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Please cite this paper as:

Hutniczak, B., C. Delpeuch and A. Leroy (2019-02-14), "Closing Gaps in National Regulations Against IUU Fishing", *OECD Food, Agriculture and Fisheries Papers*, No. 120, OECD Publishing, Paris.
http://dx.doi.org/10.1787/9b86ba08-en

OECD Food, Agriculture and Fisheries Papers No. 120

Closing Gaps in National Regulations Against IUU Fishing

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OECD

OECD FOOD, AGRICULTURE AND FISHERIES PAPERS

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This document has been declassified on the responsibility of the OECD Committee for Fisheries under the OECD reference number TAD/FI(2017)16/FINAL.

The publication of this document has been authorised by Ken Ash, Director of the Trade and Agriculture Directorate.

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CLOSING GAPS IN NATIONAL REGULATIONS AGAINST IUU FISHING

Barbara Hutniczak, Claire Delpeuch, and Antonia Leroy (OECD)

This paper identifies the progress achieved by individual countries in implementing internationally recognised best policies and practices against illegal, unreported and unregulated (IUU) fishing since 2005. It aims to inspire and guide governments and all stakeholders in the fisheries sector in how to focus their effort and investment to step up their fight against IUU fishing. The paper builds on a suite of policy indicators that investigate the extent to which countries meet their responsibilities in the most important dimensions of government intervention in relation to IUU fishing. The indicators show considerable improvement in fighting IUU fishing over the last decade, in line with international treaties and voluntary agreements. They also point to the gaps that need to be closed to individually and collectively work towards eliminating IUU fishing.

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The companion paper, *Intensifying the fight against IUU fishing at the regional level* (OECD Food, Agriculture and Food Paper N°121), tracks implementation of best practices by regional fisheries management organisations and identifies scope for intensifying their contribution to the fight against IUU fishing.

Key words: Fisheries management, fisheries policy, IUU fishing

JEL codes: Q22, Q27, Q28

Acknowledgements

The authors would like to thank all the countries and economies having participated in the survey, as well as the European Commission and the General Fisheries Commission for the Mediterranean (GFCM), for providing and verifying the information and references needed to prepare this paper. The authors also wish to thank OECD colleagues Kelsey Burns, James Innes, Franck Jésus and Roger Martini for their comments on successive versions of it. They are grateful to Laetitia Christophe, Sally Hinchcliffe, Stéphanie Lincourt, Michèle Patterson, and Theresa Poincet for editing and preparing this paper for publication.

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Abbreviations

ABNJ	Areas beyond national jurisdictions
AIS	Automatic identification system
BO	Beneficial owner
CDS	Catch documentation scheme
CMM	Conservation and management measure
COFI	OECD Fisheries Committee
DWFN	Distant water fishing nation
EEZ	Exclusive economic zone
EMFF	European Maritime and Fisheries Fund
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FATF	Financial Action Task Force
FOC	Flag of convenience
GDP	Gross domestic product
GFCM	General Fisheries Commission for the Mediterranean
GT	Gross tonnage
IAEG-SDGs	Inter-Agency and Expert Group on SDG Indicators
IMO	International Maritime Organization
INTERPOL	International Criminal Police Organization
IPOA-IUU	International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing
IUU	Illegal, unreported and unregulated
MCS	Monitoring, control and surveillance
MPA	Marine protected area
PSM	Port state measure
PSMA	Port State Measures Agreement
RBM	Risk-based management
RFMO	Regional fisheries management organisation
SDG	Sustainable Development Goal
UNCLOS	United Nations Convention on the Law of the Sea
UVI	Unique vessel identifier
VMS	Vessel monitoring system
WTO	World Trade Organization

Executive Summary and Key Recommendations

Illegal, unreported and unregulated (IUU) fishing is a serious threat to fisheries and fisheries-dependent communities, marine ecosystems and societies at large. Public and political awareness of the issue has increased and a consensus has emerged on the need for countries to join in efforts to combat IUU fishing. The issue now features prominently on the international political agenda, particularly following the adoption of the Sustainable Development Goal (SDG) targets 14.4 and 14.6, which set the objective of ending IUU fishing and subsidies contributing to IUU fishing by 2020.

This study highlights the progress made in adopting and implementing internationally recognised best policies and practices against IUU fishing by a number of OECD countries over the last decade, while identifying regulatory loopholes and policy gaps that still need to be addressed. The objective of this analysis is to inspire and guide governments and all stakeholders in the fisheries sector in how to focus their efforts and investment to step up their fight against IUU fishing. At the same time, this study recognises that countries may have different portfolios of policies and practices, and does not measure their effectiveness.

The analysis is based on an objective framework investigating the extent to which countries meet their responsibilities in the most important dimensions of government intervention in relation to IUU fishing:

- *as flag states*, to regulate domestically-flagged vessels fishing in areas beyond their national jurisdiction and in foreign waters;
- *as coastal states*, to regulate vessels in their domestic exclusive economic zone;
- *as port states*, to apply port controls and regulate the flow of products to the market;
- *as markets*, to prevent the purchase of illegal seafood and detect it within the supply chain;
- *as regulators*, in all the above roles, to enforce regulation through monitoring, control and surveillance, as well as sanctioning; and
- *as members of the international community*, to engage in co-operation and cross-country initiatives against IUU fishing.

Survey responses from 31 countries or economies, of which 23 are OECD members, were used to take stock of the current state of play. Results were summarised into six indicators reflecting each area of government intervention in relation to IUU fishing described above. For a number of OECD countries, these indicators were also generated for 2005, using information collected through a similar survey.

Comparing indicator values for surveyed countries in 2016 and 2005 shows considerable progress over the last decade. Among the most noticeable changes is the almost universal implementation of comprehensive registration and authorisation regimes, which allow flag states to better monitor national vessels and effectively eliminate fishing operations in

contravention of applicable laws. A decade ago, this was true for only about half on them. As coastal states, all OECD countries surveyed now fully implement authorisation regimes for foreign vessels.

Port state measures that reduce the ability of vessel operators to sell illegal catches have also been strengthened. For example, with intention to better direct available control capacity, lists of ports designated for use by foreign-flagged vessels and advance requests requirements for port entry are now in use in 87% of the OECD countries surveyed. Measures to deny port access or services to vessels suspected of IUU fishing are also in significantly greater use.

The results also show that catch documentation and certification schemes designed to prevent IUU fishing products from entering markets are now required in most OECD countries. Investigations into the financial transactions connected to fraudulent trade of seafood products have become more common. All OECD countries surveyed also reported the use vessel monitoring systems. The effectiveness of these systems is reinforced by improved international co-operation such as sharing of information at regional or international level and co-operative monitoring, control and surveillance.

Gaps remain, however, in the treatment of fishing-related activities, which is often more permissive than that governing fishing itself. For example, reporting of transhipments is less commonly required than reporting of catches, both on the high seas and in domestic waters. Almost 25% of OECD countries surveyed also reported there were no regulations in place to control foreign private companies chartering domestic company vessels to access their coastal marine resources.

To facilitate the detection of illegal activities, greater transparency is needed. In 2016, only 6% of surveyed OECD countries were making data on fishing authorisations of foreign vessels in their domestic waters easily accessible to both the public and other arms of government. A third of the OECD countries surveyed did not have fully functioning mechanisms allowing the use of trade information to target the movement of IUU fishing products along the value chain.

Weak sanctioning schemes continue to create loopholes that IUU fishing operators can exploit. For instance, while all the OECD countries surveyed reported regulations on the prevention of money laundering that, in principle, cover the proceeds from IUU fishing, only 26% had regulations specifically considering IUU fishing as a predicate offence for money laundering. Furthermore, prosecution of IUU fishing violations could be easier if vessel registration systems required information about the beneficial owners of vessels. In 20% of the OECD countries surveyed, fishers who do not abide by the law still had access to public support.

Key recommendations for addressing IUU fishing

1. Reinforce the international accountability of flag-granting states with respect to vessels under their jurisdiction conducting fishing operations on the high seas by maintaining strict registration and deregistration procedures.
2. Advance the adoption and implementation of mandatory unique vessel identifiers through the International Maritime Organization (IMO) by all flag states for vessels fishing on the high seas.
3. Adopt strong regulatory framework to support effective oversight of the transhipment activities.
4. Recognise the importance of the impact of domestic fishers on local marine resources by strengthening regulations governing domestic fishers (e.g. strict fishing authorisation regimes) in coastal waters.
5. Assure transparency on fishing vessel registries and granted fishing authorisations though public disclosure of the information by flag and coastal states.
6. Ensure that access to coastal marine resources through chartering arrangements is regulated.
7. Establish lists of vessels internationally recognised as involved in IUU fishing that are maintained and used at national level, and develop efficient protocols to share them with other countries for easy verification when vessels attempt to gain access to port services.
8. Establish strict protocols for effective implementation of port state measures.
9. Enhance corporate transparency in relation to entities managing large-scale fishing operations through policies allowing to trace the money generated by IUU fishing and, consequently, gather critical evidence for law enforcement authorities against behind-the-scene beneficiaries of IUU activities and their networks.
10. Restrict access to marine insurance for vessels involved in IUU fishing through co-operation and information sharing between flag and coastal states and insurance companies.
11. Support the marginalisation of products of unknown origin through public information programmes raising awareness of the problem of IUU fishing and how it compromises the sustainability of marine resources and ecosystems, targeted trade policies, and greater controls in targeted markets.
12. Reserve access to fisheries support to fishers with a clean record of compliance with regulations through policies assuring strict compliance verification when applying for support.
13. Prohibit harmful subsidies that contribute to overfishing, overcapacity and support IUU fishing by working together towards effective disciplines in the World Trade Organization (WTO).
14. Develop standards on transparency of sanctions imposed on fishers to allow comprehensive assessment of the effectiveness of sanctioning systems in place and establishing best practices for other countries to learn from.
15. Improve communication and information sharing at the regional level – for example, creating regional fisheries intelligence groups bringing together the International Criminal Police Organization (INTERPOL), RFMOs and national executive government bodies, to share information on IUU fishing, develop new tools and share best practices to eliminate IUU fishing.
16. Intensify efforts to develop partnerships between public administrations and private sector stakeholders, in particular technology providers, to deploy innovative platforms and technology to track IUU fishing vessels – for example through initiatives such as the agreements between the governments of Indonesia and Peru with Global Fishing Watch.
17. For developed countries, share experiences with developing countries to help them adopt and implement best policies and practices against IUU fishing.

These recommendations cover the full spectrum of gaps identified in this paper. OECD countries have addressed many of these over the past decade. Each country will find those that are relevant to its situation by looking into individual country scores in Annex C. These recommendations should also be of particular relevance to countries outside the OECD area.

1. Understanding progress in curbing IUU fishing and priorities for future policy improvements

1.1. The persistence of IUU fishing impairs the development of a sustainable ocean economy

Illegal, unreported and unregulated (IUU) fishing is a serious threat to sustainable fishing, fishery-dependent communities, marine ecosystems and societies at large (Box 1.1). IUU fishing reduces the resources available to legal fishers, creating unfair competition that reduces the profitability and employment opportunities associated with legitimate fishing. This, in turn, can harm the social cohesion of fishing communities and weaken food security in countries that depend on local fishery resources (Petrossian, 2014[1]; Stiles et al., 2013[2]). IUU fishing also undermines governments' capacity to manage fish stocks sustainably by adding pressure on resources that is difficult to estimate and account for when designing the necessary policies (Österblom, 2014[3]). This is the case for IUU fishing both in countries' exclusive economic zones (EEZs) and on the high seas (Berkes et al., 2006[4]). Furthermore, IUU fishing often involves the use of techniques that are detrimental to resources and ecosystems, and targets species that need to be protected, sometimes leading to damaged coral reefs and destructive bycatch of endangered species (Liddick, 2014[5]).

Box 1.1. What is IUU fishing?

Building on the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU) (FAO, 2001[6]), the elements of IUU fishing are defined as follows:

- *Illegal fishing* refers to activities conducted in a country's EEZ in contravention of its laws and regulations as well as to fishing in international waters in violation of that country's flag state law and regulations related to its obligations under the international treaties and regional fisheries management organisations (RFMO) convention arrangements to which it is party.
- *Unreported fishing* refers to fishing activities that have not been reported, or have been misreported, to the relevant national authority or RFMO, in contravention of the laws, regulations and reporting procedures of that country or organisation. This can occur both within EEZs and on the high seas.
- *Unregulated fishing* refers to fishing activities in areas or of fish stocks where there are no national, regional or international conservation or management measures applicable to a particular fishery or fishing vessel. Unregulated fishing can occur in an unmanaged fishery within an EEZ or on the high seas by vessels without nationality, or by vessels flying the flag of a country that is not a party to international conventions or a relevant RFMO.

IUU fishing has economic consequences that go beyond the fisheries sector. Apart from the forgone revenue from the illegally removed marine resources, other costs of IUU fishing include the loss of local economic activities related to fisheries (Bennett, Govan and Satterfield, 2015[7]) and lost opportunities to collect fees and other tax liabilities (Galaz et al., 2018[8]) that reduce countries' abilities to fight poverty, fund public investment and support development activities. The proceeds from illegal fishing are often laundered through complex networks of at-sea transhipment services and fraudulent catch documentation (Liddick, 2014[5]). Agnew et al. (2009[9]) estimate that illegal and

unreported fishing cost the global economy as much as USD 23.5 billion annually, excluding the cost of unregulated fishing and other related economic losses.

