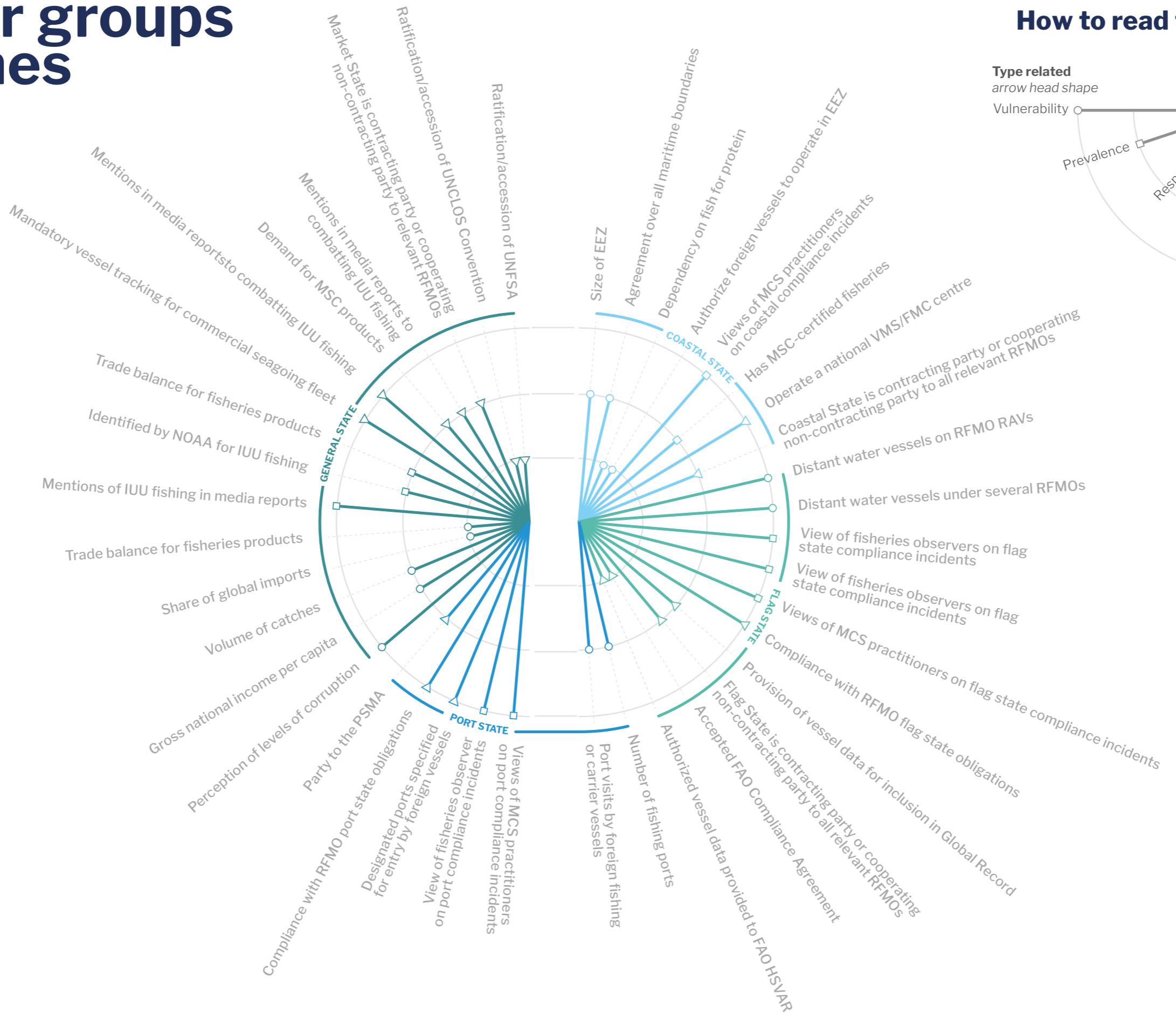
The 40 indicators included are listed on Tables 1 and 2.

TABLE 1
Indicator groups and names

Indicator Group	Indicator Name
Coastal state/ Vulnerability	· Size of EEZ · Agreement over all maritime boundaries · Authorized foreign vessels to operate in EEZ · Dependency on fish for protein
Coastal state/ Prevalence	· Has MSC-certified fisheries · Views of MCS practitioners[4] on coastal compliance incidents
Coastal state/ Response	· Coastal state is contracting party or cooperating non-contracting party to all relevant RFMOs · Operate a national VMS or FMC
Flag state/ Vulnerability	· Distant-water vessels on RFMO RAVs · Distant-water vessels under several RFMOs
Flag state/ Prevalence	· Vessels on IUU lists · View of fisheries observers on flag state compliance incidents · Views of MCS practitioners on flag state compliance incidents
Flag state/ Response	· Accepted FAO Compliance Agreement · Authorized vessel data provided to FAO HSVAR · Provision of vessel data for inclusion in Global Record · Compliance with RFMO flag state obligations · Flag state is contracting party or cooperating non-contracting party to all relevant RFMOs
Port state/ Vulnerability	· Number of fishing ports · Port visits by foreign fishing or carrier vessels
Port state/ Prevalence	· Views of MCS practitioners on port compliance incidents · View of fisheries observers on port compliance incidents
Port state/Response	· Party to the Port State Measures Agreement · Designated ports specified for entry by foreign vessels · Compliance with RFMO port state obligations
General/Vulnerability	· Perception of levels of corruption · Gross national income per capita · Volume of catches · Trade balance for fisheries products · Share of global imports
General/Prevalence	· 'Carded' under the EU IUU Regulation · Identified by the National Oceanic and Atmospheric Administration for IUU fishing · Mentions of IUU fishing in media reports
General/ Response	· Mandatory vessel tracking for commercial seagoing fleet · Ratification/accession of UNCLOS Convention · Ratification of UN Fish Stocks Agreement · Mentions in media reports of combating IUU fishing · Have a national plan of action to prevent, deter and eliminate IUU (NPOA-IUU) fishing · Demand for MSC productss · Market state is contracting party or cooperating non-contracting party to relevant RFMOs

4. Those working for governments in fisheries enforcement agencies.

Indicator groups and names

How to read this diagram

Type related
arrow head shape

Vulnerability

Prevalence

Response

Weighting
radius lenght

Low

Medium

High

Market State is contracting party or cooperating non-contracting party to relevant RFMOs

Ratification/accession of UNCLOS Convention

Ratification/accession of UNFSA

Size of EEZ

Agreement over all maritime boundaries

Dependency on fish for protein

Authorize foreign vessels to operate in EEZ

Views of MCS practitioners on coastal compliance incidents

Has MSC-certified fisheries

COASTAL STATE

Operate a national VMS/FMC centre

Coastal State is contracting party or cooperating non-contracting party to all relevant RFMOs

Distant water vessels on RFMO RAVs

Distant water vessels under several RFMOs

View of fisheries observers on flag state compliance incidents

View of fisheries observers on flag state compliance incidents

Views of MCS practitioners on flag state compliance incidents

FLAG STATE

Compliance with RFMO flag state obligations

Provision of vessel data for inclusion in Global Record

Flag State is contracting party or cooperating non-contracting party to all relevant RFMOs

Accepted FAO Compliance Agreement

Authorized vessel data provided to FAO HSVAR

Number of fishing ports

Port visits by foreign fishing or carrier vessels

Views of MCS practitioners on port compliance incidents

View of fisheries observer on port compliance incidents

Designated ports specified for entry by foreign vessels

Compliance with RFMO port state obligations

PORT STATE

Party to the PSMA

Perception of levels of corruption

Gross national income per capita

Volume of catches

Share of global imports

Trade balance for fisheries products

Mentions of IUU fishing in media reports

Identified by NOAA for IUU fishing

Trade balance for fisheries products

GENERAL STATE

Mandatory vessel tracking for commercial seagoing fleet

Mentions in media reports to combatting IUU fishing

Demand for MSC products

Mentions in media reports to combatting IUU fishing

TABLE 2

Number of indicators in different indicator groups and subgroups

Responsibilities	Number	% of total
Flag	10	25.00%
Coastal	8	20.00%
Port	7	17.50%
General	15	37.50%
TOTAL	40	

Types	Number	% of total
Vulnerability	13	32.50%
Prevalence	10	25.00%
Response	17	42.50%
TOTAL	40	

Subgroups	Number	% of total
Flag vulnerability	2	5.00%
Flag prevalence	3	7.50%
Flag response	5	12.50%
Coastal vulnerability	4	10.00%
Coastal prevalence	2	5.00%
Coastal response	2	5.00%
Port vulnerability	2	5.00%
Port prevalence	2	5.00%
Port response	3	7.50%
General vulnerability	5	12.50%
General prevalence	3	7.50%
General response	7	17.50%
TOTAL	40	

All countries are assigned individual scores, with their scores also allocated to both a region and relevant ocean basin(s), to allow for analysis of Index scores by individual country, region and ocean basin. Scores for any region or ocean basin are the average scores of all countries in that region/ocean basin. Where countries have a coastline in two ocean basins, their scores are included in the averages of both ocean basins.

Sources of data for the indicators include a mix of publicly available sources, country correspondents for certain indicators that require factual data at country level and expert opinion. A full methodological description of the basis for selecting indicators, sources of data, thresholds used for scores between 1 and 5 for the values associated with each indicator, strengths and weaknesses of each indicator, weightings of different indicators, and other technical considerations for compiling the indicator scores and raising the IUU

Index are provided in a separate methodological paper published on the IUU Fishing Index website (**IUUfishingindex.net/methodology**).

The methodological paper openly acknowledges and discusses weaknesses of the Index and its indicators. No composite indicator, or index, can ever be 'perfect', and render through a score – or series of scores – a genuinely truthful picture of a complex real-world situation. An index always remains an approximation, and will always resonate more with the real-world situation on the ground in some places than in others.

The database underpinning the IUU fishing scores contains 5 528 separate data entries, with a high (95%) response/completion rate across all indicators/countries.

Introduction
to the results

2

2. Introduction to the results

2.1 Structure of this report

Results are organized into sections of the report as follows:

Section 3 provides results at an aggregated level, highlighting best- and worst-performing countries, and exploring differences in aggregated scores between regions and ocean basins.

Section 4 provides results pertaining to **coastal** states, presenting data on scores by type (i.e. vulnerability, prevalence and response), and highlighting geographical differences.

Section 5 provides results pertaining to **flag** states, presenting data on scores by type and highlighting geographical differences.

Section 6 provides results pertaining to **port** states, presenting data on scores by type and highlighting geographical differences.

Section 7 provides results pertaining to states in **general** (i.e. not results that are specific to flag, coastal or port states), presenting data on scores by type and highlighting geographical differences.

Section 8 highlights some implications of the results.

Section 9 provides and introduction to the IUU Fishing Index website (IUUfishingindex.net)

2.2 Comments on interpretation of scores

The main use of the IUU fishing scores is to allow for a comparison between countries, regions and ocean basins for single indicators or for different indicator groups. This enables users of the Index to identify better/worse performers by ranking them and to determine where action to combat IUU fishing is most needed. The scores will also be useful for comparative purposes over time, as the Index will be updated in 2020, to assess change and progress.

Scores between indicator groups are not directly comparable because the specification thresholds and weightings differ between indicator groups. So, for example, a score of 2.5 for coastal state indicators is not directly comparable with a score of, say, 2 for port state indicators, and does not imply that coastal state performance is worse than port state performance, or that there is a need to focus more effort on coastal state performance than on port state performance.

The IUU fishing scores for countries contained in the Index are not a proxy for volumes and values of IUU fish catch. They represent a standardized performance score related to the 40 indicators included in the Index. The scores therefore represent a measure of vulnerability, prevalence and response, across different state responsibilities.

The IUU fishing country scores cannot, and should not, be used with any algorithm to generate estimated volumes and values of IUU fish catch for different countries.

Scores of 1 for vulnerability, prevalence and response indicators do not imply that a country has no vulnerability and no IUU fishing, although certainly imply very good performance. Likewise, scores of 5 for response indicators do not imply that a country is doing nothing to combat IUU fishing, but clearly indicate that there are responses to IUU fishing which countries could take.

How to read the fishbone graphics used in this report

Skull and tail

Represents the overall IUU Fishing score, larger fish skull and tail showing high/poor scores
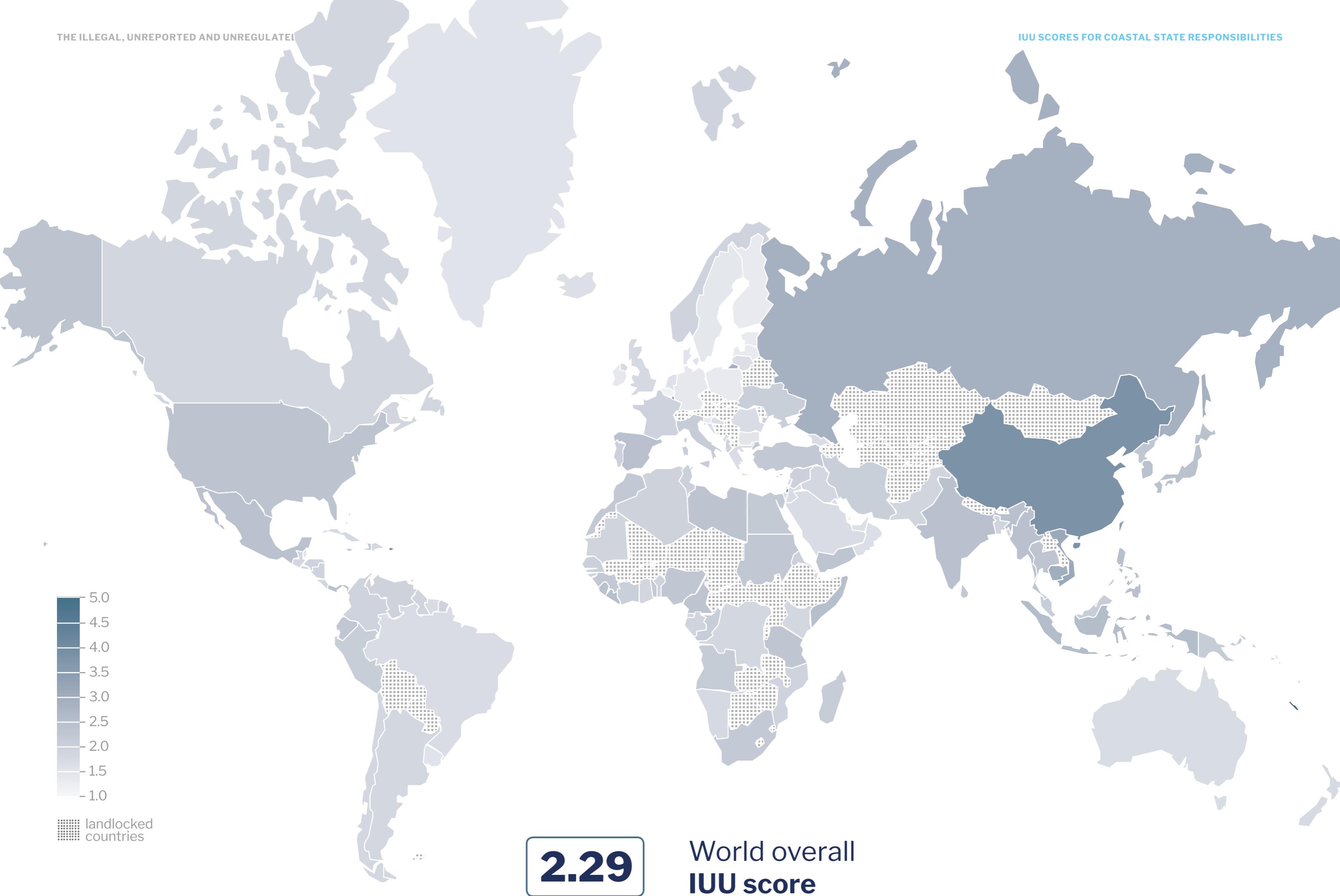
Fishbones

The fishbones represent the coastal, flag, port, and general state responsibilities, with larger fishbones showing high/poor scores.