IUU fishing is inherently a global activity. As seafood is one of the most traded food commodities (OECD/FAO, 2018[10]), products deriving from IUU fishing can fraudulently end up on consumers' plates in any country. Operators engaged in IUU fishing also move from one jurisdiction to another in search of higher profits, targeting areas where regulations and enforcement are weaker. The countries most vulnerable to IUU fishing are those with weak governance and insufficient capacity to police their waters (Liddick, 2014[5]). Poor socio-economic conditions can also make fishers and others in fishing communities vulnerable to recruitment into criminal activities (UNODC, 2011[11]). Moreover, globalisation has enabled criminal networks to expand the scope of illegal fishing operations and use fishing vessels for related crimes, such as drugs and weapons trafficking, and human abuse, and use of the proceeds to finance terrorism (UNODC, 2011[11]).

1.2. There is increasing recognition of the need for strong policies and international co-operation to tackle IUU fishing globally

Over the past decade, a more detailed picture of the threat posed by IUU fishing operations has emerged. Public and political awareness of the issue has increased and a consensus has emerged on the need for countries to join in efforts to combat IUU fishing.[1] Countries have realised that curtailing IUU fishing could contribute to the recovery of their fisheries without having to resort to socially or politically unpopular actions such as fishing moratoria or forced capacity removals (Cabral et al., 2018[12]; OECD, 2017[13]). The issue also now features prominently on the international political agenda, particularly following the adoption in 2015 of specific targets under the Sustainable Development Goal (SDG) 14, which set objectives to end IUU fishing (14.4) and eliminate subsidies contributing to IUU fishing (14.6) by 2020 (Box 1.2).[2] Calls for better enforcement of legislation targeting IUU fishing has become a focal point for discussion at high-level meetings such as the *Our Ocean Conference* series, most recently hosted by Indonesia in Bali.[3] On 5 June 2018, the *International Day for the Fight Against Illegal, Unreported and Unregulated (IUU) Fishing* was celebrated for the first time.[4] Members of the World Trade Organization (WTO) also continue to discuss disciplines on subsidies related to IUU fishing (WTO, 2018[14]).

[1] Countries, for example, acknowledged the threat that IUU fishing poses to sustainable development in The Future We Want, the outcome document of the United Nations Conference on Sustainable Development held in Rio de Janeiro, Brazil, 20–22 June 2012 (United Nations, 2012[126]): "We acknowledge that illegal, unreported and unregulated fishing deprive many countries of a crucial natural resource and remain a persistent threat to their sustainable development."

[2] The fight against IUU fishing can also contribute to attaining SDG 1 (No poverty), SDG 2 (Zero hunger) and SDG 16 (Peace, justice and strong institutions).

[3] More information at http://ourocean2018.go.id/.

[4] A resolution proposed by FAO and agreed by the United Nations General Assembly on 5 December 2017.

Box 1.2. IUU-related targets of SDG 14: *Conserve and sustainably use the oceans, seas and marine resources for sustainable development*

SDG Target 14.4

"By 2020, 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."

SDG Target 14.6

"By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation."

Concrete progress has been made with the adoption of a number of international treaties and voluntary agreements intended to support the fight against IUU fishing (Box 1.3). As a result, fishing nations, including within the OECD, have been taking action to address IUU fishing through new regulations and improved monitoring and enforcement practices.

Box 1.3. International treaties and voluntary agreements on IUU fishing

Since 2005, a number of countries have committed to improved measures against IUU fishing. The major documents include:

- 2009 Agreement on Port State Measures to Prevent, Deter, and Eliminate Illegal, Unreported and Unregulated Fishing; in force since 2016 (FAO, 2009[15]).
- 2014 Voluntary Guidelines for Flag State Performance (FAO, 2014[16]).
- 2015 Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (FAO, 2015[17]).
- 2017 Voluntary Guidelines for Catch Documentation Schemes (FAO, 2017[18]).

1.3. Tracking progress in implementing best policies and practices against IUU fishing

Despite the efforts invested in the fight against IUU fishing, the problem persists and it is believed that each year more than 15% of global capture fisheries production is still taken illegally, or not accounted for in any statistics (FAO, 2016[19]). Hence, monitoring progress and identifying gaps in the adoption and implementation of recognised best policies and practices against IUU fishing will be key to maintaining momentum towards greater compliance with fisheries regulations and identifying priorities for action.

The Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs) is responsible for development of a global indicator framework to track progress in the achievement of

SDGs.[5] In this context, the Food and Agriculture Organization of the United Nations (FAO) was designated as custodian of Indicator 14.6.1, which aims to measure "progress by countries in the degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing". The methodology for this indicator was approved by the FAO Committee on Fisheries Bureau in July 2017.[6] The FAO started collecting information on this in the context of its regular monitoring of the implementation of the Code of Conduct for Responsible Fisheries; the progress will be reported at country level once scores are validated by surveyed countries.[7]

To complement the global monitoring effort led by the FAO, this paper aims to inform policy makers from OECD countries and partner countries and economies working with the OECD Fisheries Committee (COFI) on the progress made in implementing a broader set of measures against IUU fishing, covering policies (regulations and instruments) and practices (decision-making processes, institutional arrangements and deployed tools) identified as having potential to reduce IUU fishing through a review of recommendations from international legal instruments and the relevant scientific literature, as well as consultations with stakeholders. The remainder of the paper refers to this inventory as "recognised best policies and practices".[8] In considering the international instruments aiming to combat IUU fishing also covered in the FAO indicators, this paper focuses on the implementation of relevant individual measures rather than on the adherence to the instruments as a whole. In addition, it considers market instruments and tools for international co-operation. Finally, this project makes the disaggregated country-level information publicly available.

The purpose of this detailed analysis is to illustrate the concrete advances that have been made, to inspire those countries wanting to step up their fight against IUU fishing. The paper also aims to identify regulatory loopholes and policy gaps, which continue to undermine efforts in this fight. This will guide countries, international organisations and all stakeholders in the fisheries sector in how to focus their effort and investment in the fight against IUU fishing.

[5] This was agreed at the 47th session of the UN Statistical Commission held in March 2016. The report of the Commission, which included the global indicator framework, was then taken note of by United Nations Economic and Social Council at its 70th session in June 2016. More information can be found at: https://sustainabledevelopment.un.org.

[6] The FAO indicator focuses on evaluation, by countries, or their adherence and implementation to the 1982 United Nations Convention on the Law of the Sea, the 1995 United Nations Fish Stocks Agreement, and the 2009 FAO Agreement on Port State Measures (PSMA); implementation of Flag State Responsibilities in the context of the 1993 FAO Compliance Agreement and FAO Voluntary Guidelines for Flag State Performance; and development and implementation of a national plan of action (NPOA) to combat IUU fishing in line with the IPOA-IUU. Methodology available at: https://unstats.un.org/sdgs/metadata/files/Metadata-14-06-01.pdf.

[7] More details at: http://www.fao.org/sustainable-development-goals/indicators/1461/en/.

[8] This inventory updates and expands a similar inventory undertaken in 2005 in the report *Why Fish Piracy Persists* (OECD, 2005[22]).

Box 1.4. Using indicators to measure progress towards best policies and practices against IUU fishing

The recognised best policies and practices reviewed in this paper are classified into six categories focusing on the key areas of government intervention against IUU fishing. The indicators are constructed by aggregating scores for all the policies and practices falling under each of these categories (Table 1.1).

The four state responsibility indicators assess countries' regulatory activity in the following roles:

- as *flag states* (regulating domestically flagged fishing vessels in the areas beyond national jurisdiction and in the EEZs of other countries)
- as *coastal states* (regulating vessels in their domestic EEZ)
- as *port states* (applying port controls and regulating flow of products to their markets)
- as *markets* (creating economic disincentives for IUU fishing and using market tools to detect illegal seafood along the supply chain).

The *enforcement* indicator assesses the capacity of the monitoring, control and surveillance schemes; national interagency co-operation practices; and the comprehensiveness the sanctioning systems in place. All these elements are key to a country's capacity to enforce the regulations established in the above roles.

The *international co-operation* indicator assesses the extent to which countries engage with other countries to fight IUU fishing, mostly through regional fisheries management organisations.

Table 1.1. OECD indicators of policies and practices against IUU fishing

Policy indicators
Responsibilities as a flag state
Responsibilities as a coastal state
Responsibilities as a port state
Responsibilities as a market
Enforcement
International co-operation

A survey was developed to obtain information from governments on whether they had adopted the recognised best policies and practices, i.e. the appropriate legislation was in place. Governments were also asked to self-assess the degree to which they implement them. Answers were scored, and scores validated by respondents, to objectively and transparently consolidate the information into a series of indicators (Box 1.4).[9] The data

[9] The survey and references to the sources in which each of the recognised best policies and practices were identified, as well as the scoring methodology used to consolidate the collected information into indicators, can be found in Annex A, including the precise criteria that were defined for each question to guide the self-assessment of the degree of implementation by surveyed countries (in Table A.1).

collected refer to 2016 and, where similar information was collected in 2005, allow identification of progress over the past decade.

Responses were received from 31 countries and economies – 23 OECD members and 8 non-members.[10] In 2015, these countries together accounted for about 23% of the global capture fisheries production volume (FAO, 2017[20]) and 85% of the value of landings in the OECD countries (OECD, 2017[21]).[11] The analysis focuses on OECD countries, while occasionally referring to non-members (when specified). It is important to note that a number of important fishing nations are not included in the analysis and so the results need to be considered with caution.[12] In particular, the limited coverage of countries outside the OECD area needs to be considered when referring to this study and using results derived from it as benchmark indicators. Nevertheless, this is a useful step towards more transparency on IUU fishing issue and efforts to find best solutions to the problem, aimed to feed into the global discussion and encourage progress, both inside and outside the OECD.

1.4. OECD countries have made significant policy progress but some areas need further attention

In 2005, inadequate legislation and management practices were identified as key underlying causes for IUU fishing (OECD, 2005[22]). It is thus encouraging that this study has found considerable improvement among the OECD countries surveyed over the last decade with respect to the implementation of recognised best policies and practices against IUU fishing (Figure 1.1).

According to the survey results, states are becoming better at assuming their responsibilities in their roles as flag states, coastal states, port states and markets. Comprehensive registration and authorisation regimes now allow surveyed countries to monitor vessels and effectively eliminate fishing operations in contravention of applicable laws (Sections 2 and 3). Widespread implementation of port state measures is cutting access to offloading areas to operators of vessels involved in IUU fishing (Section 4). The use of market measures

[10] The following OECD countries completed the survey: Australia, Belgium, Canada, Denmark, Estonia, Germany, Greece, Iceland, Ireland, Italy, Japan, Korea, Lithuania, Latvia, the Netherlands, New Zealand, Norway, Poland, Slovenia, Sweden, Turkey, the United Kingdom and the United States. The non-OECD countries and economies were: Albania, Colombia, Lebanon, Libya, Malta, Chinese Taipei, Thailand and Tunisia. On 25 May 2018, the OECD Council invited Colombia to become a member country. At the time of preparation, the deposit of Colombia's instrument of accession to the OECD Convention was pending and therefore Colombia does not appear in the list of OECD members and is not included in the OECD zone aggregates. The countries that participated in both the 2017 survey and the equivalent one in 2005 include: Australia, Belgium, Canada, Germany, Iceland, Ireland, Italy, Japan, Korea, the Netherlands, New Zealand, Norway, Slovenia, Turkey and the United States.

[11] To compute the share of the value of landings for OECD countries, the value for countries with missing data was estimated on the basis of the production volume sourced from FAO (FAO, 2017[20]) and a proxy price calculated as an average price for OECD countries that reported data for 2015 (OECD, 2017[21]).

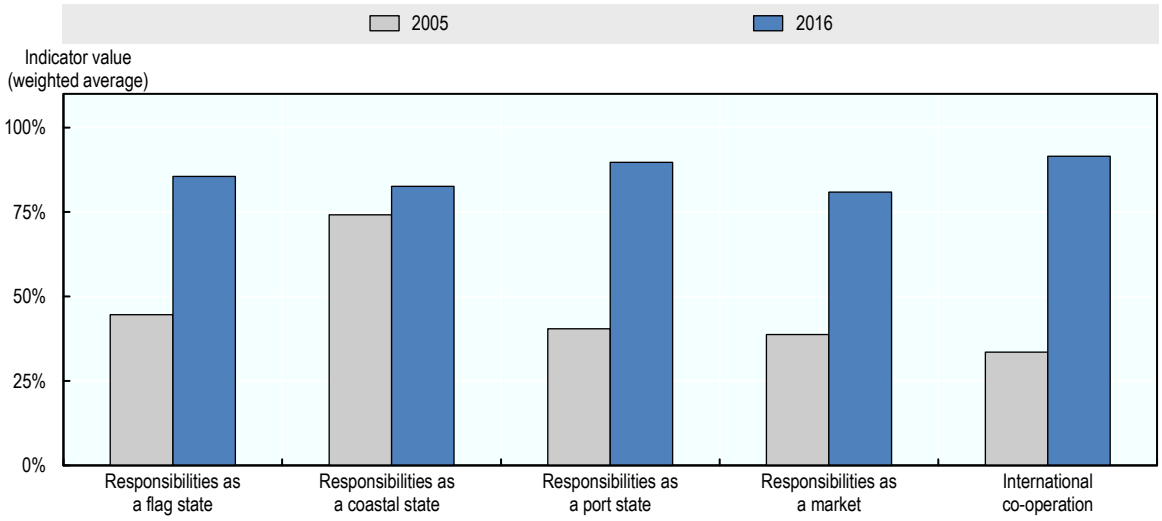
[12] Important OECD fishing nations not included in the study are Chile, Finland, France, Mexico, Portugal and Spain.

and improved alignment of economic incentives is also on the rise (Section 5). For instance, nearly all surveyed countries practise catch documentation and certification schemes to prevent IUU fishing products from entering the market. Targeted marketing campaigns are also contributing to raising consumers' awareness of the problem of IUU fishing. Increasing awareness among consumers of the importance of seafood origins in terms of social responsibility improves the competitiveness of fishers committed to legal activity because it increases demand for their products and creates incentives to fish legally. It is also increasingly common for countries to investigate financial transactions related to the seafood trade for fraudulent sourcing.

The reforms already undertaken are giving rise to comprehensive laws on preventing IUU fishing, which provide a strong foundation for effective enforcement (Section 6). The countries surveyed use a variety of enforcement tools to police waters and deter IUU fishing.[13] Implementing a comprehensive mixture of monitoring, control and surveillance (MCS) tools and sanctioning systems in line with best practices puts authorities in a better position to fight IUU fishing.

There has been also notable progress on the international co-operation front (Section 7). Most of the countries noted the importance of sharing information on detected illegal activities on the high seas between each other and have designated channels to exchange information with RFMOs regarding owners, operators and crews of vessels suspected of IUU fishing. This suggests that reducing IUU fishing is a broadly accepted goal and resulting efforts have been streamlined for the effective conservation of marine resources.

Figure 1.1. Progress in implementing best policies and practices against IUU fishing in surveyed countries (2005 and 2016)



Note: Policy indicators based on weighted average of responses to the OECD survey on measures against IUU fishing. Results limited to the subset of questions where data were available for both 2005 and 2016. The enforcement indicator is not included because the respective data were not collected in 2005. Results include OECD countries participating in the data survey. For details on methodology, refer to Annex A.
Source: OECD 2017 data collection on measures against IUU fishing.

[13] Data on enforcement were not collected in 2005 and thus no comparison can be made.

However, the results also highlight the fact that some areas need further attention. The comprehensiveness of vessel registration requirements still varies widely between countries. For example, only about half of the OECD countries surveyed require information about the beneficial owner for vessels fishing on the high seas (Section 2.1), and even less (39%) for vessels fishing in domestic waters (Section 3.2). Mandatory use of unique vessel identifiers is not universal and required by 91% of the OECD countries participating in the survey. Among OECD countries, regulations applicable to fishing-related activities, such as transhipment, remain more permissive than those governing fishing. For operations in the high seas, although all countries have legislation pertaining to the authorisation of fishing activities, only 78% of the OECD countries surveyed reported having legislation related to the authorisation of fishing-related activities (Section 2.2). Reporting of transhipments is also less commonly required than reporting of catches, both on the high seas (Section 2.2) and in domestic EEZs (Section 3.2). Weak regulations on transhipment and other fishery-related activities open seafood supply chains to IUU fishing operators. In many OECD countries, there is a lack of easily accessible data on fishing authorisations (fishing licences) available to both the public and arms of government other than the main authority responsible for fisheries management. This results in cumbersome processes that hinder the detection of illegal activities (Sections 2.2 and 3.1). The challenge of regulating access to domestic resources by foreign enterprises through chartering agreements remained untackled 23% of surveyed OECD countries in 2016 (Section 3.1). In relation to port state measures, the survey found shortcomings in the implementation of mechanisms to prioritise which vessels to inspect and with setting targets in terms of number of port inspections. These measures were fully implemented by only 70% of the OECD countries surveyed (Section 4). As markets, only 65% of the OECD countries surveyed reported fully functioning mechanisms allowing the use of trade information, e.g. sourced from customs authorities, to target the movement of IUU fishing products along the value chain. While all the OECD countries surveyed have regulations on the prevention of money laundering that in principle cover the proceeds from IUU fishing, only 26% reported that their regulations specifically considered IUU fishing as a predicate offence for money laundering (Section 0). Not all the surveyed OECD countries (80%) apply restrictions on public support to operators convicted of IUU offences (Section 0).

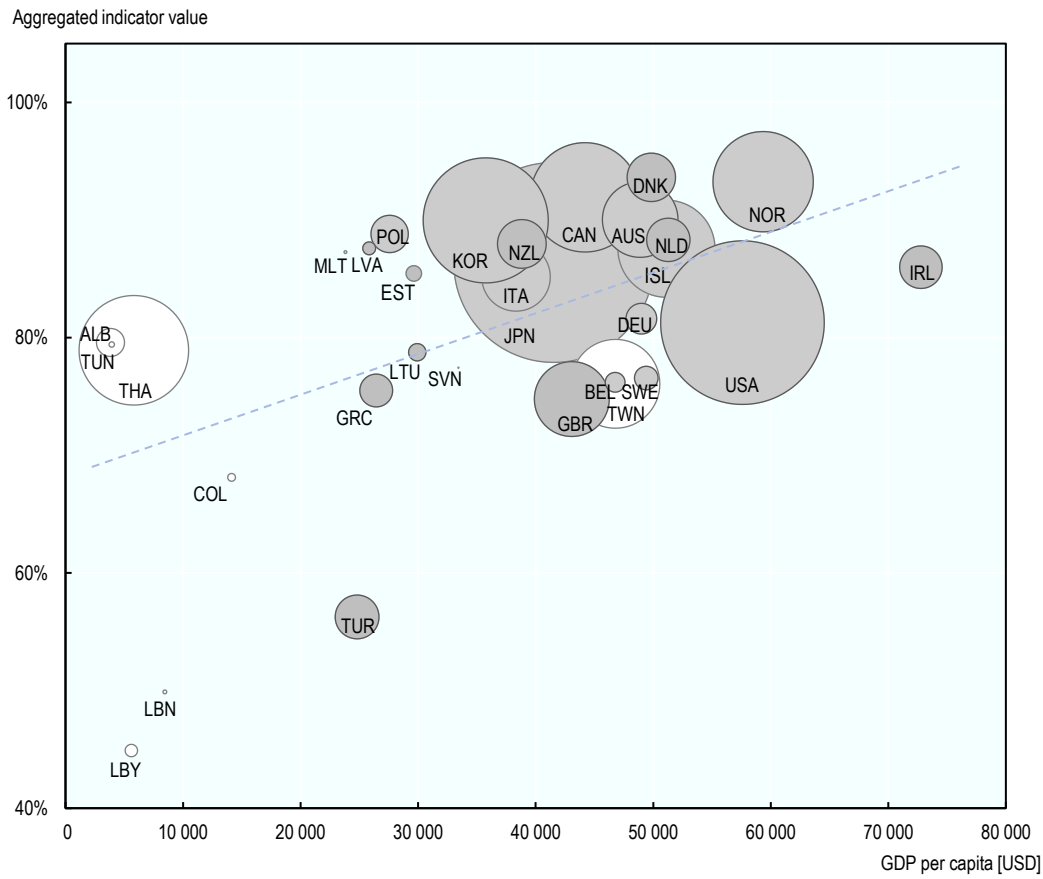
The survey also found room for improvement in relation to the enforcement mechanisms of fisheries regulations. The lack of universally implemented MCS systems (Section 6.1) and dissuasive sanctioning systems (Section 6.3) continues to create loopholes that IUU fishing operators can exploit. Lack of co-ordination between government agencies (Section 6.2) may diminish the effectiveness of even the most comprehensive legislation. Only 70% of participating OECD countries reported they had a specialised task force or inter-agency group convened specifically for the purpose of fighting IUU fishing. OECD countries could improve the involvement of tax and customs authorities in the fight against IUU to facilitate the pursuit of related crimes such as money laundering. Currently, customs are involved in detection of IUU fishing in 87% of the OECD countries surveyed, while tax administration only in 26%. In the international arena, co-operative MCS systems and joint actions against alleged IUU operations, as well as participation in regional task forces or groups to combat IUU fishing, are common (87%), but not universal (Section 7.1).

Sections 2 to 7 review in detail the progress made and the remaining scope for improvement in each of the main policies and practices areas serving as a base for the six OECD policy indicators on IUU fishing. Annex C presents the specific results by country, including those which are not OECD members.

1.5. Lessons learned by OECD countries in implementing best practice against IUU fishing could help other fishing nations

Figure 1.2 summarises the information on all the indicators. It shows that most of the OECD countries surveyed appear to be implementing the identified best policies and practices related to their responsibilities as flag states, coastal states, port states, and as markets, as well as practices related to enforcement and fostering international co-operation. It is also worth noting that the degree of implementation of policies and practices against IUU fishing appears to be often closely related to gross domestic product (GDP) per capita, used here as a proxy for countries' development. This suggests that countries outside the OECD area are more likely to face larger regulatory gaps and implementation weaknesses.

Figure 1.2. Aggregated indicator of policies and practices against IUU fishing in relation to GDP per capita



Note: GDP per capita sourced from OECD GDP database (OECD, 2018[23]). Grey bubbles represent OECD countries; white bubbles represent non-OECD countries. The size of the bubble is based on estimated production value (FAO, 2017[24]; OECD, 2017[21]); details in footnote 11).
Source: OECD 2017 data collection on measures against IUU fishing.

Given the positive impact that closing the remaining regulatory gaps and implementation weaknesses in third countries could have on global IUU fishing and on resources and communities, including in OECD countries, this suggests that, alongside continuing efforts to adopt and implement best policies and practices, countries should be interested in co-operating with each other and OECD countries are at the position to guide efforts on

improving policies on IUU fishing. This would help to avoid undermining their own efforts and achieve more effective and rapid results. As this paper shows, OECD countries are a good source of information about measures that could be considered by other countries, who could use the OECD experience in implementing a comprehensive set of policies and practices against IUU fishing. For such purpose, the survey developed by this project could be used in third countries not yet covered by the study and guide them in identify priorities for bilateral co-operation and assistance.

1.6. A useful tool for policy makers and fisheries managers around the globe

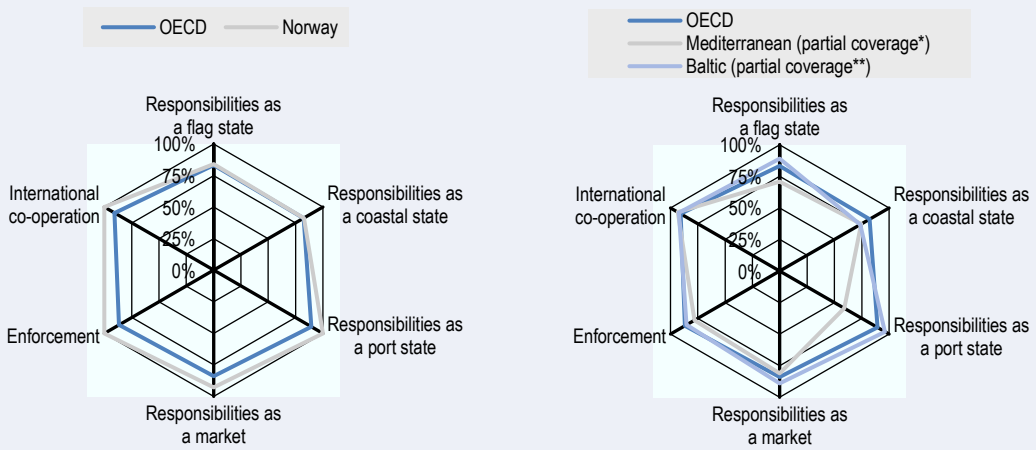
The OECD policy indicators on IUU fishing could be a useful tool for comparing efforts across regions or highlighting successfully implemented policies and any remaining shortcomings of specific countries (Box 1.5). As such, they can be helpful in guiding policy design to reflect recognised best practices in combatting IUU fishing.

Box 1.5. Using the OECD indicators of policies and practices against IUU fishing in practice

This box illustrates how the OECD IUU fishing policy indicators can be used in practice for benchmarking efforts at different scales. In addition to identification of gaps in domestic policies and practices, countries may also be interested in investigating the overall level of policies and practices at regional level because of the cross-border nature of IUU fishing impact. For example, Figure 1.3 compares the results for Norway (left hand panel) and the countries surveyed for this project fishing in the Mediterranean Sea and the Baltic Sea (right hand panel) against the OECD average.

As the figure clearly shows, Norway, the country with the highest overall score among OECD countries, is leading efforts against IUU fishing, in particular in terms of advanced enforcement and well-established international co-operation procedures. International co-operation between Mediterranean countries (covered partially by this project) is at high level but measures related to their responsibilities as port states are undermined by gaps in a few surveyed countries within this group. In the Baltic Sea region, port state measures and use of market tools stand at particularly high level. The remaining categories fall close to the OECD average.

Figure 1.3. OECD policy indicators on IUU fishing at regional and national level



Note: *Mediterranean countries (countries on the coast of the Mediterranean Sea) include both OECD counties that participated in the survey (Greece, Italy, Slovenia and Turkey; these countries also contribute to the OECD average) and non-OECD countries surveyed for this project in co-ordination with the General Fisheries Commission for the Mediterranean (GFCM): Albania, Lebanon, Libya, Malta and Tunisia. **Baltic countries (countries on the coast of the Baltic Sea) include the following OECD countries surveyed for the project: Denmark, Germany, Estonia, Latvia, Lithuania, Poland and Sweden.
Source: OECD 2017 data collection on measures against IUU fishing.

2. Flag states have improved control over vessels fishing outside their own waters, but laws on fishing-related activities are laxer

The flag state is responsible for exercising jurisdiction over vessels flying its flag, irrespective of the vessel's geographical location (High Seas Convention 1958, United Nations Convention on the Law of the Sea 1982). Exercising jurisdiction does not necessarily mean the flag state implements physical control of vessels at sea, but that it is responsible for enforcing the regulations that apply to the vessel using its flag. Granting a flag to a vessel thus implies the country is responsible for effective control over its fishing and fishing-related activities in the areas beyond national jurisdiction (ABNJ) and in the waters of other countries.[14]

Strong flag-state policies and practices ensure that distant water fishing nations (DWFNs) are not contributing to the global IUU fishing problem. Flying a flag of convenience (FOC) – that is, having a vessel registered in a country with lax regulations or enforcement – allows vessel owners and operators to lower costs by exploiting loopholes in environmental or labour regulations, or by avoiding taxes (OECD, 2013[25]; Liddick, 2014[5]; NAFIG and INTERPOL, 2017[26]). Furthermore, FOCs often allow flexible reflagging of vessels operating on the high seas without thorough examination of their possible involvement in IUU fishing (Birnie, 1993[27]; Gianni and Simpson, 2005[28]; Miller and Sumaila, 2014[29]), undermining efforts to efficiently track and control vessels' activities. Indeed, vessels found guilty of engaging in IUU fishing and sanctioned under one jurisdiction can continue to operate under another if they obtain a FOC.