5

3

1

Coastal   General

Flag   Port

IUU fishing scores for all state responsibilities

3

- 5.0
- 4.5
- 4.0
- 3.5
- 3.0
- 2.5
- 2.0
- 1.5
- 1.0

landlocked
countries

2.29

World overall
IUU score

3. IUU fishing scores aggregated across all state responsibilities

3.1 Introduction and distribution of scores

The distribution of individual country scores aggregated by indicator responsibility (shown below) indicates that no countries have scores of over 4; only one has a score of under 1.5. A large number of countries (123 or 81%) fall within the 2 to 2.99 score boundaries. When the scores aggregated by responsibility are broken down by indicator type (vulnerability, prevalence and response), scores for countries are more widely distributed for response and vulnerability indicators. Prevalence scores show a high percentage of countries (89%) that fall within a score range of 1 to 1.99.

TABLE 3

Number of countries within score ranges for IUU fishing scores aggregated across all responsibilities

Range	IUU Score Distribution	Vulnerability Score Distribution	Prevalence Score Distribution	Response Score Distribution
4.50—4.50	0	0	0	0
4.00—4.49	0	3	1	3
3.50—3.99	1	17	1	13
3.00—3.49	5	49	1	32
2.50—2.99	30	50	1	24
2.00—2.49	93	28	12	53
1.50—1.99	22	5	44	26
1.00—1.49	1	0	92	1

3.2 Key findings

Tables 4 and 5 show the ten countries with the highest (worst performing) and lowest (best performing) scores for aggregated responsibilities, for all types of indicators, and for indicators broken down by vulnerability, prevalence and response. They also show scores by region and ocean basin.

A full list of scores for all 152 countries aggregated across responsibilities is provided in the Annex at the end of this report.

The reasons underlying these scores is more fully discussed in later sections of this report, which consider coastal, flag, port and general state responsibilities, and the indicators associated with them.

However, in summary, the following factors are of interest:

The global total score aggregated across all state responsibilities and types of indicator is 2.29.

Individual country scores, aggregated across all indicator responsibilities and types, range from 3.93 for China (the worst-performing country) to 1.43 for Belgium (the best-performing country).

China, Indonesia, Russia and Cambodia all feature among the ten worst-performing countries for two out of three indicator types.

For scores aggregated by both state responsibility and type of indicator, the worst-performing countries are all in Asia, and the region has four countries in the ten worst-performing countries. Africa has four of the ten countries with the worst scores, the Middle East one, and Europe one (Russia[5]).

For scores aggregated by both state responsibility and type of indicator, eight of the ten countries with the best scores are in Europe. The Asian country with the best score is Brunei, ranked 67th out of 152 countries.

European countries dominate the list of ten best-performing countries in terms of prevalence, along with Canada and New Zealand, but top performers in terms of response are from five of the eight regions, while countries with best scores in terms of vulnerability are to be found in the European, South American, Caribbean and Central American regions.

When considering the performance of different regions and ocean basins for all types of indicators combined, the Asian region and the Western Pacific basin (bordering the Asian continent) produce the worst scores, while the European region and the East Atlantic ocean basin (bordering the European and African continents) have the best. Asia is also the region with the worst prevalence score. The two Pacific regions (west and east) come to the fore as the most vulnerable.

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5. Note that although Russia straddles both the East Atlantic and Western Pacific ocean basins, all countries are allocated to one geographical region only; for the Index, Russia has been assigned to the European region.

TABLE 4

Ten worst-performing countries
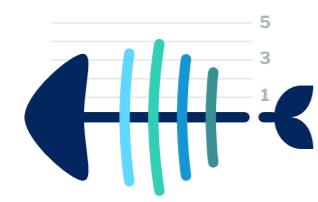
for IUU fishing scores by type, aggregated by responsibility

All types
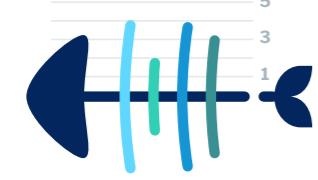
#1 China

3.93
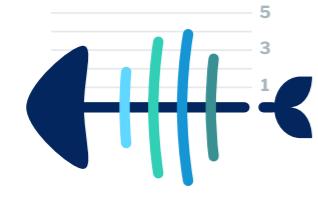
#2 Taiwan

3.34
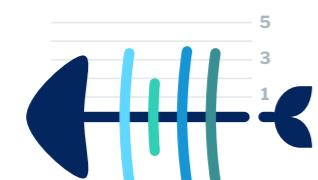
#3 Cambodia

3.23
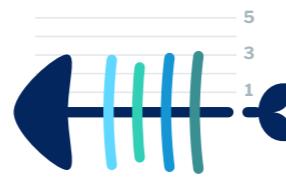
#4 Russia

3.16
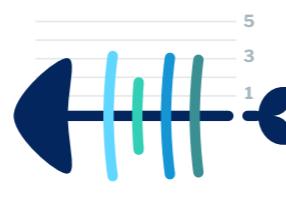
#5 Vietnam

3.16
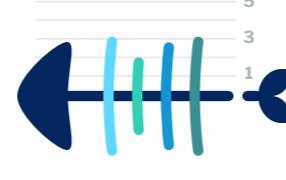
#6 Sierra Leone

3.01
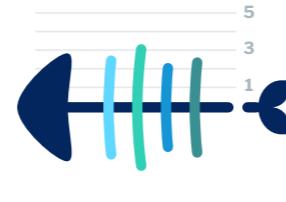
#7 Yemen

2.96

#8 Sudan

2.77

#9 Liberia

2.76

#10 Somalia

2.75

The fishbone colours, by responsibility:

● Coastal   ● Flag   ● Port   ● General

Vulnerability

China	4.44
Japan	4.28
Russia	4.22
USA	3.96
France	3.92
Indonesia	3.92
Philippines	3.92
S Korea	3.91
Spain	3.91
Morocco	3.84

Prevalence

China	4.44
Taiwan	4.28
Vietnam	4.22
Thailand	3.96
Panama	3.92
Russia	3.92
Cambodia	3.92
Sierra Leone	3.91
Ecuador	3.91
Indonesia	3.84

Response

Singapore	4.29
Cambodia	4.00
Yemen	4.00
Saint Lucia	3.81
Haiti	3.80
N Korea	3.75
Iraq	3.73
Cameroon	3.71
Jamaica	3.71
Grenada	3.71
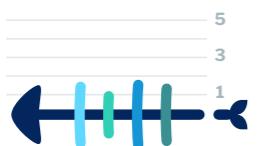
TABLE 5

Ten best-performing countries
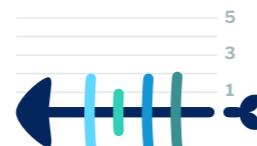
for IUU fishing scores by type, aggregated by responsibility

All types

#1 Belgium

1.43
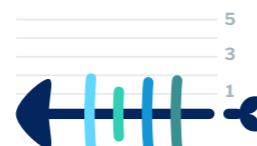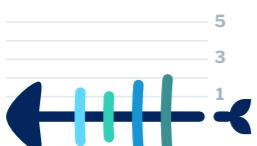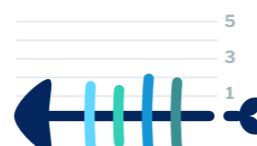
#2 Latvia

1.57

#3 Estonia

1.67

#4 Finland

1.67

#5 Poland

1.68

#6 Sweden

1.73

#7 Bulgaria

1.74

#8 Belize

1.78

#9 Tonga

1.82
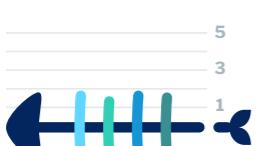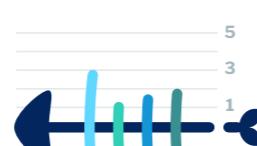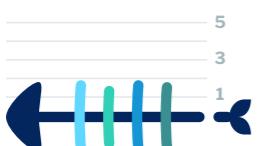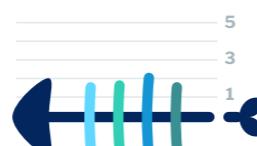
#10 Ireland

1.85

The fishbone colours, by responsibility:

● Coastal   ● Flag   ● Port   ● General

Vulnerability

Monaco	1.56
Belgium	1.80
Slovenia	1.80
Uruguay	1.87
Barbados	1.95
Dominica	2.00
Estonia	2.00
Latvia	2.00
Finland	2.05
Israel	2.05

Prevalence

Canada	1.00
Denmark	1.00
Iceland	1.00
New Zealand	1.00
Norway	1.00
Sweden	1.00
Ireland	1.07
Estonia	1.15
Finland	1.22
France	1.22

Response

Belgium	1.28
Poland	1.50
Latvia	1.53
Bulgaria	1.53
Ghana	1.56
USA	1.56
Australia	1.58
Belize	1.61
Iceland	1.62
Canada	1.64
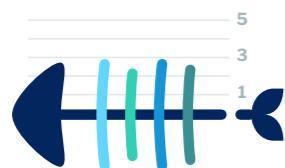
TABLE 6

Scores for regions
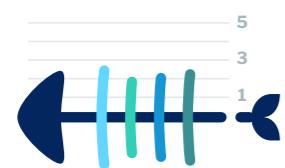
by type, aggregated by responsibility

All types
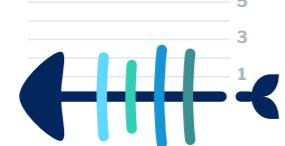
#1 Asia

2.69
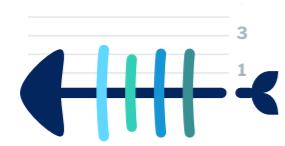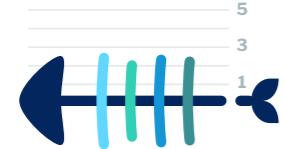
#2 Africa

2.38

#3 Middle East

2.32

#4 Caribbean and Central America

2.24

#5 South America

2.19

#6 Oceania

2.16

#7 North America

2.13

#8 Europe

2.05

World overall

2.29

The fishbone colours, by responsibility:

● Coastal   ● Flag   ● Port   ● General

Vulnerability

North America	3.71
Asia	3.32
Oceania	3.06
Africa	3.05
South America	2.90
Europe	2.75
Middle East	2.60
Caribbean and Central America	2.58
World overall	2.91

Prevalence

Asia	2.05
Africa	1.57
South America	1.51
Caribbean and Central America	1.48
Oceania	1.44
North America	1.43
Europe	1.37
Middle East	1.33
World overall	1.54

Response

Middle East	3.24
Asia	2.77
Caribbean and Central America	2.70
Africa	2.60
South America	2.27
Oceania	2.15
Europe	2.10
North America	1.60
World overall	2.48

TABLE 7
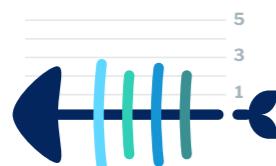
Scores for ocean basins

by type, aggregated by responsibility

All types
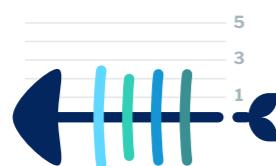
#1 Western Pacific

2.48
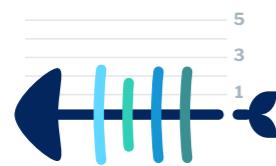
#2 East Indian Ocean

2.46
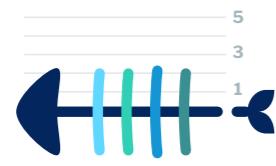
#3 West Indian Ocean

2.36
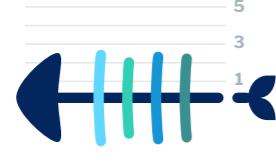
#4 Mediterranean and Black Sea

2.24

#5 Eastern Pacific

2.22

#6 West Atlantic

2.22

#7 East Atlantic

2.21

World overall

2.29

The fishbone colours, by responsibility:

● Coastal   ● Flag   ● Port   ● General

Vulnerability

Western Pacific	3.27
East Indian Ocean	3.20
Eastern Pacific	3.14
East Atlantic	2.96
West Indian Ocean	2.87
Mediterranean and Black Sea	2.86
West Atlantic	2.70
World overall	2.91

Prevalence

Western Pacific	1.88
East Indian Ocean	1.76
Eastern Pacific	1.60
West Indian Ocean	1.50
East Atlantic	1.47
West Atlantic	1.47
Mediterranean and Black Sea	1.42
World overall	1.54

Response

West Indian Ocean	2.78
West Atlantic	2.57
East Indian Ocean	2.51
Mediterranean and Black Sea	2.51
Western Pacific	2.41
East Atlantic	2.28
Eastern Pacific	2.07
World overall	2.48
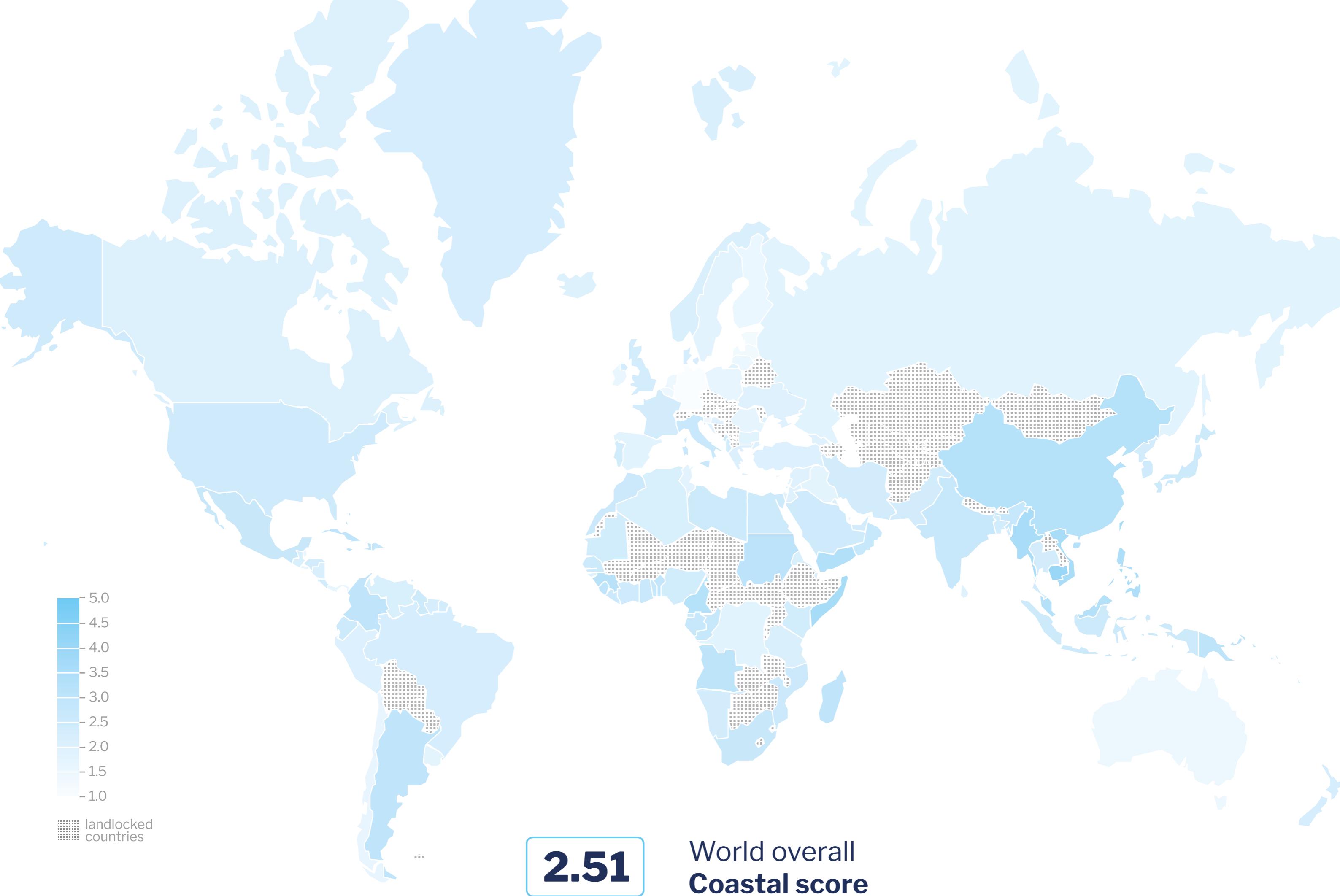
IUU fishing scores for coastal state responsibilities

4

landlocked
countries

5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0

2.51 World overall
Coastal score

4. IUU scores for coastal state responsibilities

TABLE 8
Coastal state indicators

Indicator Group	Indicator Name
Coastal state/ Vulnerability	· Size of EEZ · Agreement over all maritime boundaries · Authorized foreign vessels to operate in EEZ · Dependency on fish for protein
Coastal state/ Prevalence	· Has MSC-certified fisheries · Views of MCS practitioners on coastal compliance incidents
Coastal state/ Response	· Coastal state is contracting party or cooperating non-contracting party to all relevant RFMOs · Operate a national VMS/FMC centre

4.1 Introduction and distribution of scores

Indicators included within the coastal state responsibilities indicator group are shown in the table below. Large EEZs, a failure to have agreed maritime boundaries, authorizing foreign vessels to fish in a state's EEZ and high dependency on fish for protein, all serve to increase the risk of IUU fishing. Having MSC-certified fisheries provides an indication that actual levels of IUU fishing may be low given MSC-criteria associated with certification. And the views of those working in MCS also provide a good indication of which countries most commonly exhibit compliance incidents reflecting of IUU fishing. Responses by states that can help better ensure reduced levels of IUU fishing in their EEZs include becoming a contracting party or cooperating non-contracting party (CNCP) to the RFMOs relevant to the ocean basins in which the state is located, and establishing an FMC capable of identifying and monitoring vessel location through the use of VMS.