Following the recommendations in OECD (2005[22]), and in line with the 2014 *FAO Voluntary Guidelines for Flag State Performance* (FAO, 2014[16]; Erikstein and Swan, 2014[30]), this paper investigates two crucial areas of responsibility for flag states' monitoring of national vessels fishing or conducting fishing-related activities outside their exclusive economic zone (EEZ), that is in the jurisdiction of foreign countries or in the ABNJ (referred to as the external fleet) (Englender et al., 2014[31]; Churchill, 2012[32]; Erceg, 2006[33]; Kao, 2015[34]; Erceg, 2006[33]). The first is the maintenance of comprehensive registries of the external fleet (Section 2.1). Vessel registration is the process by which a country documents a vessel and assigns it its flag, which allows the vessel to travel internationally but implies the vessel is subject to its domestic laws. The second is the use of authorisation systems for the external fleet (Section 2.2). Vessel authorisation is the process of issuing a licence or permit to registered vessels for a specific fishing or fishing-related activity. Authorisations detail the scope of permitted activities, e.g. in terms of target species, fishing techniques or geographical location. Authorisations are often designed to assure compliance with any conservation and management measures (CMMs) in place. While authorisation must be preceded by registration, both systems are complementary and some objectives of IUU fishing prevention can be addressed through either one, by incorporating equivalent measures.[15]

[14] A vessel is subject to domestic laws of the country in which it is registered and which flag it flies at all times. However, when the vessel is within territorial jurisdiction of other country, it is subject to that country's laws and both jurisdictions exist concurrently.

[15] For example, verification of a vessel's history of IUU fishing can be a requirement at either the registration or authorisation stage.

2.1. Registries have become standard but could be more comprehensive

The contribution of national registry systems to containing IUU fishing depends on a number of attributes. The more relevant information is requested when registering a vessel, the easier it is to track its activities and the wider the scope of actions that can be taken to prevent IUU fishing activities. Considering a vessel's history – for example, reviewing records of non-compliance with regulations or reflagging, or whether it is already registered in another country, limits the scope for vessels to "hop" from one registry to another in order to avoid facing the consequences related to IUU fishing. Including information on the beneficial owner (BO)[16] of the vessel makes it easier to ensure that the person registering a vessel has no legal, personal, financial or other ties to owners or operators found guilty of IUU fishing, and exercises full control over the vessel. It also allows economic measures to be used against IUU fishing (Section 5). Including an International Maritime Organization (IMO) number (Box 2.1) allows data to be cross-checked with other sources, improves MCS and transparency, and makes it more difficult for vessels to operate outside the law. The mandatory use of IMO numbers can also help to deter related crimes, such as human trafficking, especially when vessels use multiple identities, changing flags, names and radio call-signs to avoid detection and sanctions (EJF, 2013[35]; ILO, 2013[36]). Frequent updating of the registry increases its relevance, while transparency over the information included reinforces the accountability of flag-granting countries, opening them to public scrutiny (OECD, 2013[25]; McCauley et al., 2016[37]; Merten et al., 2016[38]). Finally, ensuring that vessels conducting fishing-related activities, such as transhipment, are also subject to registration procedures contributes to the effectiveness of IUU detection and prevention. Loose laws on transhipment allow IUU fishing operators to launder their illegal harvest by delivering the product to the market under the paperwork of a vessels not directly associated with illegal activities, making controls at port potentially overdue.

The 2005 OECD report found many flaws in countries' external fleet registration processes (OECD, 2005[22]). The new survey found that significant progress has been made since then. In 2016, all OECD countries participating in the review reported that they had fully implemented registration processes for the external fleet, both for vessels conducting fishing and fishing-related activities, up from only 60% and 33% respectively in 2005 (Figure 2.1). Most of the OECD countries surveyed (83%) also reported that their registries were regularly updated. The share of surveyed OECD countries which prohibit registration of vessels with a history of IUU fishing increased from 40% to 83%, while the share prohibiting the registration of vessels already registered by another state (except on a temporary basis) increased from 33% in 2005 to 91% in 2016. The number of countries requiring the mandatory payment of penalties before vessels can be deregistered increased from 27% in 2005 to 91%. Moreover, 87% of OECD participants now make their registries publicly available.

[16] Beneficial owner refers to the natural person(s) who ultimately* owns or controls a customer** and/or the natural person on whose behalf a transaction is being conducted. It also includes those persons who exercise ultimate effective control over a legal person or arrangement. *Reference to "ultimately owns or controls" and "ultimate effective control" refer to situations in which ownership/control is exercised through a chain of ownership or by means of control other than direct control. **This definition should also apply to beneficial owner or a beneficiary under a life or other investment linked insurance policy (FATF/OECD, 2014[73]).

Box 2.1. Unique vessel identifiers (UVIs)

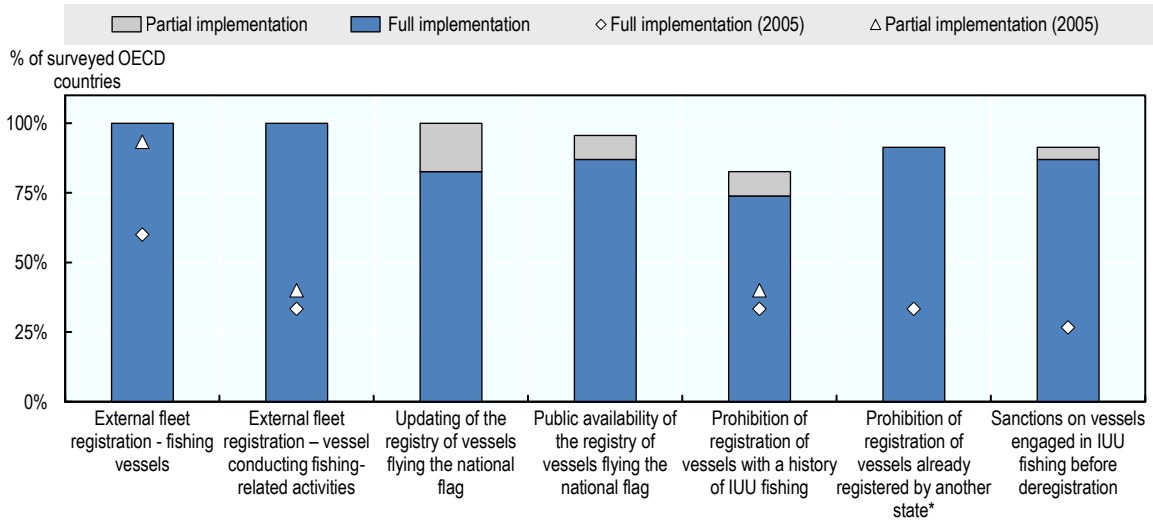
The International Maritime Organization (IMO) ship identification number scheme was introduced in 1987 through adoption of resolution A.600(15) under the *International Convention for the Safety of Life at Sea*. The implementation of the scheme became mandatory as of 1 January 1996, but applied only to passenger ships of 100 gross tonnage (GT) and above and to cargo ships of 300 GT and above. The unique seven-digit vessel number (UVI), preceded by the letters IMO, identifies the vessel and traces its activity over time, irrespective of changes of name, ownership or flag, until it is scrapped.

Following adoption of the *Rome Declaration on Illegal, Unreported and Unregulated Fishing* by the FAO Ministerial Meeting in 2005, which called for a comprehensive record of fishing vessels, the FAO Committee on Fisheries conducted a feasibility study on setting up a Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels (Global Record). The Committee concluded in 2012 that the most feasible tracking method was to add fishing vessels to the IMO ship identification number scheme.

Progress was made in 2013 when the IMO approved a proposal co-sponsored by the FAO and adopted resolution A.1078(28) allowing the voluntary application of the IMO ship identification number scheme to fishing vessels of 100 GT and above. Consequently, the conditions are in place to use the IMO number as a UVI for fishing vessels. This initiative is voluntary and provides reliable information on vessel identification in a timely manner. Since 2013, a number of RFMOs, the European Union (EU 1962/2015) and some coastal and flag states have mandated the use of IMO by all eligible vessels (TMT, 2017[39]).

More on Global Record can be found at www.fao.org/global-record.

Figure 2.1. Implementation of flag state measures (2005 and 2016)

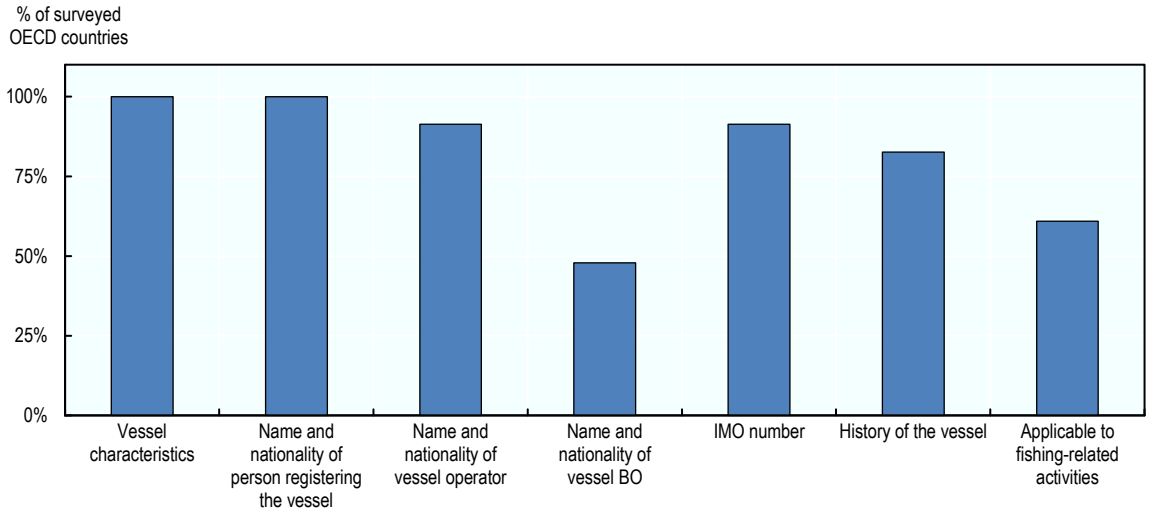


Note: Questions on updating of the registry and public availability of the registry were not part of the 2005 survey; * except on a temporary basis.
Source: OECD 2017 data collection on measures against IUU fishing.

The comprehensiveness of registration requirements still vary widely, however (Figure 2.2). Requesting information on vessel characteristics (such as length, tonnage and power), IMO number, and information about the legal or natural person registering the vessel, is standard. However, only about half of the OECD countries surveyed require the name and nationality of the BO of the vessel. Moreover, in only 61% of countries are the

requirements for registering vessels involved in fishing-related activities as comprehensive as those for fishing vessels.

Figure 2.2. Registration requirements for the external fleet



Source: OECD 2017 data collection on measures against IUU fishing.

2.2. Authorisation regimes are increasingly used to support implementation of conservation and management measures

Strict authorisation regimes for the external fleet support the implementation of internationally agreed CMMs, as well as other relevant economic and social regulations, in the scope of the granted authorisation. Delineating the area and duration of the authorisation gives countries control over authorised fishing capacity, and consequently allows for better assessment of potential impact and necessary enforcement capacity.[17] Verification of their history of compliance with regulations allows countries to reject applications for authorisation from owners or operators known to be involved in IUU fishing. Verification of UVIs allows vessels' registration history to be cross-checked, even after a change of flag or name. Mandatory use of vessel monitoring systems (VMSs) or requiring on-board observers allow a better understanding of vessels' operations, particularly where they are fishing, and consequently eases enforcement. Requirements related to the maintenance of fishing logbooks, as well as reporting catches and transhipments to authorities, enhance product traceability and thus increase the probability of detecting IUU products entering the market.

Clear authorisation conditions and transparent authorisation systems are also important to ease controls and reduce the incidence of corruption (Hanich and Tsamenyi, 2009[40]). For example, publicly accessible authorisation lists allow third parties to verify the vessels' right to fish in a given area or cross-check authorisation lists with available lists of IUU vessels.

[17] As flag state is responsible for vessels flying its flag, its enforcement should be adequate for the capacity of its fleet in the ABNJ. However, enforcement can be agreed at the regional level with collaborating countries that fish in the same area.

Additional application criteria can widen the functioning of authorisation systems to prevent fishery-related crimes and support sustainability. For instance, if vessel operators have to demonstrate that working conditions on board comply with national legislation, the authorisation regime can also help to prevent abuses of human rights, many cases of which have been documented in recent years (Surtees, 2013[41]; EJF, 2015[42]).

Another example is the introduction of sustainability criteria for eligibility to ensure the protection of marine resources of the high seas (Havice, 2010[43]). The FAO *Voluntary Guidelines for Flag State Performance* specifically recommend that the flag states only authorise their vessels to fish in third-country waters when these activities do not undermine the sustainability of the fish stocks, both in the case of a bilateral agreement with the third country or outside any agreement (FAO, 2014[16]).[18] Sustainability criteria may become increasingly important in the context of climate change and the development of new fisheries on the high seas.[19]

When fishing occurs in the context of bilateral agreements, it is important that the conditions of such agreements are transparent to allow for the assessment of whether enforcement is in line with provisions, and whether the required precautionary measures are implemented to ensure resources are not used excessively (Gagern and Van Den Bergh, 2012[44]). Fair financial compensations for access to resources support the efforts of countries opening their EEZs to foreign-flagged vessels by providing funds that can be used to support fight with IUU fishing through capacity building and improving MCS actions (Mwikya, 2006[45]).