THE DISTRIBUTION OF INDIVIDUAL COUNTRY SCORES (SEE TABLE 9) INDICATES THAT WHEN CONSIDERING ALL INDICATOR TYPES COMBINED FOR COASTAL STATE RESPONSIBILITIES, 142 COUNTRIES (I.E. 93% OF THOSE IN THE INDEX) SCORE BETWEEN 1.5 AND 3.49.

The distribution of individual country scores (see Table 9) indicates that when considering all indicator types combined for coastal state responsibilities, 142 countries (i.e. 93% of those in the Index) score between 1.5 and 3.49. Vulnerability scores are the most distributed across all score ranges for the different types of indicators. Prevalence and response indicators both have over 68% of countries scoring within a single score range (2.5 to 2.99 in the case of prevalence indicators, and 1 to 1.49 in the case of response indicators).

TABLE 9
Number of countries within score ranges for coastal state IUU fishing Scores

Range	Coastal	Coastal by Vulnerability	Coastal by Prevalence	Coastal by Response
4.50—4.50	0	20	1	1
4.00—4.49	1	27	5	8
3.50—3.99	7	23	8	0
3.00—3.49	22	25	6	22
2.50—2.99	49	16	106	0
2.00—2.49	49	18	8	1
1.50—1.99	22	17	2	16
1.00—1.49	2	6	16	104

4.2 Key findings

Tables 10 and 11 show the ten best- and worst-performing countries in terms of coastal state responsibilities, by indicator type, and scores by region and ocean basin. Comments, observations and explanations include:

The average IUU fishing score for coastal state responsibilities, aggregated for all types of indicator, is 2.51.

Individual country scores, aggregated across types for coastal responsibilities range from 4.00 for Cambodia (the worst-performing country) to 1.19 for Germany (the best-performing country).

While France and Denmark appear as European countries that are particularly vulnerable to IUU fishing, and Albania as a European country with a poor response to IUU fishing, the worst performers generally (across all types) are located in Asia, Oceania and Africa.

Only two out of the ten most vulnerable coastal states do not have a geographical layout consisting of, or encompassing substantial island territory, underlining the general vulnerability of island states to IUU fishing – developed and developing alike.

In a similar vein, six out of the ten worst coastal state responders to IUU are developing island states, underlining the combination of strong exposure to risk and weak governance among such states.

European countries dominate the lists of best coastal state performers across all types.

With regard to regions, Oceania has the highest score for vulnerability to IUU fishing, reflecting the region's scores for the four vulnerability indicators. Countries in this region often have large EEZs; lack agreement over all maritime borders; allow foreign vessels access

to generate licence revenue given the state of development of their own fishing industries; are home to migratory tuna resources; and have a high dependence on fish protein.

However, in terms of prevalence of IUU fishing in coastal state waters, Asia as a region ranks as the worst, and second worst in terms of response to IUU, after the Caribbean and Central American region.

In terms of ocean basins, the Western Pacific comes to the fore as the most vulnerable, for the same reasons as stated above for Oceania. However it performs well compared to other ocean basins in terms of response. The East and West Indian Ocean basins have the worst scores for prevalence indicators.
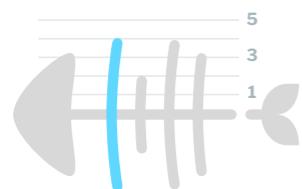
TABLE 10

Ten worst-performing countries

for coastal state responsibility IUU fishing scores, by indicator type

All types
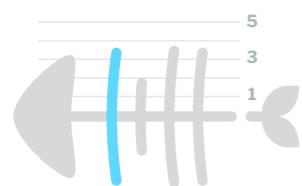
#1 Cambodia

4.00
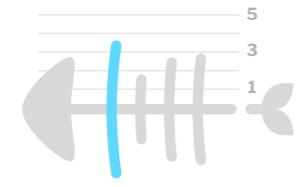
#2 Somalia

3.69

#3 Vietnam

3.64

#4 Myanmar

3.63

#5 Taiwan

3.63
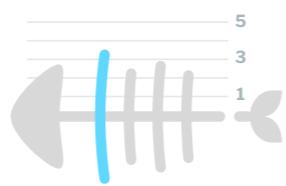
#6 Kiribati

3.50

#7 Timor-Leste

3.50

#8 Philippines

3.50

#9 Seychelles

3.38

#10 Yemen

3.38

Vulnerability

Japan	5.00
Kiribati	5.00
Seychelles	5.00
China	4.83
Fiji	4.83
France	4.83
Philippines	4.83
Vietnam	4.75
Denmark	4.67
Mauritius	4.67

Prevalence

Ecuador	5.00
Philippines	4.40
Sierra Leone	4.40
Somalia	4.40
Taiwan	4.40
Thailand	4.40
Cambodia	3.80
China	3.80
Colombia	3.80
Gabon	3.80

Response

Timor-Leste	4.60
Cambodia	4.20
Cameroon	4.20
Haiti	4.20
Jamaica	4.20
Myanmar	4.20
Saint Kitts and Nevis	4.20
Saint Lucia	4.20
Togo	4.20
Albania	3.40

TABLE 11

Ten best-performing countries

for coastal state responsibility IUU fishing scores, by indicator type

All types

#1 Germany

1.19
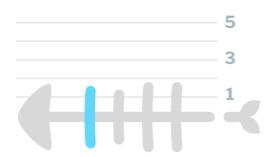
#2 Estonia

1.44

#3 Latvia

1.50

#4 Slovenia

1.56

#5 Belgium

1.63

#6 Australia

1.63

#7 Netherlands

1.63

#8 Finland

1.69

#9 Belize

1.69
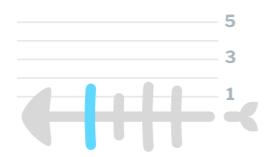
#10 Lithuania

1.69

Note: Spain, Sweden and the UK also score 1 for prevalence indicators. Another 94 countries score 1 for response indicators.

Vulnerability

Djibouti	1.00
Monaco	1.00
Slovenia	1.17
Bahrain	1.25
Belgium	1.33
Latvia	1.33
Belize	1.50
Estonia	1.50
Germany	1.50
Lithuania	1.50

Prevalence

Australia	1.00
Canada	1.00
Denmark	1.00
France	1.00
Germany	1.00
Iceland	1.00
Netherlands	1.00
New Zealand	1.00
Norway	1.00
Russia	1.00

Response

Algeria	1.00
Angola	1.00
Australia	1.00
Bahrain	1.00
Barbados	1.00
Belgium	1.00
Belize	1.00
Bosnia and Herzegovina	1.00
Brazil	1.00
Bulgaria	1.00
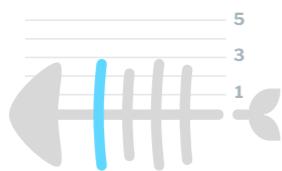
TABLE 12

Coastal state scores for region

and indicator type

All types

#1 Asia

2.94

#5 South America

2.41

#2 Oceania

2.82

#6 North America

2.33

#3 Africa

2.69

#7 Middle East

2.28
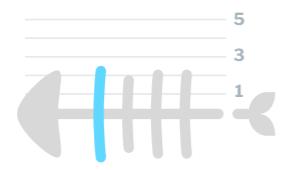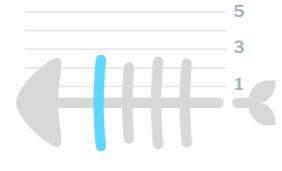
#4 Caribbean and Central America

2.54

#8 Europe

1.99

World overall

2.51

Vulnerability

Oceania	4.28
North America	4.20
Asia	3.48
Africa	3.37
South America	3.00
Europe	2.70
Caribbean and Central America	2.67
Middle East	2.44
World overall	3.17

Prevalence

Asia	3.00
South America	2.90
Africa	2.83
Caribbean and Central America	2.60
Middle East	2.60
Oceania	2.40
Europe	1.99
North America	1.80
World overall	2.58

Response

Caribbean and Central America	2.28
Asia	2.14
Africa	1.64
Oceania	1.48
Middle East	1.33
South America	1.20
Europe	1.18
North America	1.00
World overall	1.60

TABLE 13

Coastal state scores for ocean basin
and indicator type
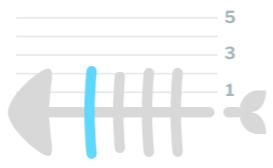
All types
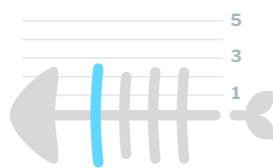
#1 Western Pacific

2.89

#5 East Atlantic

2.35
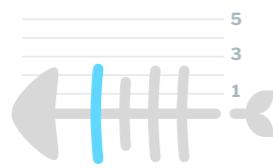
#2 East Indian Ocean

2.70

#6 Eastern Pacific

2.31

#3 West Indian Ocean

2.63
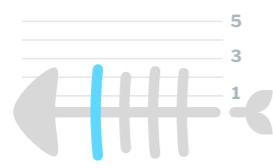
#7 Mediterranean and Black Sea

2.17

#4 West Atlantic

2.55

World overall

2.51

Vulnerability

Western Pacific	4.04
West Indian Ocean	3.30
East Atlantic	3.17
East Indian Ocean	3.04
Eastern Pacific	3.03
West Atlantic	2.91
Mediterranean and Black Sea	2.60
World overall	3.17

Prevalence

Western Pacific	2.73
West Indian Ocean	2.72
East Indian Ocean	2.69
Eastern Pacific	2.66
West Atlantic	2.61
Mediterranean and Black Sea	2.48
East Atlantic	2.28
World overall	2.58

Response

East Indian Ocean	2.28
West Atlantic	1.99
Western Pacific	1.62
West Indian Ocean	1.52
East Atlantic	1.42
Mediterranean and Black Sea	1.21
Eastern Pacific	1.14
World overall	1.60
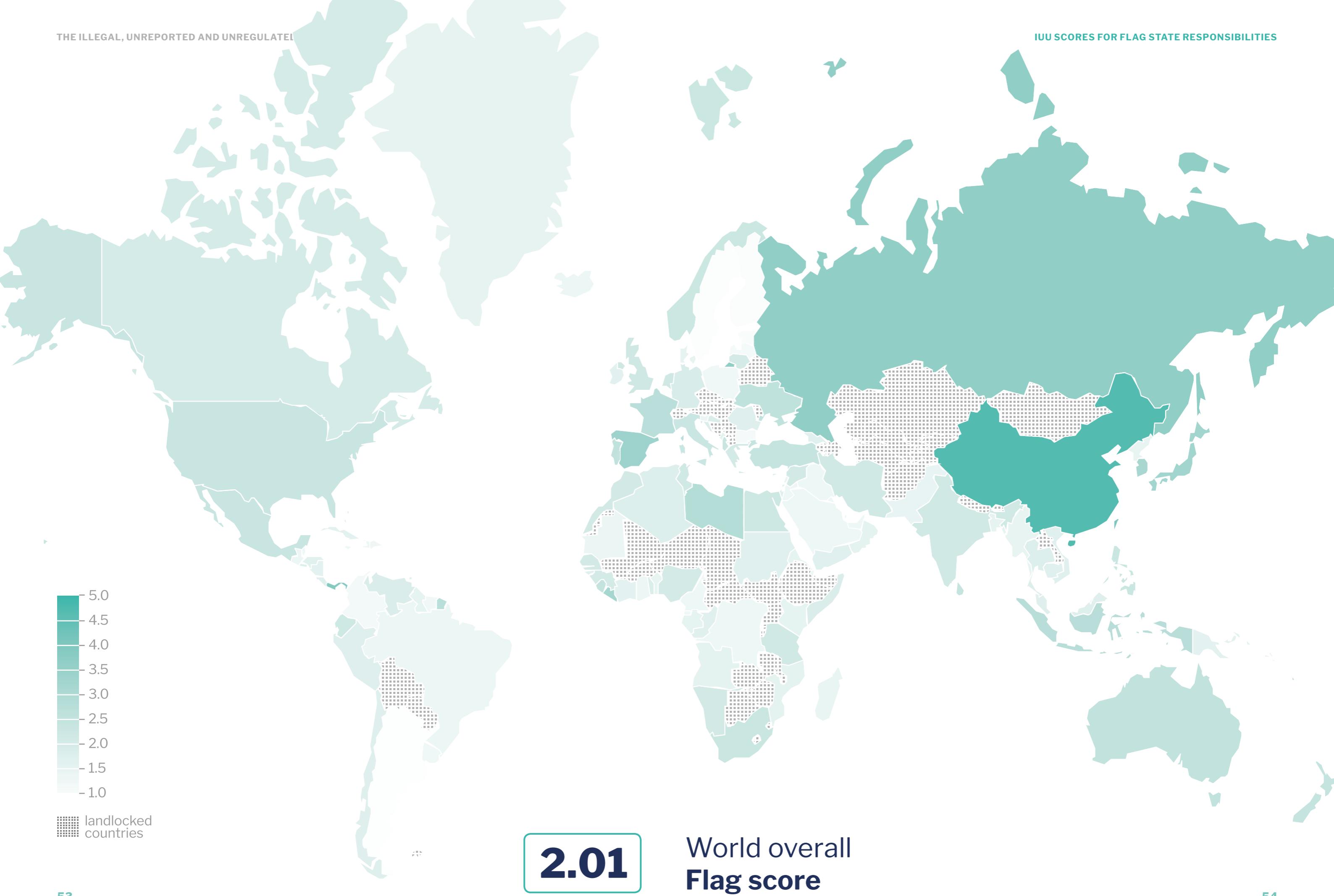
IUU fishing scores for flag state responsibilities

5

5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0

landlocked
countries

2.01

World overall
Flag score

5. IUU scores for flag state responsibilities

5.1 Introduction and distribution of scores

Indicators included within the flag state responsibilities indicator group are shown in Table 14. Having vessels fishing outside of a state's own waters increases flag state vulnerability/risk of IUU fishing. Having vessels on IUU fishing vessel lists indicates that illegal fishing is taking place by vessels flagged to specific countries, and views of observers and MCS practitioners also provide an indication of IUU fishing and faltering flag state responsibility. Responses that flag states can take to combat IUU fishing by vessels they flag include adherence to international instruments and initiatives, and active engagement with relevant RFMOs and flag state obligations, as specified in the conservation and management measures (CMMs) of those RFMOs.

THE DISTRIBUTION OF INDIVIDUAL COUNTRY SCORES (SHOWN IN TABLE 15) INDICATES THAT FOR ALL TYPES OF FLAG INDICATORS COMBINED, 80 COUNTRIES (52% OF THE TOTAL) HAVE SCORES THAT FALL BETWEEN 1.5 AND 1.99.

TABLE 14

Flag state indicators

Indicator Group	Indicator Name
Flag state/ Vulnerability	Distant-water vessels on RFMO RAVs Distant-water vessels under several RFMOs
Flag state/ Prevalence	Vessels on IUU lists View of fisheries observers on flag state compliance incidents Views of MCS practitioners on flag state compliance incidents
Flag state/ Response	Accepted FAO Compliance Agreement Authorized vessel data provided to FAO HSVAR Provision of vessel data for inclusion in Global Record Compliance with RFMO flag state obligations Flag state is contracting party or cooperating non-contracting party to all relevant RFMOs

The distribution of individual country scores (shown in Table 15) indicates that for all types of flag indicators combined, 80 countries (52% of the total) have scores that fall between 1.5 and 1.99. By indicator type, vulnerability scores are the most widely distributed followed by flag/response scores, with prevalence scores being highly concentrated in the lower score bands.

TABLE 15

Number of countries within score ranges for flag state IUU fishing scores

Range	Flag	Flag by Vulnerability	Flag by Prevalence	Flag by Response
4.50—4.50	1	16	1	1
4.00—4.49	1	3	1	3
3.50—3.99	2	12	1	12
3.00—3.49	4	11	3	**57**
2.50—2.99	14	9	1	40
2.00—2.49	34	11	13	19
1.50—1.99	**80**	17	14	12
1.00—1.49	16	**73**	**118**	8

5.2 Key findings

The tables below show the ten best- and worst-performing countries in terms of flag state responsibilities, by indicator type, and flag state responsibility scores by region and ocean basin. Comments, observations and explanations include:

The average IUU fishing score for flag state responsibilities, aggregated for all types of indicator, is 2.01.

Individual country scores, aggregated across indicator types for flag state responsibilities, range from 4.70 for China (the worst-performing country) to 1.05 for Argentina (the best-performing country).

The mix of countries showing up in the table of worst performers is diverse in terms of their location, and many developed nations – including European flag states with large fleets of distant-water fishing vessels (such as France, Italy and Spain) – show up among the bottom performers in terms of vulnerability and prevalence.

Eight of the worst-performing countries for vulnerability indicators are developed States.

China has the highest score of prevalence, as well as the second poorest flag state response score of the 152 countries.

Belize, a bottom-ten performer in terms of IUU prevalence, is the only country showing up in the top-ten performers with regard to flag state response to IUU fishing, where it is the top-ranked country. This underscores Belize's more recent commitments to combat IUU fishing, notably in the domain of flag state responsibility.

In terms of regional vulnerability, North America and Europe are the most vulnerable, closely followed by Asia, these scores being largely driven by the long-range fleets operated by countries in these regions. Conversely, the Middle East has the lowest vulnerability score, owing to the fact that relatively few distant-water fishing vessels hail from this region. Asia is the region with the worst performance in term of prevalence, and also – worryingly – scores poorly compared to other regions in terms of flag state response.

The analysis by ocean basin does not yield big spreads or differences in scores, especially in terms of response.
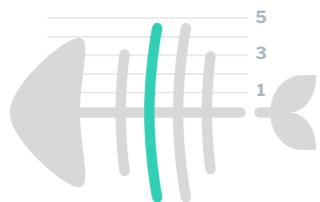
TABLE 16

Ten worst-performing countries
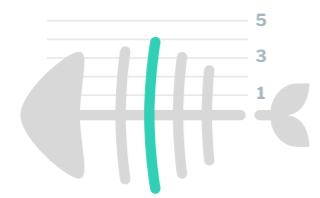
for flag state responsibility IUU fishing scores, by indicator type

All types
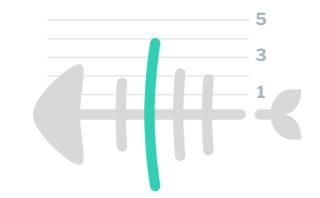
#1 China

4.70
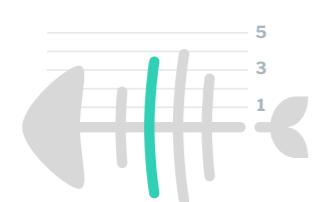
#2 Taiwan

4.13

#3 Panama

3.96

#4 Russia

3.74
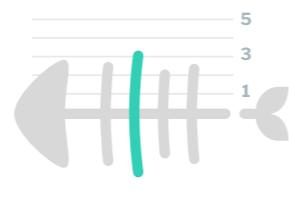
#5 Spain

3.46
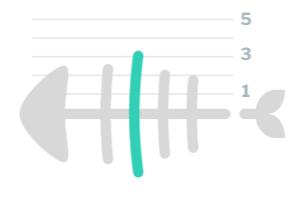
#6 Japan

3.38

#7 Liberia

3.30

#8 S. Korea

3.25

#9 Libya

2.96

#10 Indonesia

2.87

Vulnerability

China	5.00
France	5.00
Japan	5.00
S Korea	5.00
Panama	5.00
Spain	5.00
Taiwan	5.00
Australia	4.50
Canada	4.50
Italy	4.50

Prevalence

China	5.00
Taiwan	4.00
Panama	3.67
Spain	3.33
S Korea	3.00
Russia	3.00
India	2.67
Indonesia	2.33
Sierra Leone	2.33
Belize	2.00

Response

Singapore	4.60
China	4.13
Libya	4.00
Russia	4.00
Liberia	3.88
Dominica	3.86
Albania	3.67
Egypt	3.67
Japan	3.67
Namibia	3.67

TABLE 17

Ten best-performing countries

for flag state responsibility IUU fishing scores, by indicator type

All types

#1 Argentina

1.05
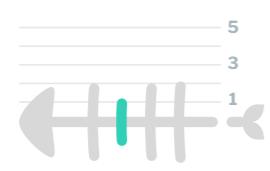
#2 Belgium

1.08
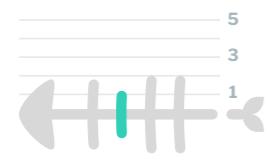
#3 Sweden

1.10
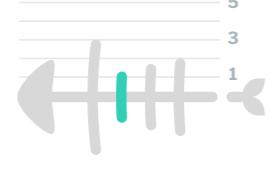
#4 Finland

1.11

#5 Tonga

1.17

#6 Estonia

1.21
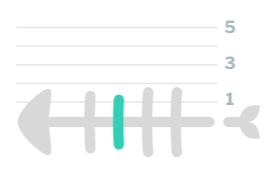
#7 Bulgaria

1.33

#8 Latvia

1.33
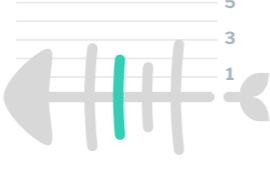
#9 Colombia

1.35

#10 Uruguay

1.42

Note: Another 60 countries have a vulnerability score of 1.00, and another 88 countries have a prevalence score of 1.00

Vulnerability

Angola	1.00
Antigua and Barbuda	1.00
Argentina	1.00
Bahrain	1.00
Bangladesh	1.00
Barbados	1.00
Belgium	1.00
Benin	1.00
Bosnia and Herzegovina	1.00
Brunei	1.00

Prevalence

Albania	1.00
Algeria	1.00
Angola	1.00
Antigua and Barbuda	1.00
Argentina	1.00
Australia	1.00
Bahamas	1.00
Bahrain	1.00
Bangladesh	1.00
Barbados	1.00

Response

Belize	1.00
Argentina	1.11
Belgium	1.22
Bulgaria	1.22
Estonia	1.22
Sweden	1.22
Finland	1.33
Chile	1.44
Guatemala	1.50
Iceland	1.50

TABLE 18

Flag state scores for region
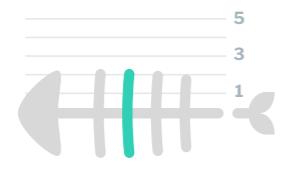
and indicator type

All types

#1 Asia

2.44

#5 Oceania

1.93

#2 North America

2.33

#6 Caribbean and Central America

1.89

#3 Europe

2.03

#7 Middle East

1.83

#4 Africa

1.98

#8 South America

1.69
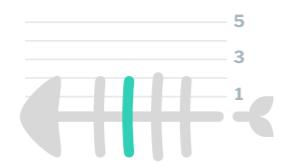
World overall

2.01

Vulnerability

North America	**4.50**
Europe	**2.78**
Asia	**2.64**
Oceania	**2.15**
South America	**2.00**
Africa	**1.84**
Caribbean and Central America	**1.84**
Middle East	**1.57**
World overall	**2.23**

Prevalence

Asia	**1.85**
North America	**1.50**
Europe	**1.30**
Africa	**1.27**
Caribbean and Central America	**1.24**
South America	**1.13**
Oceania	**1.11**
Middle East	**1.07**
World overall	**1.31**

Response

Middle East	**3.09**
Asia	**3.08**
Africa	**2.95**
Caribbean and Central America	**2.75**
Oceania	**2.72**
Europe	**2.28**
South America	**2.11**
North America	**1.72**
World overall	**2.69**
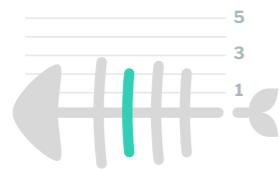
TABLE 19

Flag state scores for ocean basin
and indicator type

All types
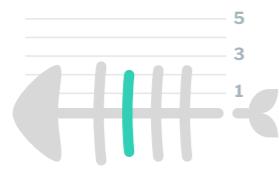
#1 Western Pacific

2.33

#5 East Atlantic

2.01
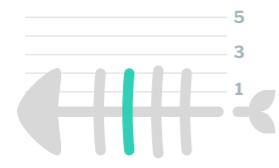
#2 East Indian Ocean

2.18

#6 West Indian Ocean

1.84
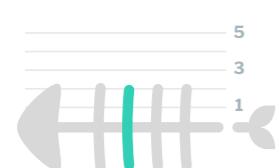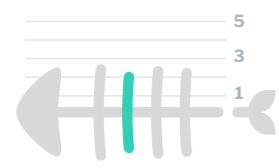
#3 Mediterranean and Black Sea

2.16

#7 West Atlantic

1.83

#4 Eastern Pacific

2.14

World overall

2.01

Vulnerability

Eastern Pacific	3.08
Mediterranean and Black Sea	2.71
Western Pacific	2.65
East Atlantic	2.38
East Indian Ocean	2.27
West Atlantic	1.91
West Indian Ocean	1.60
World overall	2.23

Prevalence

Western Pacific	1.62
East Indian Ocean	1.52
Eastern Pacific	1.41
East Atlantic	1.35
Mediterranean and Black Sea	1.24
West Atlantic	1.22
West Indian Ocean	1.19
World overall	1.31

Response

Western Pacific	2.95
East Indian Ocean	2.92
West Indian Ocean	2.85
Mediterranean and Black Sea	2.78
East Atlantic	2.55
West Atlantic	2.53
Eastern Pacific	2.29
World overall	2.69
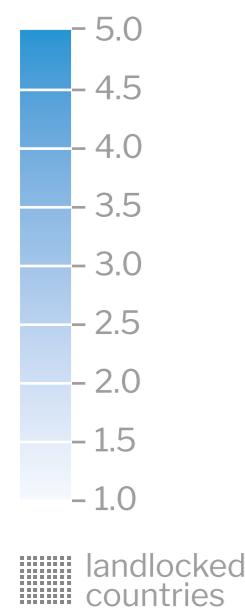
IUU fishing scores for port state responsibilities

6

5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0

landlocked
countries

2.41 World overall
Port Score

6. IUU scores for port state responsibilities

6.1 Introduction and distribution of scores

Indicators included within the port state responsibilities indicator group are as shown in Table 20. Having large numbers of fishing ports and visits by foreign fishing and carrier vessels to those ports increase the risks that a state faces of illegally harvested fish passing through its ports. The views of observers and MCS practitioners provide insight into which countries are perceived as being most subject to port state compliance incidents. However, port states can respond positively to both vulnerability and prevalence dimensions by becoming party to the Port States Measures Agreement (PSMA), implementing the provisions of the agreement and by complying with port state obligations as they may be provided in RFMO resolutions.

VULNERABILITY SCORES ARE HIGHLY DISTRIBUTED IN UPPER SCORE BANDS, WHEREAS PREVALENCE SCORES ARE HIGHLY CONCENTRATED IN LOWER SCORE BANDS (WITH 70% OF COUNTRIES IN THE LOWEST SCORE BAND).

TABLE 20

Port state indicators

Indicator Group	Indicator Name
Port state/ Vulnerability	• Number of fishing ports • Port visits by foreign fishing or carrier vessels
Port state/ Prevalence	• Views of MCS practitioners on port compliance incidents • View of fisheries observers on port compliance incidents
Port state/Response	• Party to the Port State Measures Agreement • Designated ports specified for entry by foreign vessels • Compliance with RFMO port state obligations

The distribution of individual country scores (shown in Table 21) shows that response indicators are more widely distributed than scores for vulnerability and prevalence indicators. Vulnerability scores are highly distributed in upper score bands, whereas prevalence scores are highly concentrated in lower score bands (with 70% of countries in the lowest score band).

TABLE 21

Number of countries within score ranges for port state IUU fishing scores

Range	Port	Port by Vulnerability	Port by Prevalence	Port by Response
4.50—4.50	1	46	3	23
4.00—4.49	1	**68**	0	8
3.50—3.99	2	28	0	10
3.00—3.49	13	6	3	6
2.50—2.99	44	0	5	**34**
2.00—2.49	**58**	0	13	25
1.50—1.99	29	0	17	11
1.00—1.49	4	4	**107**	33

Notes: * Four countries have no scores of prevalence because of missing data;
** two countries have no scores of response because of missing data.

6.2 Key findings

The tables below show the ten best- and worst-performing countries in terms of port state responsibilities, by indicator type, and port state responsibility scores by region and ocean basin. Comments, observations and explanations include:

The average IUU fishing score for port state responsibilities, aggregated for all types of indicator, is 2.41.

Of the worst-performing countries, 22 have a score of 5.00 for response indicators and 12 have a score of 5.00 for vulnerability indicators. Many of the best-performing countries have similar good scores for both prevalence and response. This is because, for the limited number of port state indicators, many countries scored the same marks.

Overall, only 17.5% of all indicators in the Index score reflect port state responsibilities (see Table 2). The reason behind the limited number of port state indicators (there are fewer than for coastal, flag or general responsibility) is that binding port state control mechanisms are the latest addition to the arsenal of international fisheries rule making, and there are few publicly available data sources from which to generate port state indicators. There is no authoritative list of fishing ports by country at present; the data on port numbers and visits by foreign vessels used in the Index was therefore generated from a survey of country correspondents, and from AIS data. The effect of the relatively small number of port state indicators is that there is less differentiation between country scores.

It is apparent that the countries that are most vulnerable to IUU fishing produce entering their ports, or IUU transactions taking place in ports, are by and large industrial fishing nations for which fishing, processing and trading are very important industries. Such countries include Canada, China, France, Indonesia, Japan and Norway. Conversely, small countries with few or no large commercial ports, and which don't receive foreign visits, score lower on the vulnerability scale. Interestingly, AIS data reveals that only four countries (Barbados, Dominica, Eritrea and Haiti received no foreign vessel visits in 2017).

In terms of prevalence, 50% of the worst-performing countries are in Asia, with China, Taiwan and Vietnam having the highest scores.

North America, Europe and Asia have the highest scores in terms of vulnerability. In North America's case, this is strongly driven by the small number of countries in this region. Europe and North America also have the best response scores, while Asia has the second worst regional response, followed only by the Middle East. In combination with the fact that Asia as a region scores highest in terms of prevalence – by a wide margin – it is obvious that port state measures are of special strategic importance to Asia when it comes to combating IUU fishing.