The 2005 OECD report (OECD, 2005[22]) noted the lack of universally implemented authorisation regimes for the external fleet. Since then, most of the countries that were lagging behind have improved their legislation. The current survey found that the share of OECD countries with authorisation regimes for fishing activities rose from 87% to 100% and for fishing-related activities from 40% to 78%.

However, mirroring the situation for registration requirements, the comprehensiveness of authorisation requirements varies between countries (Figure 2.3). According to the survey, in 2016 fishing authorisation regimes universally defined the area, scope and duration of the granted authorisation. The majority of the OECD countries surveyed also require vessels to use VMSs, maintain fishing logbooks and report their catch to obtain and maintain a fishing authorisation. A majority of the OECD countries surveyed also consider applicants' compliance with regulations when granting authorisations.

However, there is room for improvement over making UVIs mandatory. Currently 78% of the OECD countries surveyed require universal markings for fishing vessels over a certain size. Observer coverage and reporting of transhipments are also not widely required (43% and 70% respectively). Similarly, sustainability criteria and the verification of working conditions are less frequently requested (43% and 52% respectively).

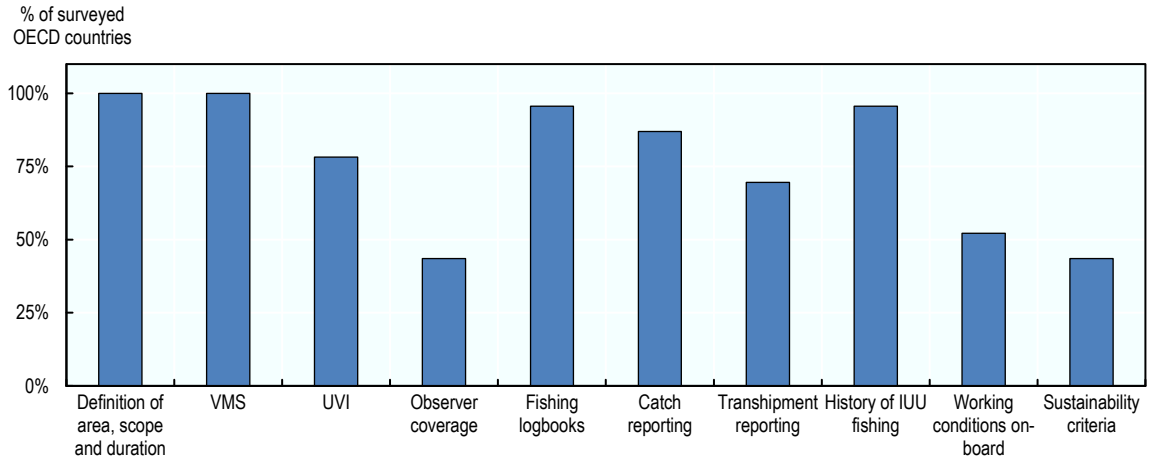
In terms of transparency, only 38% of the OECD countries surveyed make the full lists of vessels allowed to fish outside national EEZs available to the public, while 91% publish

[18] SDG 14 also mentions that fishing authorisation should be delivered in line with international commitments regarding sustainable fisheries management (Garcia and Staples, 2000[123]).

[19] This could include, for example, the marine Arctic (Kaiser, Fernandez and Vestergaard, 2016[124]), where there is currently no RFMO with a mandate to manage stocks.

comprehensive lists of bilateral agreements on access to the fishing grounds of third countries (for countries with such agreements in place).

Figure 2.3. Information required for an authorisation to be issued for the external fleet



Source: OECD 2017 data collection on measures against IUU fishing.

3. Coastal states are becoming better stewards of the resources in their own waters

Under the United Nations Convention on the Law of the Sea (UNCLOS), in force since 1994, coastal states, including island nations, have sovereign rights to the natural resources of the waters stretching up to 200 nautical miles from their coasts, an area defined as their exclusive economic zone (EEZ). While this opened new trade opportunities for coastal states, which could sell fishing opportunities in the areas under their newly acquired jurisdiction to DWFNs (Mwikya, 2006[45]; Le Manach et al., 2013[46]),[20] it also introduced a responsibility for coastal states to monitor and control fishing and fishing-related activities in their EEZs.

Registration and authorisation regimes, which are key tools for managing vessels in the ABNJ and foreign EEZs, are also convenient tools for the sustainable management of resources in domestic EEZs. Well-functioning systems to allocate fishing opportunities enable countries to accurately estimate fishing capacity and, consequently, their requirements for MCS, and the potential impact on resources and ecosystems in national waters. Making these systems transparent facilitates the detection and denouncement of unauthorised activities, including by fishers sharing the same waters and committed to legal fishing (Cavalcanti and Leibbrandt, 2017[47]). Effective pricing of licences or quotas also gives countries the ability to fund the management of resources and enforcement of legislation in waters under their jurisdiction (Arnason, Hannesson and Schrank, 2000[48]). In contrast, badly designed registration and authorisation systems lead to the overcapacity

[20] Such agreements, either bilateral or involving multiple signing parties, became important tools in co-ordination of fishing activities, especially those focused on straddling and migratory species. Following international agreement between DWFNs and coastal states, foreign vessels are subject to the laws of their host countries, on top of their obligation to follow the laws of their flag countries.

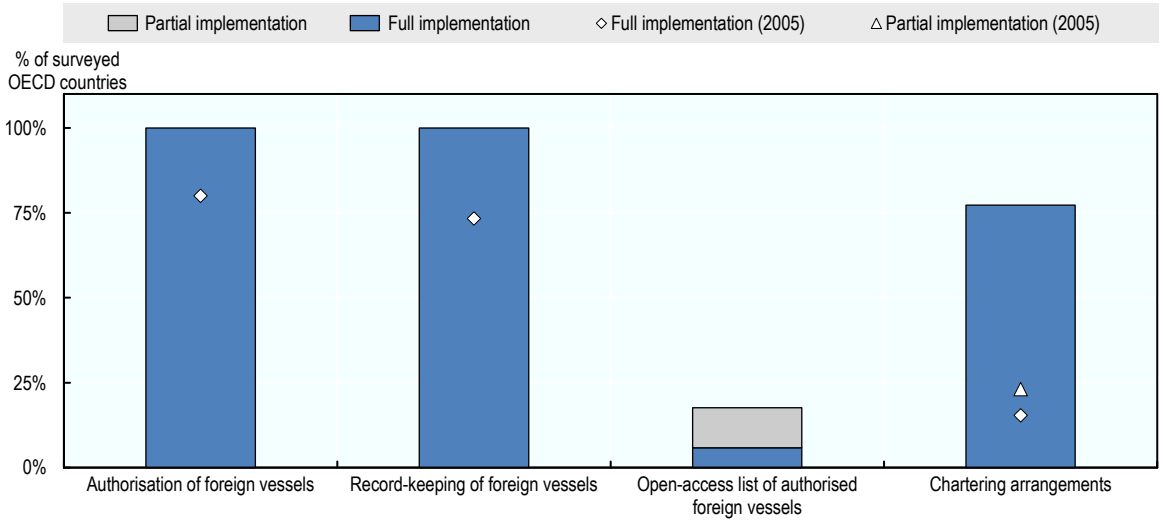
in coastal waters, incentives to fish beyond sustainable limits, exhaustion of resources and difficulty in enforcing regulations (INTERPOL, 2014[49]; Hanich and Tsamenyi, 2009[40]).

3.1. Management of coastal waters is still being undermined by chartering arrangements

Lack of well-developed authorisation and record-keeping practices over foreign vessels in domestic EEZs leads to reduced oversight of harvest of coastal resources and, consequently, ineffective prevention of IUU fishing in domestic waters. Many foreign enterprises also use chartering agreements under which foreign-flagged vessels fish a share of the resources in a coastal state's EEZ in collaboration with local companies. Lack of control over such arrangements reduces the resources available to local fishers. These arrangements thus need to be regulated to avoid foreign operators using them as a regulatory loophole to access resources that would otherwise not be available to them.

In 2005, 80% of the OECD countries surveyed reported that foreign vessels needed authorisation to operate in their EEZs and 73% reported keeping record of foreign vessels' activity while in the waters under their jurisdiction. However, only a few countries at the time (23%) were regulating access to domestic resources by foreign enterprises through chartering agreements. By 2016, the survey found great progress had been made in management measures directed towards foreign vessels in the domestic EEZ. Authorisation and record-keeping of foreign vessels become universal among the surveyed OECD countries which allowed such practice (Figure 3.1). Moreover, few countries banned foreign vessels from their coastal waters altogether. However, transparency over fishing capacity allowed through fishing agreements with foreign countries is an issue: only 6% of surveyed OECD countries with such agreements in place offer full public access to the list of foreign vessels authorised to fish in their domestic waters. There has been significant progress in regulating chartering arrangements, but 23% of surveyed OECD countries still had not tackled this issue in 2016.

Figure 3.1. Implementation of coastal state measures (2005 and 2016)



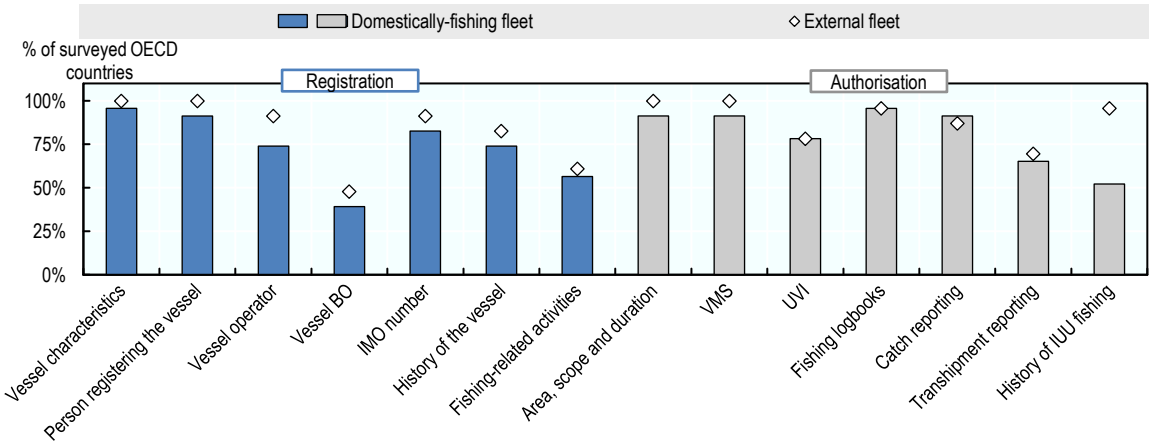
Note: Question on open-access list of authorised foreign vessels was not part of the 2005 survey.
Source: OECD 2017 data collection on measures against IUU fishing.

3.2. Countries apply more lenient registration and authorisation measures to the domestically-fishing large-scale fleet than they do, as flag states, to the external fleet

Large-scale fishing vessels are characterised by a big harvest capacity and can cause a high degree of environmental disturbance with damaging impact (Jones, 1992[50]).[21] Countries need strong controls over the large-scale vessels fishing in their domestic waters (referred to here as the domestically-fishing fleet, regardless whether under national or foreign flag) to ensure that they meet their conservation and management targets. Comprehensive registration and authorisation requirements for the domestically-fishing fleet serve the same purposes for local waters as those described in Sections 2.1 and 2.2 for the external fleet operating in the ABNJ: improve control over vessels (e.g. VMSs), guarantee harvest traceability (e.g. transhipment reporting) or prevent repeated IUU fishing violations (e.g. verification of any history of IUU fishing).

As Figure 3.2 shows, the OECD countries surveyed reported slightly more permissive registration and authorisation laws for the domestically-fishing fleet than they do for the external fleet (covered in Section 2).[22] In order to register a vessel, most countries require information about its characteristics and details about the person or entity registering it, as well as the IMO number, but not as widely as for the external fleet. In addition, the survey found considerable legislative gaps in relation to requiring the name and nationality of the BO of the vessel in the registration process, and applicability to vessels conducting fishing-related activities, in line with findings for the external fleet.

Figure 3.2. Comparison of registration and authorisation requirements for the domestically-fishing and external fleets



Note: Blue bars relate to registration requirements; grey bars to authorisation requirements.
Source: OECD 2017 data collection on measures against IUU fishing.

[21] Distinction between large-scale and small-scale vessel depends on the country-specific definitions that vary across surveyed countries.

[22] External fleet is defined solely in terms of fishing area (i.e. vessels fishing in the jurisdiction of foreign countries or in the ABNJ). However, the capacity required to fish outside coastal waters imply that it comprises of large-scale vessels. Thus the comparison of external fleet with large-scale vessels fishing in domestic waters (i.e. domestically-fishing fleet). Moreover, while the distinction here is made based on the fishing location, is it is recognised that some vessels may fish both in domestic waters and in the ABNJ.

In relation to authorisation procedures, a large majority of the OECD countries surveyed require the domestically-fishing fleet to adopt VMSs (91%), supply a UVI (78%), maintain fishing logbooks (96%) and report their catch (91%), but a considerably smaller share require the reporting of transhipments (65%) (Figure 3.2). The largest discrepancy between regulations pertaining to the domestically-fishing and external fleets is in the verification of the history of IUU fishing during the authorisation process. Only 52% of the surveyed OECD countries reported requiring such a measure for their domestically-fishing fleet (compared to 96% for the external fleet).