All ocean basins show high levels of vulnerability, and it is interesting to note that the Eastern Pacific has the best score for response, buoyed by the performance of countries in the North American region, and the above average performance of Latin America in this domain.
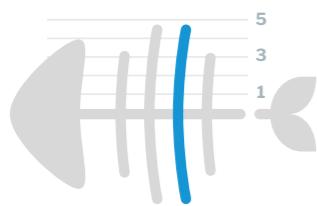
TABLE 22

Ten worst-performing countries
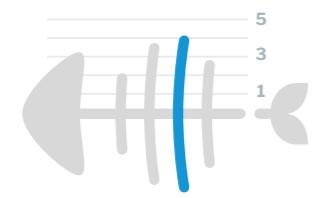
for port state responsibility IUU fishing scores, by indicator type

All types

#1 China
4.67
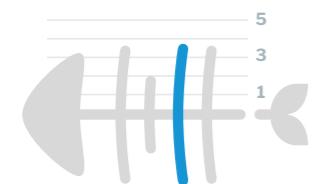
#2 Russia
4.07

#3 Cambodia
3.87
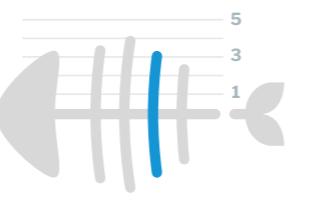
#4 Vietnam
3.73
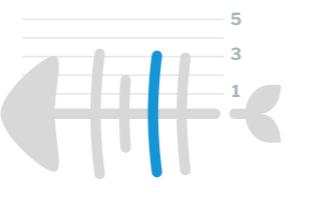
#5 Singapore
3.42
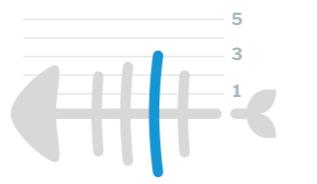
#6 Taiwan
3.28

#7 Yemen
3.28
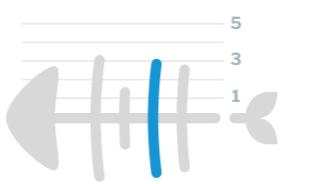
#8 Ukraine
3.27

#9 Grenada
3.27

#10 Cameroon
3.13

Note: Thailand and USA also have vulnerability scores of 5.00; another 12 countries have response scores of 5.00.

Vulnerability

Canada	5.00
China	5.00
France	5.00
Germany	5.00
Indonesia	5.00
Italy	5.00
Japan	5.00
Norway	5.00
Philippines	5.00
Sweden	5.00

Prevalence

China	5.00
Taiwan	4.50
Vietnam	4.50
Mauritius	3.00
Russia	3.00
Uruguay	3.00
Cambodia	2.50
Madagascar	2.50
Micronesia	2.50
Singapore	2.50

Response

Bahrain	5.00
Benin	5.00
Brunei	5.00
Cambodia	5.00
Cameroon	5.00
Colombia	5.00
Congo (DRC)	5.00
Congo, R.	5.00
Dominica	5.00
Grenada	5.00

TABLE 23
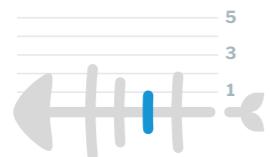
Ten best-performing countries

for port state responsibility IUU fishing scores, by indicator type

All types
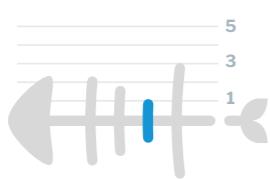
#1 Eritrea
1.00

#2 Barbados
1.00
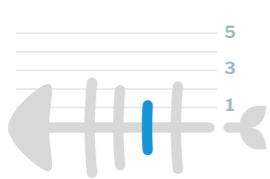
#3 Haiti
1.00
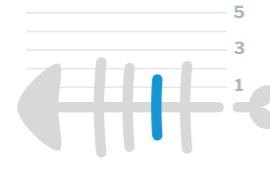
#4 Dominica
1.33

#5 Senegal
1.56
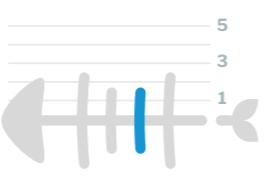
#6 Palau
1.56

#7 Mauritania
1.56
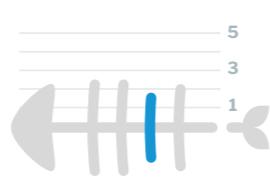
#8 Tonga
1.56
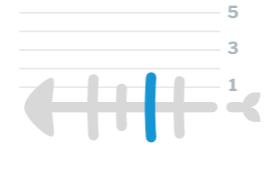
#9 Albania
1.67

#10 Belgium
1.67

Note: Another 95 countries have a prevalence score of 1.00; another 23 countries have response scores of 1.00.

Vulnerability

Barbados	1.00
Dominica	1.00
Eritrea	1.00
Haiti	1.00
Belize	3.00
Bosnia & Herzegovina	3.00
Comoros	3.00
Congo (DRC)	3.00
Nauru	3.00
Vanuatu	3.00

Prevalence

Albania	1.00
Algeria	1.00
Angola	1.00
Antigua and Barbuda	1.00
Argentina	1.00
Australia	1.00
Bahamas	1.00
Bahrain	1.00
Bangladesh	1.00
Belgium	1.00

Response

Albania	1.00
Australia	1.00
Bahamas	1.00
Barbados	1.00
Belgium	1.00
Bulgaria	1.00
Cape Verde	1.00
Costa Rica	1.00
Estonia	1.00
Finland	1.00

TABLE 24

Port scores for regions

by type, aggregated by responsibility

All types

#1 Asia

2.87
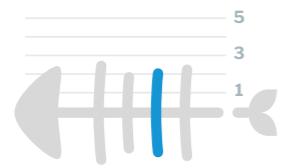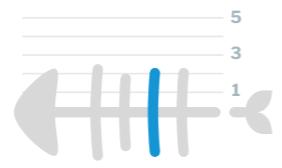
#5 Caribbean and Central America

2.31

#2 Middle East

2.74

#6 Oceania

2.26

#3 South America

2.35

#7 Europe

2.26

#4 Africa

2.33

#8 North America

2.11

World overall

2.41

Vulnerability

North America	5.00
Asia	4.38
Europe	4.29
South America	4.15
Middle East	4.03
Oceania	3.80
Africa	3.74
Caribbean and Central America	3.50
World overall	3.98

Prevalence

Asia	1.98
Oceania	1.43
South America	1.35
Africa	1.26
Europe	1.16
Middle East	1.07
Caribbean and Central America	1.06
North America	1.00
World overall	1.31

Response

Middle East	3.89
Asia	2.75
Caribbean and Central America	2.63
Africa	2.43
South America	2.13
Oceania	2.12
Europe	2.02
North America	1.50
World overall	2.43

TABLE 25

Port scores for oceans

by type, aggregated by responsibility

All types

#1 Western Pacific

2.67

#5 West Atlantic

2.32

#2 West Indian Ocean

2.53

#6 East Atlantic

2.25
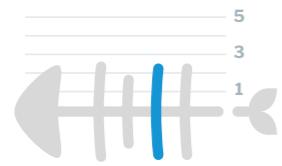
#3 East Indian Ocean

2.50

#7 Eastern Pacific

2.24

#4 Mediterranean and Black Sea

2.43

World overall

2.41

Vulnerability

East Indian Ocean	4.44
Eastern Pacific	4.23
Western Pacific	4.14
Mediterranean and Black Sea	4.13
East Atlantic	4.09
West Indian Ocean	3.79
West Atlantic	3.74
World overall	3.98

Prevalence

Western Pacific	1.95
East Indian Ocean	1.33
West Indian Ocean	1.26
East Atlantic	1.20
Eastern Pacific	1.19
Mediterranean and Black Sea	1.12
West Atlantic	1.12
World overall	1.31

Response

West Indian Ocean	2.96
Mediterranean and Black Sea	2.60
West Atlantic	2.47
Western Pacific	2.46
East Indian Ocean	2.38
East Atlantic	2.10
Eastern Pacific	1.99
World overall	2.43
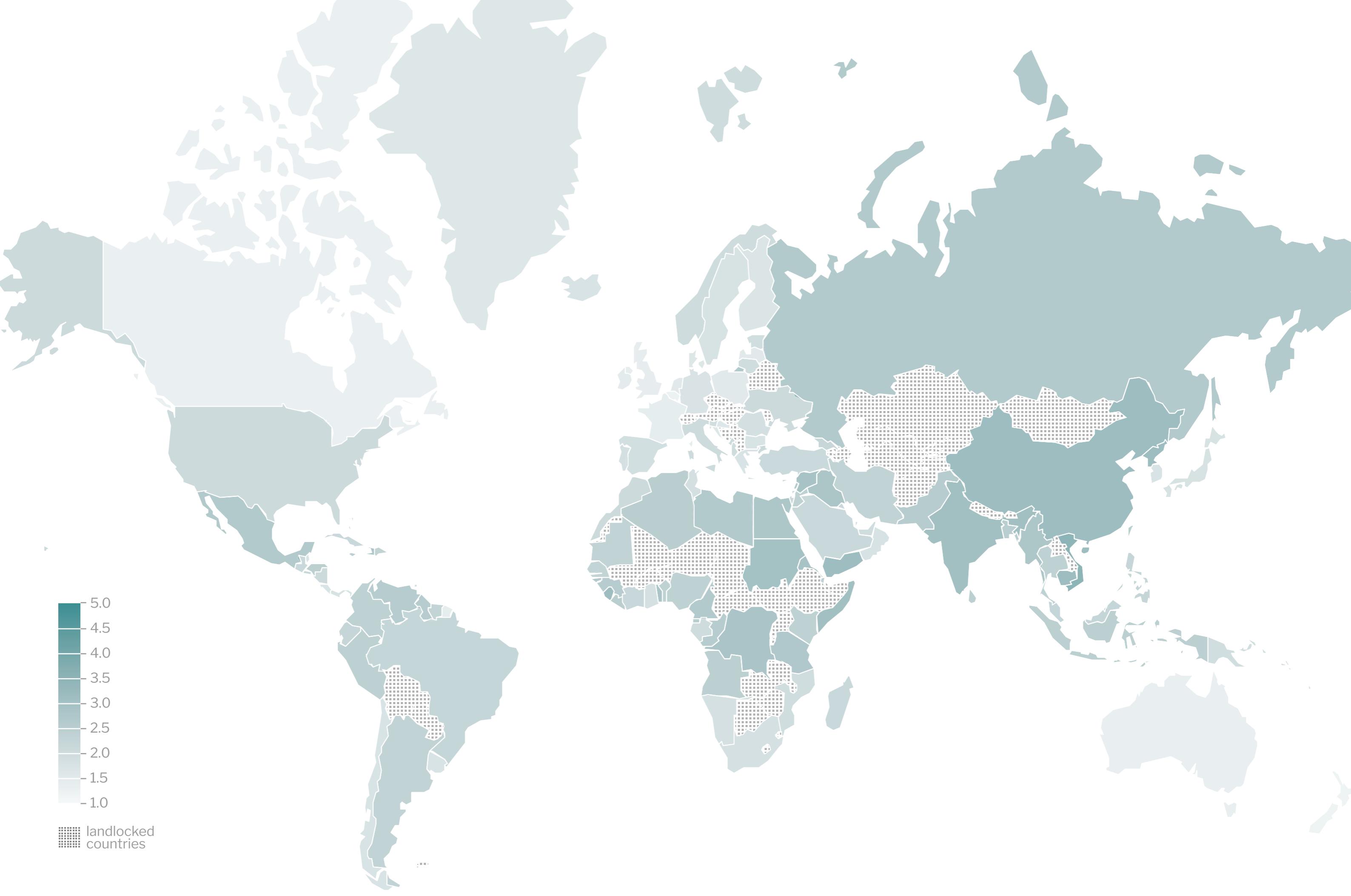
IUU fishing scores for general indicators not specific to other responsibilities

7

5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0

landlocked
countries

7. IUU fishing scores for general indicators not specific to other responsibilities

7.1 Introduction and distribution of scores

While all indicators in the Index are specific to the fishing sector, the indicator group of vulnerability includes two indicators that are not fisheries-specific. High levels of corruption and low levels of national income in a country are considered as being especially likely to increase or lead to vulnerability to IUU fishing, so these factors are included as proxy-type indicators. Other general indicators of vulnerability relate to trade in fish products and the volume of catches made by different countries. The Index also draws on other assessments of IUU fishing and media reports for indicators of prevalence, which can be considered 'general', as they cover a range of state responsibilities.

States can take action in a number of areas that serve to combat IUU fishing across all areas of state responsibility, as reflected by the response indicators included in the Index. For example, actions specified in an NPOA-IUU may relate to all of a state's responsibilities, reflecting the structure of the International Plan of Action to prevent, deter and eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU).

The category 'general' also includes indicators that relate specifically to market state responsibilities, as the Index does not include a dedicated group of indicators to market state responsibilities This is because this specific, and highly relevant category – covering fish trade – has even less publicly available data than the port state domain. It is also the only remaining domain of the four state-type responsibilities that still lacks a dedicated (i.e. fisheries-specific) international regulatory framework.

Indicators included within the 'general' indicator group are shown in Table 26.

TABLE 26

General indicators

Indicator Group	Indicator Name
General/Vulnerability	• Perception of levels of corruption • Gross national income per capita • Volume of catches • Trade balance for fisheries products • Share of global imports
General/Prevalence	• 'Carded' under the EU IUU Regulation • Identified by the National Oceanic and Atmospheric Administration for IUU fishing • Mentions of IUU fishing in media reports
General/ Response	• Mandatory vessel tracking for commercial seagoing fleet • Ratification/accession of UNCLOS Convention • Ratification of UN Fish Stocks Agreement • Mentions in media reports of combating IUU fishing • Have a national plan of action to prevent, deter and eliminate IUU (NPOA-IUU) fishing • Demand for MSC productss • Market state is contracting party or cooperating non-contracting party to relevant RFMOs

The distribution of individual country scores (shown in Table 27) indicates that scores are most widely distributed between the different score ranges for response indicators, but also well distributed for vulnerability indicators. Prevalence indicators are more concentrated (80% of countries) in just one score band, reflecting the specific indicators included.

TABLE 27

Number of countries within score ranges for general state responsibility IUU fishing scores

Range	General	General by Vulnerability	General by Prevalence	General by Response
4.50—4.50	0	0	0	0
4.00—4.49	0	3	0	10
3.50—3.99	1	9	0	28
3.00—3.49	11	46	3	28
2.50—2.99	41	32	2	18
2.00—2.49	62	29	13	48
1.50—1.99	35	25	12	19
1.00—1.49	2	8	122	1

7.2 Key findings

The tables below show the ten best- and worst-performing countries in terms of general state responsibilities, by indicator type, and general state responsibility scores by region and ocean basin. Comments, observations and explanations include:

The average IUU fishing score for general state responsibilities, aggregated for all types of indicator, is 2.32.

Individual country scores, aggregated across types for general state responsibilities range from 3.58 for Vietnam (the worst-performing country) to 1.43 for New Zealand (the best-performing).

This category of general indicators has a large number of indicators, and therefore provides high differentiation and resolution between countries (as opposed to the limited port state indicators, as discussed earlier), except for prevalence indicators, which are fewer in number. In this category, the mix of countries from different regions is more diverse, since a more varied mix of indicators is used to raise scores.

Although Asian countries dominate the rankings of countries that are highly vulnerable, having a high prevalence of IUU fishing, while responding poorly to the challenges, Middle Eastern, African and Latin American countries also show poor performance.

In terms of best response to IUU fishing, large, developed fishing nations, such as Australia, Canada, France, Japan and New Zealand, come to the fore as top performers. This underscores the inherent weakness of developing countries when it comes to effectively combating IUU fishing, regardless of the importance fishing may play in social or economic terms. It also shows that it is crucially important to make progress in this domain. Ghana's good performance in terms of response is most probably driven by actions taken by that country in recent years, showing

that when there is sufficient political will, positive steps can be taken to combat IUU fishing in developing countries.