3.3. Domestic small-scale fisheries often enjoy special exemptions, but most countries are keeping track of their fishing capacity

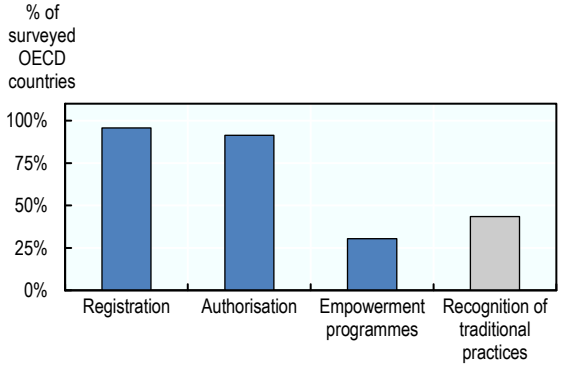
It is estimated that about two-thirds of the world's catches destined for human consumption originate from small-scale fisheries (FAO, 2015[51]; Jentoft et al., 2017[52]). The size of these estimates suggest the need for adequate MCS of these activities, so that these catches do not go unreported and CMMs are respected. Applying registration and authorisation regimes to small-scale fisheries is therefore vital for effective management of harvest capacity in the domestic EEZ. However, rules governing small-scale fisheries are often embedded in historical and cultural contexts and it is important to recognise the local specifics of small-scale fisheries. In some cases, countries have found they need to tailor the law to allow traditional practices and special exemptions, in order to assure compliance (Hauck, 2008[53]).

In 2014, FAO member states endorsed the *Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries* (FAO, 2015[17]). The guidelines stress the need for states to establish fisheries data collection frameworks, including on IUU fishing, supporting responsible small-scale fisheries and sustainable development. They also call for capacity building and strengthening of MCS systems, and the application of measures reflecting local context.

In relation to regulations governing small-scale vessels in 2016, most of the OECD countries surveyed reported obligations to register the vessel (96%) and obtain authorisation to fish prior to any activity (91%),[23] suggesting a general agreement that small-scale fishers should be a subject to MCS (Figure 3.3). Moreover, 30% reported that they had empowerment programmes to combat IUU fishing specifically designed for small-scale fishers. In addition, 43% of the OECD countries surveyed recognise traditional small-scale fishing practices and allow certain exemptions from the regulations. For example, Australia recognises traditional fishing in the Torres Strait Protected Zone under the Torres Strait Treaty (1985), where the harvesting of turtles and dugongs is managed through community based management plans and monitored by Indigenous Rangers.

[23] Moreover, because small-scale fisheries are more local by nature, the distinction between registration and authorisation is not as pronounced as it is with large-scale vessels; in some cases, authorisation regimes function without fully implemented registration systems.

Figure 3.3. Regulations applicable to domestic small-scale fisheries



Note: Grey bar (recognition of traditional practices) was not included in the indicator for coastal state responsibilities.
Source: OECD 2017 data collection on measures against IUU fishing.

4. Uneven use of port state measures still allow IUU harvests to enter the global market, but loopholes are being closed

Because enforcement of regulations at sea is expensive, countries are increasingly turning to port state measures (PSMs) and less costly controls at ports[24] to combat IUU fishing (Doulman and Swan, 2012[54]; Kopela, 2016[55]). The efficient application of PSMs prevents IUU fishing products from entering markets and reduces the incentive to continue illegal activities by increasing the operating costs of vessels not complying with the regulations (Liddick, 2014[5]; Petrossian, Marteache and Viollaz, 2015[56]). When IUU vessels are denied port access, or seek to avoid more effective and frequent controls, they are forced to increase fuel use and navigation time in search of non-compliant ports (so-called "ports of convenience") to offload their IUU harvest (Le Gallic, 2008[57]).

To encourage better port controls worldwide, the FAO approved a new binding international legal instrument in 2009: the *Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing* (the Port State Measures Agreement or PSMA) (FAO, 2009[15]).[25] This agreement, which came into force in 2016, sets out universal minimum standards to prevent IUU fishing products from being landed in ports by foreign-flagged vessels.[26] These include the designation of specific ports with

[24] "Port" includes offshore terminals and other installations for landing, transhipping, packaging, processing, refuelling or resupplying.

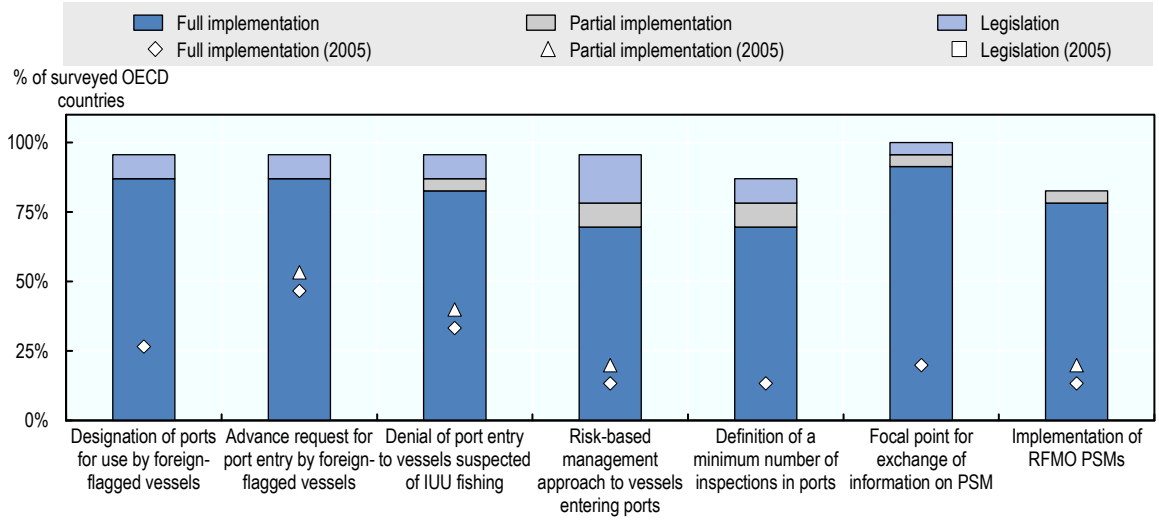
[25] Currently, there are 55 parties to the PSMA (more details at: www.fao.org/port-state-measures/en/).

[26] PSMA, article 3, paragraph 1: "Each Party shall, in its capacity as a port State, apply this Agreement in respect of vessels not entitled to fly its flag that are seeking entry to its ports or are in one of its ports, except for: (a) vessels of a neighbouring State that are engaged in artisanal fishing for subsistence, provided that the port State and the flag State cooperate to ensure that such vessels do not engage in IUU fishing or fishing related activities in support of such fishing ; and (b) container vessels that are not carrying fish or, if carrying fish, only fish that have been previously landed, provided that there are no clear grounds for suspecting that such vessels have engaged in fishing related activities in support of IUU fishing" (FAO, 2009[15]).

sufficient capacity to conduct inspections for use by foreign-flagged vessels, requirements for prior notice from vessels requesting port entry and procedures allowing port entry to be denied (including denial of landing or transhipment) to vessels suspected of IUU fishing, the development of a system to prioritise which vessels to inspect (risk-based management approach), and setting up targets for the number of port inspections.

The PSMA also encourages co-operation and exchange of information on the implementation of PSMs with all relevant stakeholders, including the authorities of other countries, international organisations and RFMOs, for the better co-ordination of efforts against IUU fishing. In addition to the measures recommended by the PSMA, a number of PSMs contributing to the reduction of IUU fishing are also mandated in the CMMs adopted by RFMOs (Flothmann et al., 2010[58]).

Figure 4.1. Implementation of port state measures (2005 and 2016)



Source: OECD 2017 data collection on measures against IUU fishing.

Most of the surveyed OECD countries are parties to the PSMA.[27] The agreement prompted many countries to considerably improve their measures related to responsibilities as a port state. The survey found that, in 2016, 87% of participating OECD countries had developed lists of ports designated for use by foreign-flagged vessels (up from 27% in 2005), 87% required advance requests for port entry from all foreign-flagged vessels (53% in 2005) and 87% had measures in place to deny port access or services to vessels suspected of IUU fishing (40% in 2005) (Figure 4.1). Moreover, 96% had designated an authority to act as a focal point for the exchange of information on PSM (20% in 2005) and 83% reported fulfilling obligations related to PSMs arising from membership of RFMOs (20% in 2005).

However, despite considerable progress, some gaps remain. Notably, nearly 30% of the countries surveyed do not fully implement risk-based management of vessels entering port or do not set a minimum number of port inspections.

[27] Canada reported on implementation of equivalent measures, i.e. measures with the same goal, introduced to domestic law towards ratifying the PSMA. At this time, Canada has signed the PSMA and is taking the necessary steps to pursue ratification.

5. As markets for seafood, countries increasingly use economic disincentives to discourage IUU fishing

The continuation of IUU fishing stems significantly from the high profits operators can make and, often, the comparatively low financial risks they face (Sumaila, Alder and Keith, 2006[59]; Schmidt, 2005[60]). Thus, policies introducing economic disincentives to engage in IUU fishing by lowering the associated benefits and increasing financial risks effectively complement the traditional measures against IUU fishing described in Sections 2, 3 and 4. Such polices can operate upstream, restricting access to services to IUU vessels (for example, access to marine insurance – see Box 5.1) and downstream, closing access to markets for IUU products, notably by improving the traceability of seafood along the value chain (Section 5.1). In addition, polices allowing to track the BOs of IUU fishing increase the financial risks for IUU fishing operators (Section 0), while restricting access to public support for operators practising IUU fishing is a way to cut their benefits (Section 0).

Box 5.1. Restricting access to marine insurance:
An example of a disincentive to engage in IUU fishing

Restricting or eliminating access to marine insurance for fishing vessels identified as being involved or potentially involved in IUU fishing can be a powerful disincentive to engage in IUU fishing (OECD, 2005[22]). When access to insurance is limited due to high cost, or removed altogether, this increases operating costs and financial risks which can alter behaviour in favour of compliance with CMMs in place. Miller and colleagues (2016[61]) propose some practical implementation suggestions which include:

- the imposition of premium rates for insurance of vessels flagged to countries known as FOCs or for vessels sanctioned for IUU fishing in the past
- denial of insurance to IUU fishing vessels (e.g. those listed by RFMOs on IUU vessel lists)

In addition to awareness raising among insurance providers, countries could facilitate the adoption of these suggestions by government actions and suitable changes in national legislation, such as making it compulsory for insurers to consult officially verified IUU vessel lists.

5.1. OECD countries have made significant efforts to improve seafood traceability

Catch documentation schemes (CDSs) enable seafood products to be traced from the point of catch to the point of final sale and can be effective means of preventing products derived from IUU fishing from entering the supply chain (Bush et al., 2017[62]). Under CDSs, the value of an illegal catch is reduced because it cannot be legally brought to the market, thus reducing the financial incentives to engage in IUU fishing (Hosch, 2016[63]). CDSs can be also effective in eliminating misreporting,[28] in particular when combined with the deployment of modern technologies such as electronic logbooks, that has contributed to reducing the risk of falsification or alteration of fishing records at later stage (Visser and Hanich, 2017[64]). Information gathered through CDSs can be also compiled by the authorities and used as evidence in investigations targeting trade in seafood originating

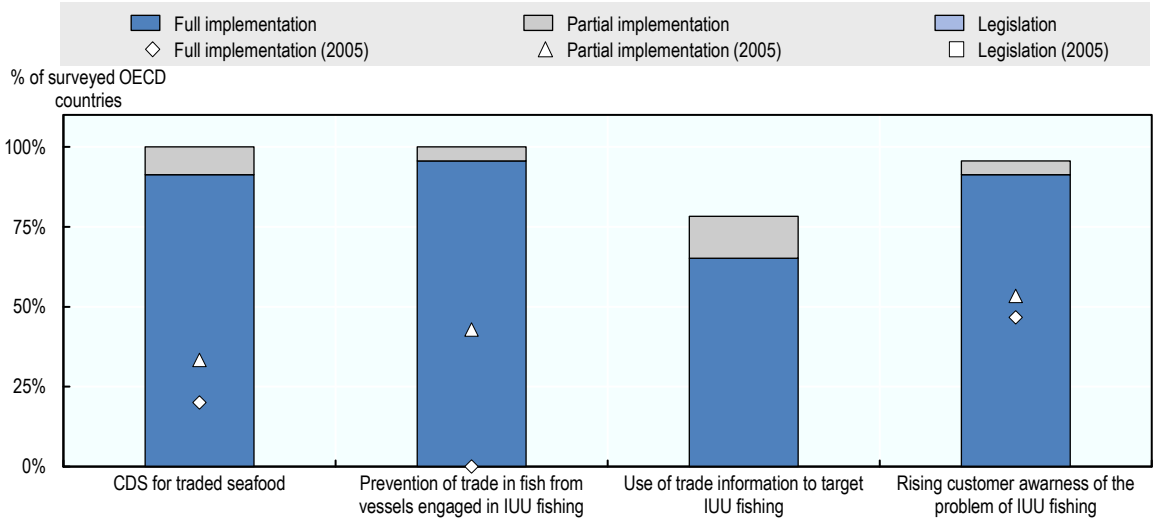
[28] However, in some cases, trade measures and the use of CDSs only triggered changes in the profile of IUU fishing at the global level, e.g. IUU fishing in tuna fisheries went from illegal to unreported or misreported (Hosch, 2016[63]). Thus, it is important to consider the potential scope of misreporting when introducing a CDS.

from IUU fishing. The *Voluntary Guidelines for Catch Documentation Schemes* released on 5 April 2017 (FAO, 2017[18]) constitute a valuable source of guidance for the design of a CDS.

Growing customer awareness of the importance of food origin, both in terms of safety and social responsibility, provides another opportunity to discourage IUU fishing. Increasing demand and premium prices for products certified as sustainable and legally sourced improve the competitiveness of fishers committed to legal operations. Information campaigns directed at consumers about the threat posed by IUU fishing to sustainability can therefore contribute to reducing IUU fishing (Petrossian, Weis and Pires, 2015[65]).