In terms of regions, Asia has the worst score in terms of both vulnerability and prevalence. Africa's poor score also reflects this region's vulnerability. Oceania and Europe both yield good scores for vulnerability and prevalence, as well as good scores for response, emphasizing the presence of strong action to combat IUU fishing in these regions and signalling the importance fisheries play in the public sphere, which is reflected in policy, law making and international collaboration. Conversely, the Middle East scores the worst for response indicators by a very wide margin, signalling a stark lack of policy emphasis or action on fisheries in the region.

The West and East Indian Ocean basins display the highest levels of vulnerability, with the East Indian Ocean also yielding the worst score for prevalence, largely driven by the low performance of Asian countries bordering this ocean basin. Response scores are best for the Eastern and Western Pacific ocean basins, reflecting the strength of regional institutions and fisheries policy in the area.
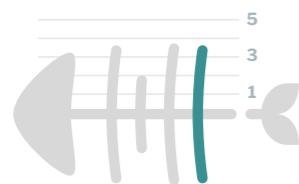
TABLE 28

Ten worst-performing countries
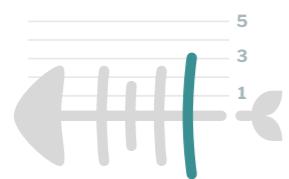
for general state responsibility IUU fishing scores, by indicator type

All types
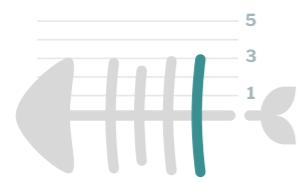
#1 Vietnam

3.58
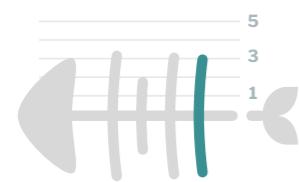
#2 Comoros

3.30

#3 Sierra Leone

3.23

#4 Yemen

3.23
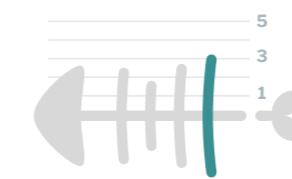
#5 Cambodia

3.23

#6 China

3.23
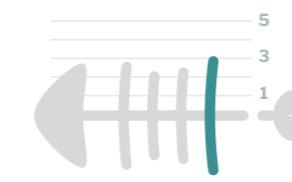
#7 North Korea

3.21

#8 Somalia

3.13

#9 India

3.13

#10 Sudan

3.10

Vulnerability

India	**4.22**
Vietnam	**4.11**
Indonesia	**4.00**
Myanmar	**3.78**
Russia	**3.78**
Eritrea	**3.67**
Peru	**3.67**
Syria	**3.67**
China	**3.56**
Mauritania	**3.56**

Prevalence

Thailand	**3.29**
Vietnam	**3.29**
Mexico	**3.00**
China	**2.71**
Comoros	**2.57**
Australia	**2.29**
Indonesia	**2.29**
N Korea	**2.29**
Nigeria	**2.29**
Russia	**2.29**

Response

Singapore	**4.25**
Grenada	**4.14**
Yemen	**4.14**
Eritrea	**4.00**
Israel	**4.00**
N Korea	**4.00**
Libya	**4.00**
Sudan	**4.00**
Syria	**4.00**
Venezuela	**4.00**

TABLE 29
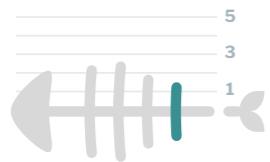
Ten best-performing countries

for general state responsibility IUU fishing scores, by indicator type

All types

#1 New Zealand

1.43
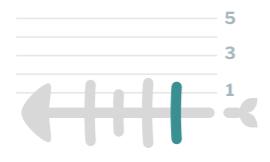
#6 France

1.60
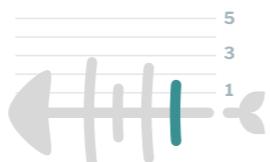
#2 Belgium

1.47
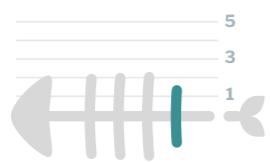
#7 Nauru

1.64
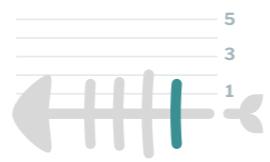
#3 Canada

1.50

#8 Ireland

1.67
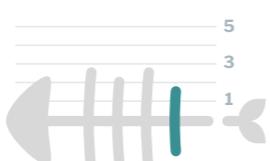
#4 Australia

1.53
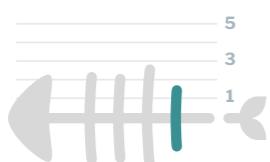
#9 Cook Islands

1.72

#5 United Kingdom

1.56

#10 Monaco

1.73

Note: Another 91 countries have a prevalence score of 1.00.

Vulnerability

Cook Islands	1.00
Monaco	1.00
Netherlands	1.22
Singapore	1.33
Sweden	1.33
Denmark	1.44
Finland	1.44
Germany	1.44
Ireland	1.44
Nauru	1.50

Prevalence

Albania	1.00
Algeria	1.00
Antigua and Barbuda	1.00
Argentina	1.00
Bahamas	1.00
Bahrain	1.00
Bangladesh	1.00
Barbados	1.00
Belgium	1.00
Benin	1.00

Response

Australia	1.14
UK	1.55
Belgium	1.57
Canada	1.57
France	1.57
Japan	1.57
New Zealand	1.57
Spain	1.57
Ghana	1.71
South Korea	1.71
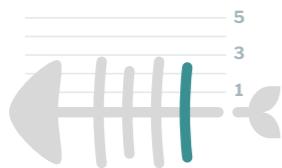
TABLE 30

General scores for regions
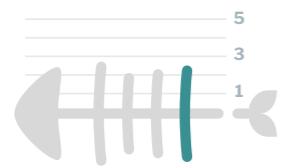
by type, aggregated by responsibility

All types
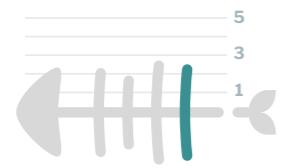
#1 Asia

2.64
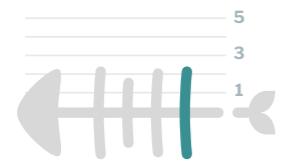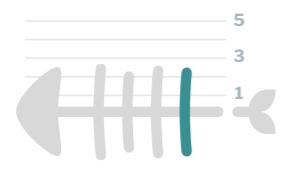
#2 Africa

2.54

#3 Middle East

2.47

#4 South America

2.39

#5 Caribbean and Central America

2.32

#6 Europe

1.98

#7 Oceania

1.90

#8 North America

1.87

World overall

2.32

Vulnerability

Asia	3.14
Africa	3.13
South America	2.81
Middle East	2.52
Caribbean and Central America	2.49
North America	2.33
Oceania	2.27
Europe	2.05
World overall	2.66

Prevalence

Asia	1.70
North America	1.43
Africa	1.31
Caribbean and Central America	1.31
Europe	1.19
Oceania	1.18
South America	1.13
Middle East	1.00
World overall	1.28

Response

Middle East	3.55
South America	2.90
Africa	2.82
Caribbean and Central America	2.82
Asia	2.81
Europe	2.37
Oceania	2.08
North America	1.79
World overall	2.68

TABLE 31
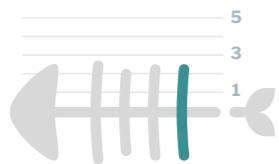
General scores for oceans

by type, aggregated by responsibility

All types

#1 East Indian Ocean

2.52
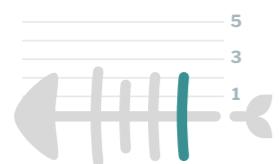
#2 West Indian OCean

2.51
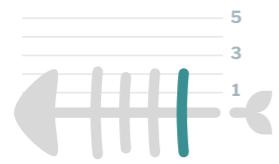
#3 West Atlantic

2.32

#4 East Atlantic

2.26

#5 Western Pacific

2.25

#6 Mediterranean and Black Sea

2.24

#7 Eastern Pacific

2.23

World overall

2.32

Vulnerability

East Indian Ocean	3.26
West Indian Ocean	2.84
Eastern Pacific	2.75
Western Pacific	2.70
East Atlantic	2.63
Mediterranean and Black Sea	2.53
West Atlantic	2.52
World overall	2.66

Prevalence

East Indian Ocean	1.78
Western Pacific	1.55
Eastern Pacific	1.43
East Atlantic	1.28
West Atlantic	1.26
West Indian Ocean	1.23
Mediterranean and Black Sea	1.14
World overall	1.28

Response

West Indian Ocean	3.06
West Atlantic	2.85
Mediterranean and Black Sea	2.71
East Atlantic	2.53
East Indian Ocean	2.40
Western Pacific	2.35
Eastern Pacific	2.30
World overall	2.68

Implications

8

8. Implications

8.1 What do the results imply about the need for action?

Table 32 draws on the contents of the results presented in earlier sections to highlight the worst-performing regions and ocean basins for different combinations of indicators related to state responsibilities and indicator types. It serves as a call to action in specific regions and ocean basins.

TABLE 32

Worst-performing regions and ocean basins by indicator group

		Type			
		Vulnerability	**Prevalence**	**Response**	**Overall**
Responsibility	**Coastal**	• Oceania / Western Pacific	• Asia / Western Pacific	• Caribbean and Central America / East Indian Ocean	• Asia / Western Pacific
	Flag	• North America / Eastern Pacific	• Asia / Western Pacific	• Middle East / Western Pacific	• Asia / Western Pacific
	Port	• North America / East Indian Ocean	• Asia / Western Pacific	• Middle East / West Indian Ocean	• Asia / Western Pacific
	General	• Asia / East Indian Ocean	• Asia / East Indian Ocean	• Middle East / West Indian Ocean	• Asia / East Indian Ocean
	Overall	• N America / Western Pacific	• Asia / Western Pacific	• Middle East / West Indian Ocean	• Asia / Western Pacific

It should be noted that vulnerability indicators do not relate to things that countries, and in particular their fisheries ministries, have much control over to change, or indeed would necessarily want to. For example, if a country operates a large distant-water fleet, which increases vulnerability to flag state IUU fishing issues, there is no suggestion that such a flag state should reduce that fleet. The only vulnerability indicator where national administrations can take action to reduce vulnerability is to work towards reaching agreement over maritime boundaries that have not been agreed on with neighbouring countries. Improvements in governance (e.g. reducing corruption) and increased income levels more generally in countries would also benefit the fisheries sector and serve to reduce the risk of IUU fishing.

Nevertheless, the indicators of vulnerability may provide a focus for geographical areas of action, especially when coupled with the geographical areas

highlighted as having poor scores for prevalence. For example, Asia and the East Indian Ocean are areas with both high vulnerability and high prevalence in terms of general state responsibilities, and consequently provide an indication as to where specific action may be needed. When all indicators are aggregated, the Western Pacific is shown to be the most vulnerable of the ocean basins and it also has the worst prevalence score.

Asia merits special attention in terms of the need for action, given its overall poor rankings, and because it is a region where progress can be made. It is the region with the worst scores for all four types of state responsibility indicators, and the worst overall scores for indicators aggregated by responsibility and type. For the same reason, the Index scores imply the need for focus of action on both the Western Pacific and East Indian oceans.

Some areas, such as the Western Pacific, that score poorly for prevalence have relatively good scores for response, which suggests that there is recognition of the need for action and that high policy priority is given to fisheries by countries and regional institutions. Other regions, such as the Middle East, may have poor response scores as a result of the lower importance that is given to the sector there, and a lack of policy focus on the fisheries sector.

However, the aggregated scores for all countries in a region or ocean basin do not reveal the need for action in or by specific countries. Table 33 draws from earlier tables to highlight the three countries that have the worst score for different indicator groups. The maps, ranking tables and country profiles on the IUU Fishing Index website (**IUUfishingindex.net**) provide indicator scores for all individual countries for different combinations of indicator groups.

TABLE 33

Worst-performing countries by indicator group

		Type			
		Vulnerability	**Prevalence**	**Response**	**Overall**
Responsibility	**Coastal**	• Japan • Kiribati • Seychelles	• Ecuador • Philippines • Sierra Leone (+ 3 others)	• Timor-Leste • Cambodia • Cameroon (+ 6 others)	• Cambodia • Somalia • Vietnam
	Flag	• China • France • Japan (+ 4 others)	• China • Taiwan • Panama	• Singapore • China • Libya/Russia	• China • Taiwan • Panama
	Port	• Canada • China • France (+ 9 others)	• China • Taiwan • Vietnam	• Bahrain • Benin • Brunei (+ 19 others)	• China • Russia • Cambodia
	General	• India • Vietnam • Indonesia	• Thailand • Vietnam • Mexico	• Singapore • Grenada • Yemen	• Viet Nam • Comoros • Cambodia
	Overall	• China • Japan • Russia	• China • Taiwan • Vietnam	• Singapore • Cambodia • Yemen	• China • Taiwan • Cambodia

Notes: Countries with the same scores in rankings are listed alphabetically. Where more countries than shown in the table have the same score, the number of additional countries is provided in brackets.

Examining the full ranking tables (see Annex) suggests that developing countries are often vulnerable to IUU fishing. In addition, these countries also often lack the resources to fully respond to the challenges of combating IUU fishing. This means that meaningful mechanisms need to be developed that support developing countries in their drive to combat IUU fishing across applicable state responsibilities.

The vulnerability of island states is also highlighted when ranking scores for both coastal and port state indicators in particular. Island state countries are likely to have a particularly strong dependence on the fisheries sector, hence the need to ensure that appropriate responses to combating IUU fishing are taken. Given that many of these island states are also developing countries, this may signal a priority for support and action. In the same vein, the top performance of Oceania as a region in the general category underlines the fact that good institutional support, as is generally understood to exist in this region, goes a long way in providing the foundation for national and regional responses that aim to combat IUU fishing.

Nations operating distant-water fishing fleets that yield poor scores for both flag/prevalence and flag/response indicators may be considered as particularly problematic. Solving their poor performance would go a long way to eliminate major portions of IUU fishing globally, and there is a pressing need to hold these countries accountable for their actions (or lack thereof), to monitor progress and to take remedial action where and as appropriate. Such countries include China, Taiwan, Panama and Russia.

8.2 What does the Index imply for SDG indicator 14.6.1?

The Goal of SDG 14 (Life Below Water), is to 'conserve and sustainably use the oceans, seas and marine resources'.

This SDG has a number of targets, one of which is 'By 2020, [to] effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics'.

The Index scores provide a strong indication that the SDG target – to eliminate IUU fishing by 2020 – will not be achieved, and that combating IUU fishing remains a huge global challenge.

SDG Indicator 14.6.1 is defined as 'progress by countries in the degree of implementation of international instruments aiming to combat illegal,

unreported and unregulated fishing', and is being used to track progress in achieving this target. The indicator 14.6.1 is under the custodianship of the FAO and will be a composite one based on data and answers collected through the Code of Conduct for Responsible Fisheries (CCRF) questionnaire, which FAO member states are requested to complete every two years.

From the FAO's 2018 report 'Progress in the implementation of the Code of Conduct for Responsible Fisheries (the Code) and related instruments',[6] we know that only 128 members[7] (i.e. 65% of FAO member states) responded to the last questionnaire. And while the indicator may be made available at regional level, individual country responses and scores are not provided or published by the FAO.

Questions in the CCRF questionnaire that are used to derive indicator 14.6.1 focus on, firstly, adherence to and, secondly, implementation of, five international instruments with a strong marine (as opposed to inland). The composite indicator is based on weightings as follows: UNCLOS (10%); the UNFSA (10%); an NPOA-IUU (30%); the PSMA (30%); and the FAO Compliance Agreement, and the Voluntary Guidelines on Flag State Performance (20%). Questionnaires assess whether states have acceded to or ratified the instruments, or are planning to, and rely on self-determination of the 'extent of implementation' (scored between 1 and 5) for all five instruments across domains of policy, legislation, institutional framework, operations and procedures. Questionnaires also include Yes/No questions for specific requirements of some instruments (e.g. designated ports under PSMA), which are included in the composite indicator.

The above points have the following important implications for the indicator developed by the FAO:
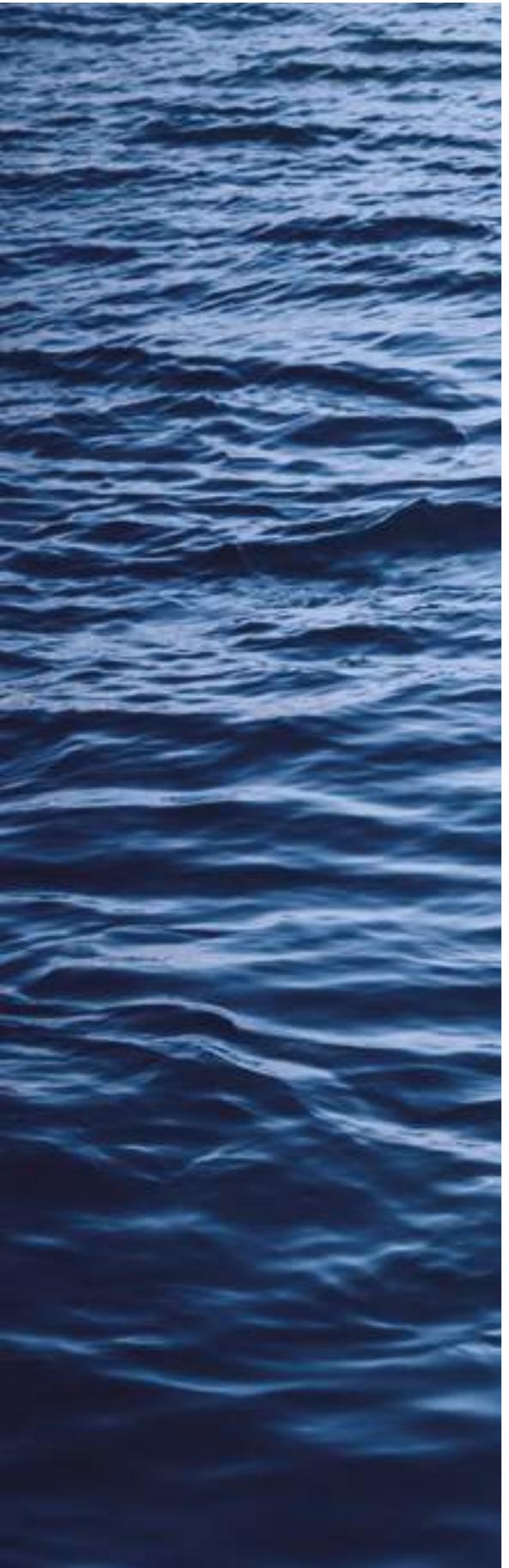
The indicator will not cover all countries, as even with improved questionnaire response rates, it is unlikely that all countries will ever complete the CCRF questionnaire;

The indicator will only address 'response' type indicators, and not vulnerability or prevalence;

6. See FAO, Committee on Fisheries, thirty-third session, July 2018, http://www.fao.org/3/MX205EN/mx205en.pdf.
7. The EU, which responded, is considered as providing a response on behalf of all EU member states, even though it does not provide answers to all questions.

Differences in how countries score themselves on the extent of implementation, even given guidance provided on the five threshold bands between 1 and 5, are likely to be considerable with a high degree of subjectivity, discretion and difference between countries; and

The indicator cannot be used for comparisons between countries and ranking.

These potential weaknesses can be compared with the characteristics of the IUU Fishing Index, which:

Covers all 152 coastal states globally;
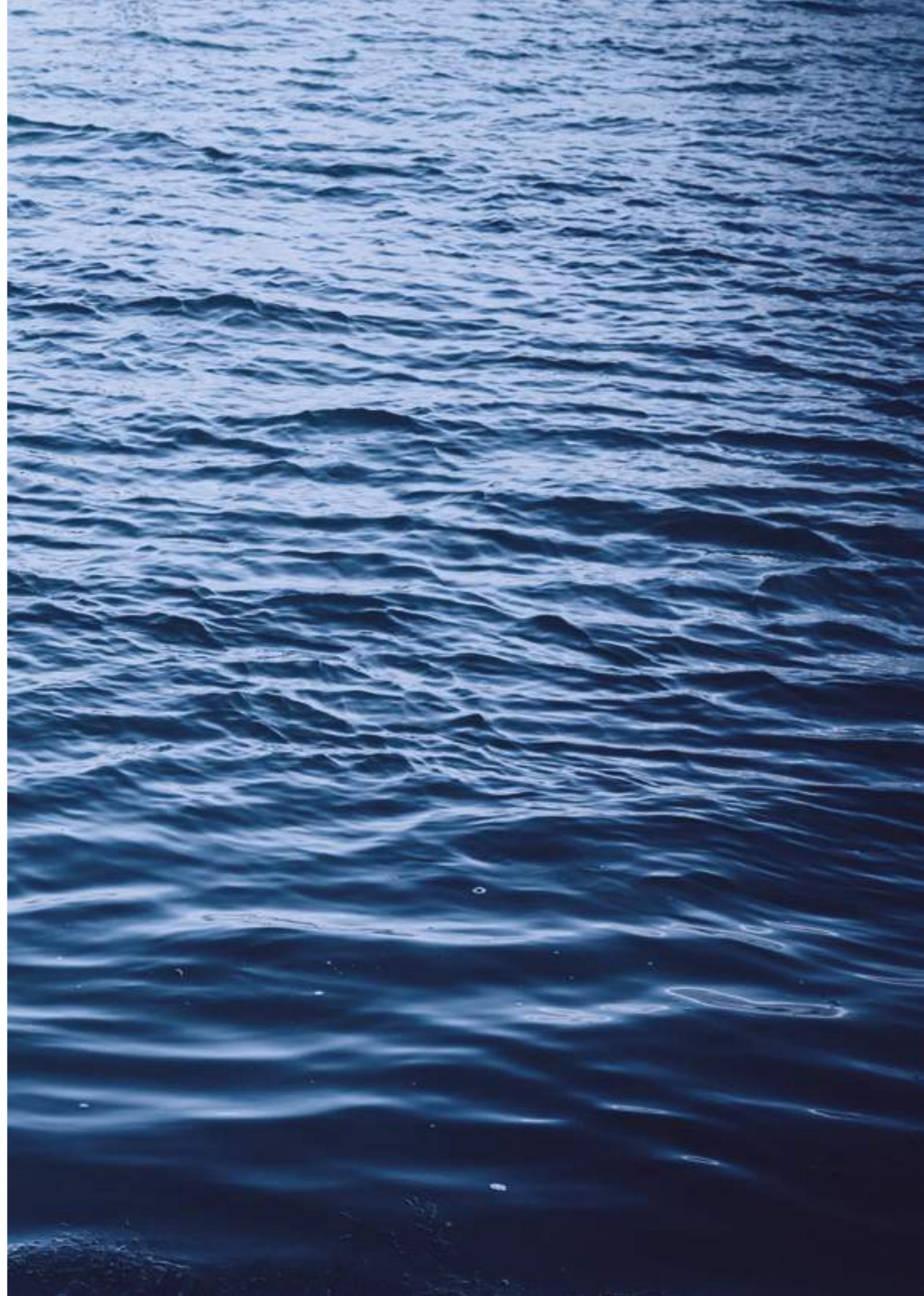
Defines and specifies different indicators as they pertain to i) vulnerability, prevalence and response, and ii) coastal, flag, and port, and general state responsibilities. The Index therefore allows for performance to be assessed for different combinations of these indicator groups;

Is transparent in the provision of scores for individual countries, allowing for comparisons between countries and ranking (as well as between regions and ocean basins);

Draws on a wide range of data sources but depends strongly on objective data for most indicators. The only indicators relying on subjective data are those based on expert opinions of observers and MCS practitioners. Government officials are only asked to provide factual 'yes/no' type data for some indicators, not to provide subjective opinion of the extent of implementation of different instruments; and

Uses objective criteria for allocating scores of between 1 and 5.

The above points indicate that the IUU Fishing Index can complement indicator 14.6.1 generated by FAO, when assessing progress in achieving the SDG goal to eliminate IUU fishing.

Introduction to the IUU Fishing Index website
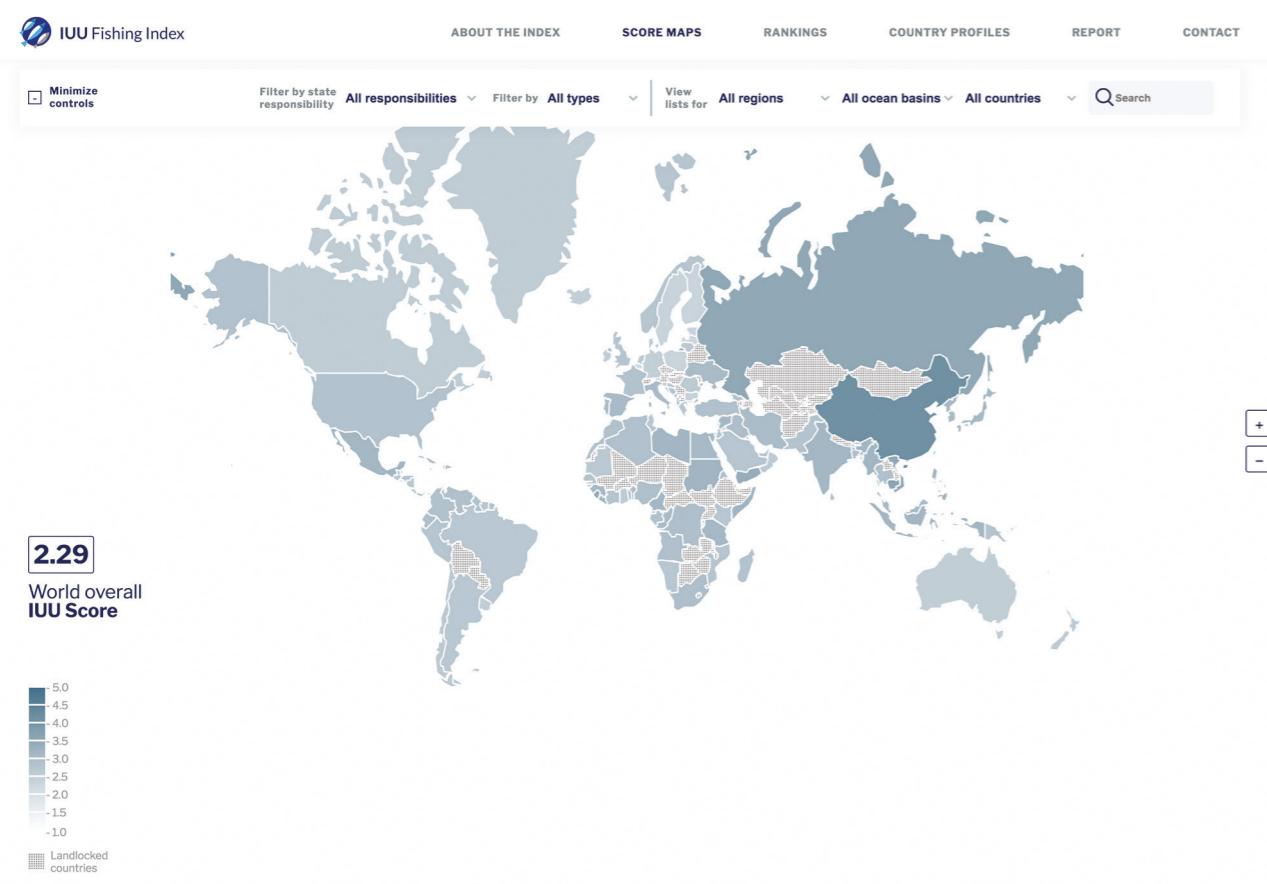
9

9. Introduction to the IUU Fishing Index website
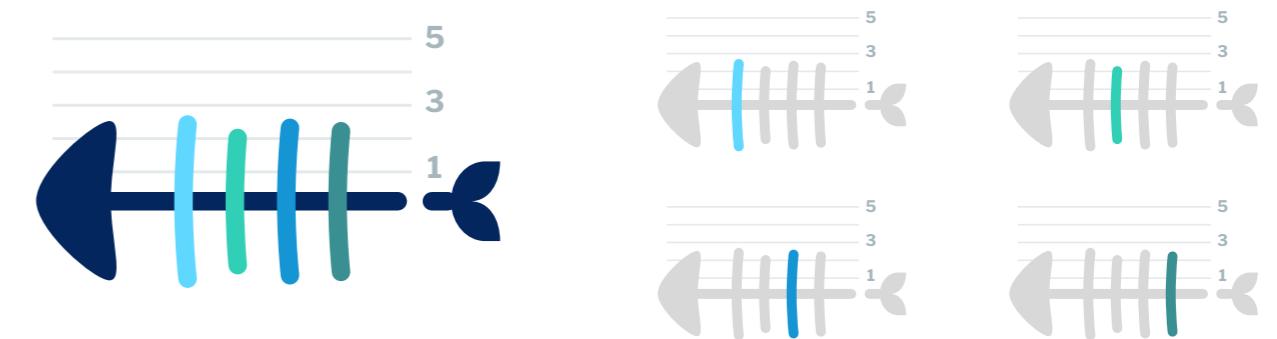
A dedicated website – **IUUfishingindex.net** – has been created to present the results of the IUU Fishing Index.

The website has a home page, which introduces the Index and explains the content of the different webpages.
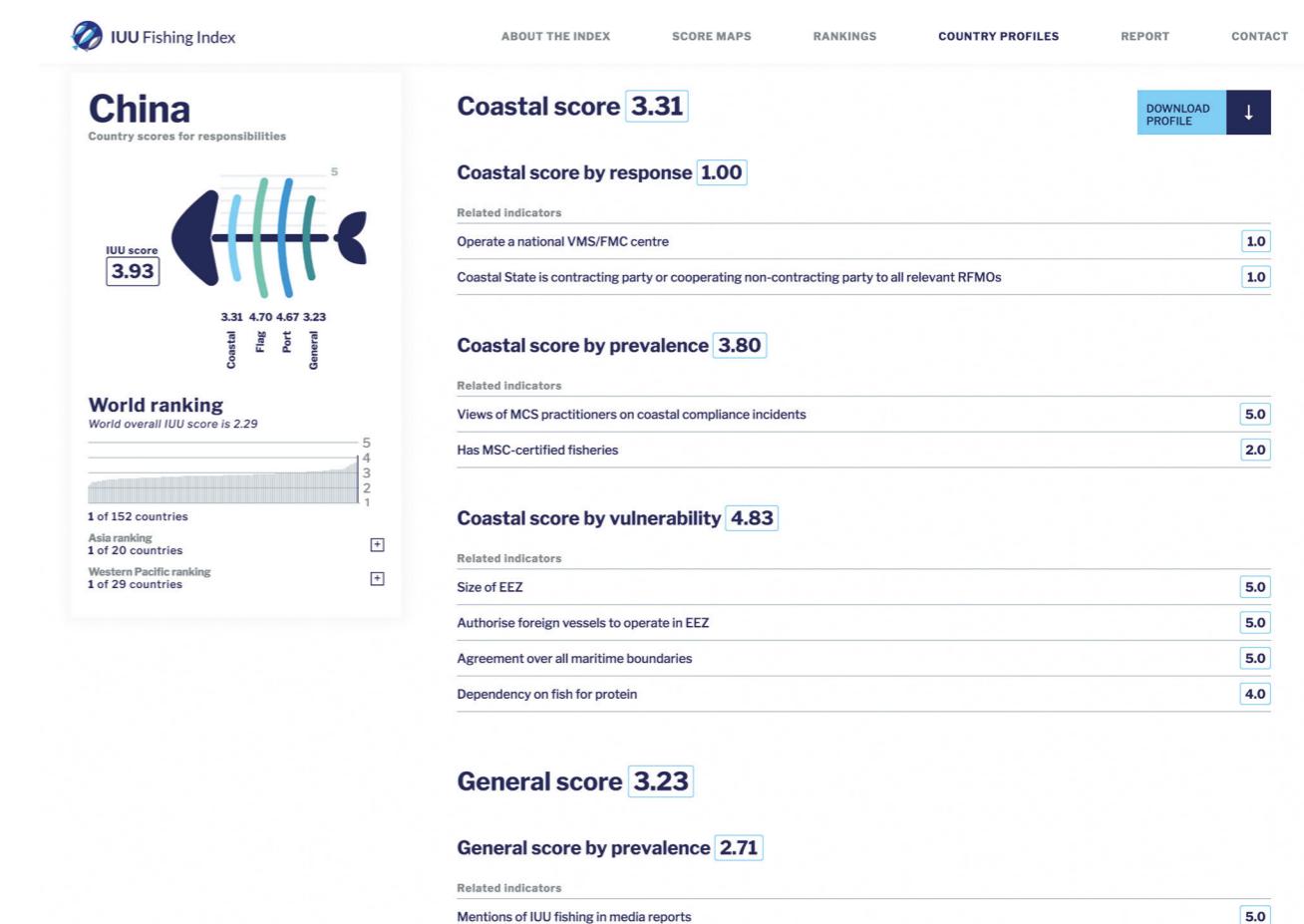
The 'Maps' webpage allows users to visualize IUU fishing scores at a global level, either aggregated, or filtered for indicators related to state 'responsibilities' (flag, coastal, port, and general), or the 'types' of indicator (vulnerability, prevalence and response). The maps can also be filtered just to show countries in specific regions or ocean basins. Dark colours indicate poor performance, and hovering over an individual country brings up some summary data on that country.