In 2005, only 33% of the OECD countries surveyed reported that they had systems of multilateral catch documentation and certification requirements for traded fish products, of which 60% were fully implemented. By 2016, demand for more traceability of seafood has led to the universal use of such systems by the surveyed OECD countries, with 91% fully implemented (Figure 5.1).

Figure 5.1. Implementation of trade measures (2005 and 2016)



Note: The question on the use of trade information to target IUU fishing was not part of the 2005 survey.
Source: OECD 2017 data collection on measures against IUU fishing.

Measures preventing trading in or importing fish caught by vessels identified as engaged in IUU fishing were still in their infancy in 2005, when only 43% of the OECD countries surveyed had partially implemented such measures. There has been clear improvement in this area: by 2016, 96% of surveyed OECD countries had such measures fully in place. A good example is the European regulation to prevent, deter and eliminate illegal, unreported and unregulated fishing adopted in 2008 (see Box 5.2) or Seafood Import Monitoring Program (SIMP) in the United States (Box 5.3). However, even now, only 65% of the OECD countries surveyed report fully functioning mechanisms allowing the use of trade information, e.g. sourced from customs authorities, to target the movement of IUU fishing products along the value chain.

Box 5.2. The EU system for preventing IUU fishing products from entering the EU market

The Council Regulation EC No 1005/2008 to prevent, deter and eliminate illegal, unreported and unregulated fishing was adopted on 29 September 2008 and entered into force on 1 January 2010. The regulation introduces two major tools to combat IUU fishing.

The first is a *catch certification scheme*, which requires that all fish traded with the European Union is accompanied by a catch certificate validated by the flag state of the catching vessel in order to prove the legality of the fish.

The second is a **colour-coded warning scheme** which 1) informs third countries if problems are detected in their fulfilling of international and regional rules related to the prevention of IUU fishing; and 2) introduces provisions for embargoes on fish products originating from countries identified as non-cooperating. The process follows several steps:

- If problems with IUU fishing in a third country are identified, the European Commission (EC) presents the country with a yellow card. The warning opens a formal dialogue which lasts a minimum of 6 months, during which the EC assists the country in its efforts to solve the problems identified.
- If the country improves its policies and practices against IUU fishing, the yellow card can be lifted, or if more time is required for improvements to be achieved, the 6 month period can be extended.
- If the problems are not addressed, the country is identified by the EU as non-cooperating and given a red card. Once such a decision enters into force, none of the seafood products harvested under the flag of the listed country can enter the EU market.

At the time of writing (September 2018), three countries are identified as non-cooperating (Cambodia, Comoros, and St Vincent and Grenadines). Eight countries or economies have been given a yellow card and are in the process of a formal dialogue (Kiribati, Liberia, Sierra Leone, St Kitts and Nevis, Chinese Taipei, Thailand, Trinidad and Tobago, and Viet Nam). Three countries have been delisted as non-cooperating after implementing the required changes (Belize in 2014, and the Republic of Guinea and Sri Lanka in 2016) while 11 countries have seen their yellow cards removed without being given a red card (Curaçao, Fiji, Ghana, Korea, Panama, Papua New Guinea, Togo, Philippines, Solomon Islands, Tuvalu and Vanuatu).

Box 5.3. Functioning of the Seafood Import Monitoring Program (SIMP) in the United States

The Seafood Import Monitoring Program (SIMP), in place since 1 January 2018, establishes reporting and recordkeeping requirements for imports of certain seafood products needed to prevent seafood originating from IUU fishing from entering the United States market. It is a risk-based traceability program, requiring the importer to report key data from the point of harvest to the point of entry into the market. Affected priority species, species identified as particularly vulnerable to IUU fishing and seafood fraud, include:

- Abalone (SIMP currently not implemented; mandatory from 31 December 2018)
- Atlantic cod
- Blue crab (Atlantic)
- Dolphinfish (mahi mahi)
- Groupers
- King crab
- Pacific cod
- Red snapper
- Sea cucumbers
- Sharks
- Shrimp (SIMP currently not implemented; mandatory from December 31, 2018)
- Swordfish
- Tunas (albacore, bigeye, skipjack, yellowfin, bluefin)

Progress has also been made in organisation of campaigns against IUU fishing: 96% of the OECD countries surveyed reported running awareness-raising activities in 2016, compared to only 53% in 2005. Moreover, a number of countries (e.g. Iceland, Italy or the Netherlands) indicated that they held regular stakeholder meetings with representatives of the industry, as well as organising campaigns promoting legally sourced seafood. In the United States, the National Ocean Council Committee on IUU Fishing and Seafood Fraud has a range of new public outreach efforts related to IUU fishing. Many governments also promote bottom-up approaches and encourage co-operation between operators in denouncing any IUU fishing activities they detect. For example, in 2013 Colombia created a simplified procedure for filing complaints about illegal fishing activities, which fishers can do in writing, through a direct phone line or on line (OECD, 2016[66]).

5.2. Despite some progress, few countries are using financial regulations to target beneficiaries of IUU fishing

Financial regulations have a strong potential to affect how IUU fishing develops (Le Gallic, 2008[57]; Stokke, 2009[67]; OECD, 2013[25]). Investigations that consider all the many dimensions of economic crimes that can be linked to IUU fishing operations (e.g. tax crimes, money laundering or corruption) increase the potential to target key players driving the IUU fishing business (Griggs and Lugten, 2007[68]). Tracing the money generated by IUU fishing can provide critical evidence for law enforcement authorities against behind-the-scenes beneficiaries of IUU activities and their networks (Box 5.4), and is particularly helpful where vessels are using FOCs (Farabee, 2016[69]; Telesetsky, 2015[70]) Thus, considering IUU fishing as a predicate for money laundering is essential to tackling the multiple corporate structures responsible for the illegal exploitation of marine resources. One key limitation in this respect is the fact that a considerable share of the proceeds from IUU fishing are known to be funnelled through countries known as tax havens and thus difficult to trace (Galaz et al., 2018[8]). General efforts towards the elimination of tax havens and more transparency of financial transactions[29] (OECD, 2014[71]) are thus particularly relevant to the fight against IUU fishing.

The inclusion of serious IUU fishing violations in laws on money laundering remains rare. While all the OECD countries surveyed have regulations on the prevention of money laundering that in principle cover the proceeds from IUU fishing,[30] only 26% reported regulations specifically considering IUU fishing as a predicate offense for money laundering. However, considering that in 2005 only Norway reported having such tools in place, the progress is evident.

[29] Given the importance of financial transparency in fighting corruption, the G20 recently identified transparency of beneficial ownership of legal persons and arrangements as a key priority action. This follows the adoption of Beneficial Ownership Principles by the G8 in 2013 (Transparency International, 2014[125]).

[30] For example, Directive (EU) 2015/849 of the European Parliament and of the Council of 20 May 2015 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing; New Zealand's Anti-Money Laundering and Countering Financing of Terrorism Act 2009 (AML/CFT Act) or Japan's Act on Prevention of Transfer of Criminal Proceeds from 2007.

Box 5.4. Indicators on the transparency of beneficial ownership

Countries face significant challenges when implementing measures to ensure the timely availability of accurate information on BOs. This is particularly challenging in the fisheries sector which often involves legal persons and legal arrangements divided across multiple jurisdictions (OECD, 2013[25]; FATF, 2012[72]).

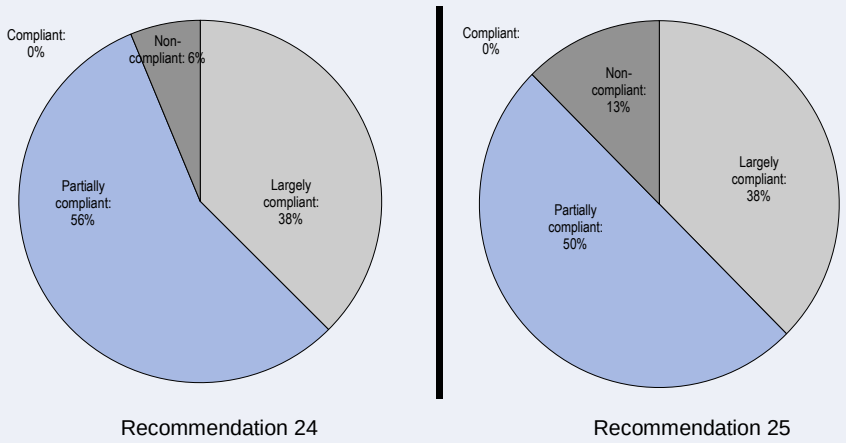
The Financial Action Task Force (FATF) is an inter-governmental body tasked with the identification of national-level vulnerabilities enabling misuse of international financial systems. Among other things, FATF standards on transparency aim to prevent the misuse of corporate vehicles: companies, trusts, foundations, partnerships and other types of legal persons and arrangements. One crucial component is assuring that the authorities have ready access to information about both the legal owner and the BO, the sources of the corporate vehicle's assets and its activities.

Consequently, the FATF developed a guidance on the implementation of two sets of recommendations of importance to combating IUU fishing relating to transparency of BO (FATF/OECD, 2014[73]):

- Recommendation 24: Transparency and Beneficial Ownership of Legal Person
- Recommendation 25: Transparency and Beneficial Ownership of Legal Arrangements

As shown in Figure 5.2, compliance with the FATF recommendations on transparency of beneficial ownership is not widespread among OECD countries.

Figure 5.2. Technical compliance with FATF recommendations relevant to the fight against IUU fishing by OECD countries



Note: Based on an assessment conducted against the 2012 FATF Recommendations, using the 2013 FATF Methodology (FATF, 2013[74]). FATF compliance based on limited number of OECD members (16 countries).

Source: FATF (2018[75]).

5.3. Countries increasingly restrict subsidies to those with a clean record of compliance with regulations

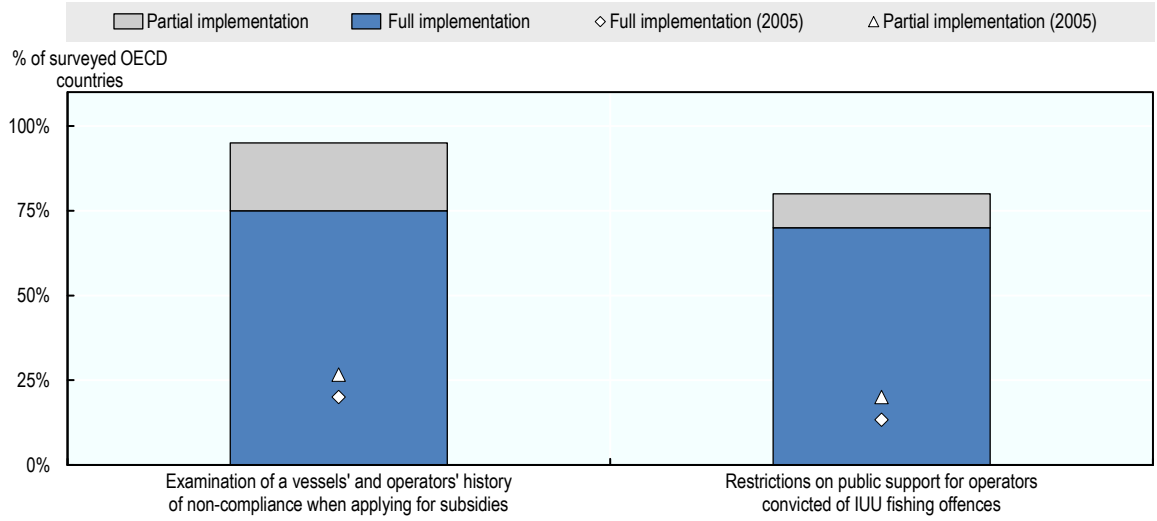
Subsidies to fishing fleets can contribute to IUU fishing by reducing capital costs and making cheap vessels available for purchase by illegal fishers (Liddick, 2014[5]). Other types of support to fishing operations, such as fuel subsidies, lower the cost of fishing and accelerate overexploitation (Pauly et al., 2002[76]; Sala et al., 2018[77]; OECD, 2017[78]), increasing the risk of fishers engaging in illegal fishing practices when faced with stiffer competition. Lack of transparency over who receives subsidies can exacerbate the misuse of allocated funds (Price, 2005[79]). Improved screening of those accessing fisheries support, in particular requiring a clean record of compliance with regulations, can help policies to support fisheries to meet their objectives without indirectly contributing to IUU fishing.

Eliminating subsidies that contribute to IUU fishing has become a part of the global conversation (United Nations, 2015[80]). Negotiations on effective disciplines in relation to fisheries subsidies linked to IUU fishing, overcapacity and overfished stocks continue at the WTO with the goal of adopting an agreement at the 2020 Ministerial Conference (WTO, 2018[14]). The United Nation's SDG 14.6 calls for the elimination of such subsidies by 2020 (Box 1.2).

A number of OECD countries have already taken action to improve the management of their fisheries subsidies by introducing policies that restrict access to such support to legal fishers. For example, the European Maritime and Fisheries Fund (EMFF), which funds projects related to the European Union fisheries for 2014-20, specifically excludes applications from operators with a history of IUU fishing.[31] About 95% of the OECD countries surveyed indicated that their regulations in 2016 allowed for vessels' and operators' history to be examined for non-compliance when applying for financial support, compared to only 27% in 2005 (Figure 5.3). A slightly smaller share (80%) apply restrictions on public support to operators convicted of IUU offences (up from 20% in 2005).