The website uses fishbones graphics as an illustrative tool to present the IUU fishing scores. Individual 'bones' represent the coastal, flag, port, and general state responsibilities, with larger fishbones showing high/poor scores.
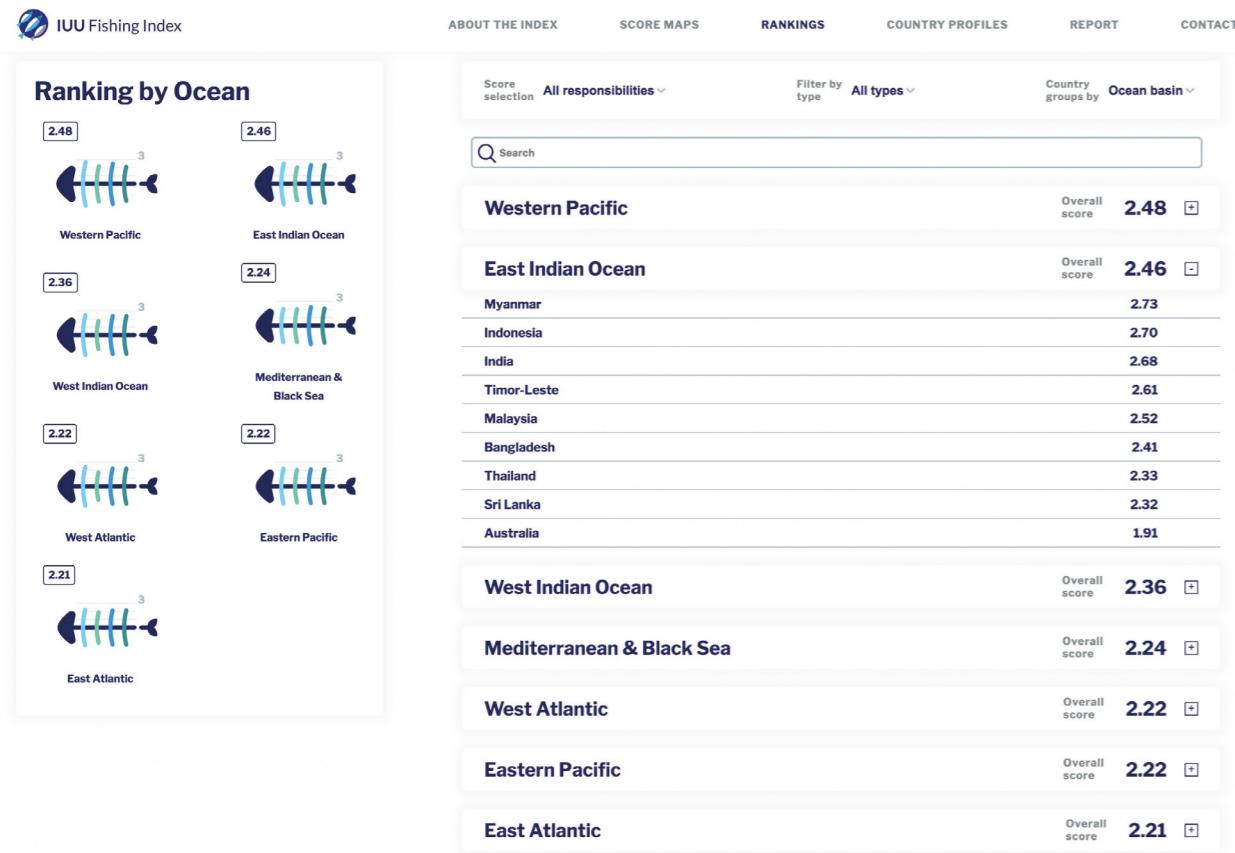
The 'Country profiles' webpage provides complete data for individual coastal states, showing the scores for each indicator for the country concerned, and how the country's scores compare with the average scores for the region and the ocean basin(s) in which the country is located. Individual country profiles can be downloaded from this webpage.

The 'Ranking' webpage shows scores ranked by country and allows users to view these rankings filtered by the type of indicator. Rankings are also provided for regional scores, and ocean basin scores.

Ranking by Ocean

2.48 Western Pacific	2.46 East Indian Ocean
2.36 West Indian Ocean	2.24 Mediterranean & Black Sea
2.22 West Atlantic	2.22 Eastern Pacific
2.21 East Atlantic	

IUU Fishing Index

ABOUT THE INDEX   SCORE MAPS   **RANKINGS**   COUNTRY PROFILES   REPORT   CONTACT

Score selection	All responsibilities ⌄	Filter by type	All types ⌄	Country groups by	Ocean basin ⌄

🔍 Search

		Overall score	
Western Pacific		**2.48**	⊞
East Indian Ocean		**2.46**	⊟
Myanmar		2.73	
Indonesia		2.70	
India		2.68	
Timor-Leste		2.61	
Malaysia		2.52	
Bangladesh		2.41	
Thailand		2.33	
Sri Lanka		2.32	
Australia		1.91	
West Indian Ocean		Overall score **2.36**	⊞
Mediterranean & Black Sea		Overall score **2.24**	⊞
West Atlantic		Overall score **2.22**	⊞
Eastern Pacific		Overall score **2.22**	⊞
East Atlantic		Overall score **2.21**	⊞

Annex: country scores

The table below provides a full list of the country scores aggregated across all state responsibilities, and ranked by the overall IUU score.

Country	Vulnerability	Prevalence	Response	Overall IUU Score
China	4.44	4.19	3.37	**3.93**
Taiwan	3.56	3.56	3.03	**3.34**
Cambodia	3.32	2.37	4.00	**3.23**
Russia	4.22	2.44	3.00	**3.16**
Vietnam	3.75	3.11	2.68	**3.16**
Sierra Leone	3.14	2.33	3.46	**3.01**
Yemen	3.41	1.30	4.00	**2.96**
Sudan	3.14	1.30	3.71	**2.77**
Liberia	3.72	1.89	2.74	**2.76**
Somalia	3.36	2.19	2.82	**2.75**
Myanmar	3.59	1.30	3.40	**2.73**
Libya	3.43	1.52	3.43	**2.73**
Philippines	3.92	2.19	2.26	**2.71**
Mexico	3.48	1.93	2.83	**2.71**
Indonesia	3.92	2.30	2.14	**2.70**
Cameroon	3.09	1.30	3.71	**2.69**
India	3.39	2.07	2.70	**2.68**
Tanzania	3.00	1.74	3.11	**2.65**
Japan	4.28	1.63	2.22	**2.63**
Comoros	3.09	1.81	2.97	**2.61**
Timor-Leste	3.14	1.41	3.36	**2.61**
Syria	3.00	1.30	3.71	**2.61**
Guinea	3.09	1.74	3.00	**2.60**
North Korea	2.77	1.74	3.75	**2.58**
Egypt	3.22	1.52	3.17	**2.58**
Jamaica	2.68	1.30	3.71	**2.57**
Panama	3.24	2.48	2.14	**2.56**

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Country	Vulnerability	Prevalence	Response	Overall IUU Score
Spain	3.91	2.22	1.94	**2.56**
Vanuatu	3.64	1.96	2.23	**2.55**
Grenada	2.37	1.30	3.71	**2.53**
Ukraine	3.13	1.74	2.79	**2.53**
Malaysia	3.09	1.52	3.13	**2.52**
São Tomé & Principe	2.95	1.30	3.26	**2.51**
Congo, R. of	3.05	1.52	3.50	**2.51**
Italy	3.76	1.70	2.17	**2.50**
Saint Lucia	2.36	1.30	3.81	**2.50**
South Korea	3.91	2.30	1.67	**2.49**
Iran	3.22	1.41	3.04	**2.49**
Haiti	2.30	1.38	3.80	**2.48**
Togo	2.64	1.63	3.24	**2.47**
Singapore	2.09	1.63	4.29	**2.46**
Kiribati	3.50	1.81	2.29	**2.45**
Portugal	3.36	1.74	2.33	**2.45**
Iraq	2.55	1.30	3.73	**2.44**
South Africa	3.52	1.78	2.17	**2.43**
Congo (DRC)	2.50	1.30	3.56	**2.42**
Bangladesh	2.73	1.30	3.09	**2.41**
Ecuador	2.96	2.30	2.06	**2.39**
Nigeria	3.05	2.19	2.12	**2.39**
Benin	3.00	1.30	3.22	**2.37**
Lebanon	2.44	1.30	3.31	**2.37**
Angola	3.12	1.41	2.63	**2.37**
Venezuela	2.83	1.41	2.92	**2.36**
Turkey	3.13	1.74	2.28	**2.34**
Thailand	2.92	2.67	1.66	**2.33**
Algeria	3.35	1.30	2.52	**2.33**
Guinea-Bissau	2.91	1.52	2.61	**2.33**
Sri Lanka	3.00	1.96	2.11	**2.32**
Morocco	3.84	1.30	2.03	**2.32**
Colombia	2.74	1.52	2.90	**2.31**
Eritrea	2.50	1.38	3.24	**2.31**
Cook Islands	3.15	1.30	2.58	**2.30**
Gabon	3.00	1.74	2.29	**2.30**
Antigua and Barbuda	2.89	1.30	2.86	**2.30**
Dominican Republic	2.85	1.30	3.24	**2.30**

Country	Vulnerability	Prevalence	Response	Overall IUU Score
USA	3.96	1.85	1.56	**2.29**
Guyana	3.14	1.30	2.53	**2.29**
France	3.92	1.22	1.94	**2.28**
Madagascar	3.08	1.63	2.19	**2.27**
Honduras	2.85	1.52	2.65	**2.27**
Georgia	2.35	1.30	3.29	**2.27**
Samoa	2.89	1.30	2.68	**2.26**
Cuba	2.43	1.30	3.22	**2.26**
Pakistan	2.78	1.30	2.87	**2.26**
Israel	2.05	1.30	3.57	**2.25**
Equatorial Guinea	3.10	1.30	2.64	**2.25**
Côte d'Ivoire	2.92	1.52	2.31	**2.24**
Senegal	3.04	1.74	2.06	**2.24**
Gambia	2.82	1.41	2.57	**2.23**
Dominica	2.00	1.38	3.42	**2.23**
Maldives	3.16	1.22	2.34	**2.23**
Papua New Guinea	3.00	1.67	2.11	**2.23**
Djibouti	2.41	1.30	3.08	**2.23**
Micronesia (FS of)	3.05	1.56	2.23	**2.23**
Brunei Darussalam	2.35	1.30	3.63	**2.22**
Mozambique	3.04	1.52	2.17	**2.22**
Albania	2.72	1.30	2.56	**2.22**
Peru	3.52	1.52	1.83	**2.21**
Saudi Arabia	2.60	1.30	3.25	**2.21**
Bosnia and Herzegovina	2.32	1.30	3.08	**2.20**
Fiji	3.09	1.56	2.14	**2.20**
Trinidad and Tobago	2.28	1.44	3.00	**2.20**
Norway	3.68	1.00	2.06	**2.19**
United Kingdom	3.13	1.44	2.15	**2.19**
Montenegro	2.48	1.30	2.85	**2.18**
Kenya	2.72	1.41	2.40	**2.18**
Namibia	3.04	1.30	2.25	**2.18**
Saint Vincent and the Grenadines	2.36	1.81	2.35	**2.18**
Jordan	2.50	1.30	3.25	**2.17**
United Arab Emirates	2.35	1.30	3.38	**2.16**
Mauritius	2.84	1.74	1.97	**2.15**

Country	Vulnerability	Prevalence	Response	Overall IUU Score
Kuwait	2.50	1.30	3.13	**2.14**
Greece	2.92	1.41	2.13	**2.13**
Brazil	2.91	1.41	2.19	**2.13**
Argentina	3.05	1.30	2.29	**2.13**
Tunisia	2.96	1.30	2.17	**2.13**
Seychelles	3.12	1.85	1.64	**2.13**
Tuvalu	2.64	1.56	2.23	**2.12**
Suriname	2.65	1.30	2.64	**2.12**
Marshall Islands	2.91	1.44	2.11	**2.11**
Solomon Islands	3.08	1.26	2.06	**2.10**
Bahamas	2.52	1.30	2.58	**2.09**
Nicaragua	2.96	1.30	2.09	**2.09**
Bahrain	2.20	1.30	3.25	**2.08**
Palau	2.95	1.33	2.18	**2.08**
Mauritania	3.23	1.41	1.85	**2.07**
El Salvador	2.68	1.30	2.23	**2.07**
Guatemala	2.83	1.30	2.22	**2.07**
Cape Verde	2.64	1.52	2.06	**2.06**
Nauru	2.76	1.22	2.35	**2.05**
Saint Kitts and Nevis	2.09	1.56	2.47	**2.05**
Qatar	2.05	1.30	3.25	**2.03**
Croatia	2.91	1.30	2.00	**2.03**
Lithuania	2.44	1.41	2.19	**2.02**
Netherlands	2.64	1.22	2.19	**2.02**
Malta	2.83	1.30	2.03	**2.01**
Chile	3.35	1.30	1.69	**2.01**
Cyprus	2.52	1.30	2.19	**2.01**
Romania	2.43	1.74	1.90	**2.00**
New Zealand	3.36	1.00	1.78	**1.99**
Oman	2.48	1.30	2.26	**1.99**
Monaco	1.56	1.30	3.04	**1.99**
Ghana	2.96	1.63	1.56	**1.98**
Canada	3.48	1.00	1.64	**1.97**
Costa Rica	2.80	1.48	1.74	**1.97**
Denmark	2.84	1.00	2.03	**1.94**
Barbados	1.95	1.38	2.48	**1.94**
Australia	3.00	1.33	1.58	**1.91**
Slovenia	1.80	1.30	2.44	**1.91**
Uruguay	1.87	1.74	2.08	**1.89**

Country	Vulnerability	Prevalence	Response	Overall IUU Score
Germany	2.40	1.22	2.03	**1.89**
Iceland	3.08	1.00	1.62	**1.86**
Ireland	2.65	1.07	1.93	**1.85**
Tonga	2.68	1.30	1.69	**1.82**
Belize	2.09	1.74	1.61	**1.78**
Bulgaria	2.52	1.30	1.53	**1.74**
Sweden	2.55	1.00	1.78	**1.73**
Poland	2.32	1.30	1.50	**1.68**
Finland	2.05	1.22	1.80	**1.67**
Estonia	2.00	1.15	1.83	**1.67**
Latvia	2.00	1.22	1.53	**1.57**
Belgium	1.80	1.30	1.28	**1.43**