[31] Regulation EU No 508/2014, article 10: Admissibility of applications: "1. An application submitted by an operator for support from the EMFF shall be inadmissible for an identified period of time laid down pursuant to paragraph 4 of this Article, if it has been determined by the competent authority that the operator concerned: (a) has committed a serious infringement under Article 42 of Council Regulation (EC) No 1005/2008 (21) or Article 90(1) of Regulation (EC) No 1224/2009; (b) has been involved in the operation, management or ownership of fishing vessels included in the Union IUU vessel list as set out in Article 40(3) of Regulation (EC) No 1005/2008, or of vessels flagged to countries identified as non-cooperating third countries as set out in Article 33 of that Regulation; (c) has committed a serious infringement of the CFP rules identified as such in other legislation adopted by the European Parliament and by the Council; or (d) has committed any of the offences set out in Articles 3 and 4 of Directive 2008/99/EC of the European Parliament and of the Council (22), where the application is made for support under Chapter II of Title V of this Regulation. 2. The beneficiary, after submitting the application, shall continue to comply with the conditions referred to in points (a) to (d) of paragraph 1 throughout the period of implementation of the operation and for a period of five years after the final payment to that beneficiary.3. An application submitted by an operator shall be inadmissible for an identified period of time laid down pursuant to paragraph 4 of this Article, if it has been determined by the competent authority that that operator has committed a fraud, as defined in Article 1 of the Convention on the protection of the European Communities' financial interests (23), in the context of the European Fisheries Fund (EFF) or the EMFF.

Figure 5.3. Implementation of policies improving the management of support to fisheries (2005 and 2016)



Source: OECD 2017 data collection on measures against IUU fishing.

6. Countries have a wider portfolio of enforcement options at their disposal

Enforcement refers to a range of procedures and actions taken by a country and its competent authorities to ensure that anybody failing to comply with laws or regulations is brought back into compliance or sanctioned. Multiple commitments in the past few decades have led to concentrated efforts to enforce fisheries regulations effectively (Box 6.1), but ensuring compliance with regulations remains a key challenge.

Robust enforcement of fisheries regulations is challenging, in part because investment in MCS systems is generally not keeping up with fleet capacity and its harvest capabilities. The lack of effective state control over vessels is still considered one of the main causes of IUU fishing (Kao, 2015[34]; Erceg, 2006[33]; Englender et al., 2014[31]; Churchill, 2012[32]). Authorities need to implement MCS tools to generate valid data on fishing activities and reliable estimates of IUU fishing if they are to govern marine resources (Song, Johnsen and Morrison, 2018[81]). To understand these difficulties, what follows looks into the use of modern technologies for MCS (Section 6.1) and the role of communication between authorities in making MCS more effective (Section 6.2).

By imposing penalties for illegal fishing, national sanctions regimes discourage illegal fishing and fishing-related operations. However, if the penalties are too low compared to the potential revenue from selling IUU seafood, they will not act as a deterrent and are often factored in by IUU fishing operators as a cost of doing business (Beke, Ackermann and Blomeyer, 2014[82]; NOAA, 2015[83]; Beddington, Agnew and Clark, 2007[84]).[32] Moreover, when sanctioning systems are ill-defined or fail to be implemented uniformly,

[32] This effect is also considered in the *Informing Fisheries-Related Trade Negotiations: Relative effects of fisheries support policies* (OECD, 2018[127]).

they create unequal treatment and incentives for corruption (Putt and Nelson, 2009[85]). Section 6.3 looks into best practices in designing effective sanctioning systems.

Box 6.1. Commitment to effective oversight of fishing vessels stemming from key international agreements

1982 UNCLOS (Article 94.1): "*Every State shall effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag*"

1995 FAO *Compliance Agreement* (Article 3.1a): "*Each Party shall take such measures as may be necessary to ensure that fishing vessels entitled to fly its flag do not engage in any activity that undermines the effectiveness of international conservation and management measures.*"

1995 United Nations Fish Stock Agreement (Article 18.1): "*A State whose vessels fish on the high seas shall take such measures as may be necessary to ensure that vessels flying its flag comply with subregional and regional conservation and management measures and that such vessels do not engage in any activity which undermines the effectiveness of such measures.*"

1995 United Nations Fish Stock Agreement (Article 19.1): "*A State shall ensure compliance by vessels flying its flag with subregional and regional conservation and management measures for straddling fish stocks and highly migratory fish stocks.*"

1995 FAO *Code of Conduct for Responsible Fisheries* (Article 8.1.1): "*States should ensure that only fishing operations allowed by them are conducted within waters under their jurisdiction and that these operations are carried out in a responsible manner.*"

1995 FAO *Code of Conduct for Responsible Fisheries* (Article 8.2.7): "*Flag States should take enforcement measures in respect of fishing vessels entitled to fly their flag which have been found by them to have contravened applicable conservation and management measures, including, where appropriate, making the contravention of such measures an offence under national legislation. Sanctions applicable in respect of violations should be adequate in severity to be effective in securing compliance and to discourage violations wherever they occur and should deprive offenders of the benefits accruing from their illegal activities. Such sanctions may, for serious violations, include provisions for the refusal, withdrawal or suspension of the authorization to fish.*"

2001 IPOA-IUU (Article 24): "*States should undertake comprehensive and effective monitoring, control and surveillance (MCS) of fishing from its commencement, through the point of landing, to final destination* […]".

2009 PSMA (Article 24.1): *"Parties shall, within the framework of FAO and its relevant bodies, ensure the regular and systematic monitoring and review of the implementation of this Agreement as well as the assessment of progress made towards achieving its objective.*"

2014 FAO *Voluntary Guidelines for Flag State Performance* (Article 31): "*The flag State implements a control regime over vessels flying its flag* […]").

6.1. Modern technology is increasingly used to ease the monitoring of fishing vessels

Effective state control leading to the elimination of IUU fishing requires an adequate set of MCS tools. These need to be deployed along the value chain, in parallel with legislative frameworks, at sea (Sections 2 and 3), in ports (Section 4) and throughout the market (Section 5), to fully realise the benefits of policies introduced by countries in their roles as flag states, coastal states, port states and markets.

At-sea monitoring methods include the use of observers, independent specialists employed by government agencies to monitor vessel activities, or the use of electronic devices to track vessel movements, i.e. VMSs. Traditionally, observer programmes played a considerable role in fisheries MCS, but now new technologies are gaining ground as new

forms of enforcement (Box 6.2). These tools are used to monitor the effort deployed for fishing and detect breaches of regulations related to spatial closures, including restrictions on vessels' presence in marine protected areas (MPAs), or temporal regulations such as closed seasons. Regulations on the size and composition of harvests at landing are predominantly enforced through CDSs and verification of catch logbooks, which note the details of the fishing activity undertaken. Further along the value chain, cross-checking of trade certificates is a common practice to prevent illegally caught seafood from entering markets.

MCS is particularly difficult because of the diversity of fishing operations (Doumbouya et al., 2017[86]; Erceg, 2006[33]). These include the use of a variety of fishing gear and specialised devices (e.g. fish aggregation devices or acoustic instruments for detection of schooling fish), means of carrying harvests to landing destinations (also due to complex at-sea transhipment operations), and the varied ways in which seafood products arrive at markets, including landing in domestic ports, and imports from various destinations and in various forms (e.g. as mixed cargo[33]). This highlights the need for well-designed risk-based management (RBM) procedures[34] (Hilborn et al., 2001[87]) to better prioritise and target the allocation of enforcement efforts. Moreover, MCS data are necessary for the successful use of RBM, as they allow fishing patterns to be analysed and suspicious activities detected.

In order for MCS systems to be successful in practice, they need competent staff responsible for their co-ordination, maintenance and regular updating. Co-operation with the industry and regular consultation with users can improve the functioning of MCS systems by making them more user friendly.

The OECD countries surveyed universally reported the use of CDSs, VMSs and AIS, and cross-checking of trade certificates in 2016 (Figure 6.1). Many countries increasingly use electronic logbooks as monitoring tools. Observer programmes were less common, however (65%). The majority of countries had developed systems to store MCS data (96%) and 87% reported the use of RBM. Oversight of transhipment remains patchy, with 83% of the OECD countries surveyed reporting MCS of fishing-related activities. Among the other practices to enhance MCS effectiveness, 87% of countries reported training of MCS staff and 70% the co-operative participation of the industry. All of the OECD countries surveyed reported they had fishery monitoring centres responsible for real-time controls of fishing vessels under their flags, both in the domestic EEZ and in the ABNJ.

[33] A shipment consisting of two or more different types of goods classified under different tariff headings.

[34] In this context, RBM aims to evaluate the probability of each activity (e.g. harvest, transhipment, landing or trade) within the area of competence of a given enforcement authority to be illegal, in order to prioritise controls when enforcement resources are limited.

Box 6.2. Monitoring at sea with new technologies

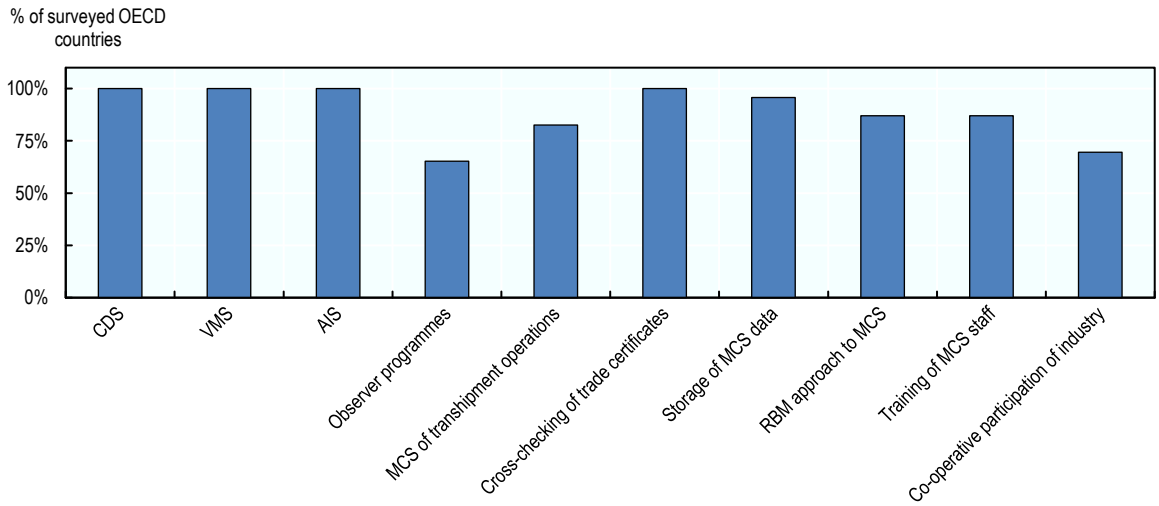
The emergence worldwide of large-scale MPAs means the enforcement of fisheries regulations at sea is increasingly challenging (McCauley, 2014[88]). The development of next-generation enforcement, such as drone patrols, use of on-board cameras and real-time satellite monitoring, is helping to ensure that the wild-caught seafood that reaches consumers' plates has been harvested legally (Toonen and Bush, 2018[89]; De Souza et al., 2016[90]).

Automatic identification systems and vessel monitoring systems

Adopted in 2000 by the IMO, the automatic identification system (AIS) is an effective tool to accomplish navigational safety goals and prevent ship collisions. Vessels carrying AIS transponders broadcast information about their identity, position and course, data which serve costal surveillance and traffic management. Initially required only on all ships over 300 GT on international voyages, cargo ships over 500 GT, tankers and passenger ships, the device has become popular for insurance, convenience, security and safety reasons (Robards et al., 2016[91]). Although AIS was not designed to detect IUU fishing activity, the stream of real-time data it generates on vessel positions gives a good understanding of routine vessel operations. Using algorithms developed by machine learning, AIS-derived data can be assessed for potential irregularities, helping to detect IUU activities. Moreover, AIS data are not bound by confidentiality and can be purchased from data vendors. This approach is used by the Global Fishing Watch project (http://globalfishingwatch.org/) founded in 2014 by Google, Skytruth and Oceana. The platform, launched in 2016, promotes transparency in the fishing industry by revealing the location and behaviour of commercial fishing fleets through publicly available interactive maps.

VMSs are used in commercial fisheries to allow regulators to track the activities of fishing vessels. The functionality of the system and the associated equipment varies with the requirements imposed by regulations pertaining to fishing in the area in which the vessel is operating. The systems are administered regionally or nationally, and access to the data is restricted. However, a few countries are starting to opt for more transparency on their VMS data. In 2017, Indonesia and Peru decided to provide proprietary information about their fishing vessels for public display on Global Fishing Watch maps.

Figure 6.1. MCS tools in use in fisheries management by OECD countries



Source: OECD 2017 data collection on measures against IUU fishing.

6.2. Co-operation between government bodies fosters the efficient prosecution of IUU fishing

At the national level, fisheries authorities commonly benefit from the collaboration of the port authorities, tax authorities, customs administrations, coastguards, trade authorities, police and other law enforcement authorities. There are a range of organisational models for sharing of responsibilities across agencies, each with distinct features. Among the OECD countries surveyed, 70% reported having a functioning inter-agency task force specifically responsible for detecting violations under the IUU fishing umbrella. The example of Norway's co-operation mechanism, The Norwegian Task Force against Organised Fisheries Crime and IUU Fishing (Box 6.3), illustrates the benefits of inter-agency co-operation.

Box 6.3. The Norwegian Task Force against Organised Fisheries Crime and IUU Fishing: A value chain approach

Establishment of an inter-agency co-operation body

The decision to establish the Norwegian Task Force against Organised Fisheries Crime and IUU Fishing was an initiative by the former Fisheries Minister, Helga Pedersen, in agreement with the Minister of Defence, the Minister of Finance, the Minister of Justice and the Minister of Foreign Affairs, who agreed on the design and the composition of the advisory group. The group was first established as a temporary project in 2009, as a measure to ensure closer co-operation between different agencies, and to produce updated and cross-sectoral analyses on IUU fishing and organised fisheries crime. After an internal evaluation, it was made a permanent entity in the Ministry of Trade, Industry and Fisheries in 2014. This required no changes to the law or the participating institutions' statutes or mandates, but the new initiative did demand some adaptability and greater co-operation, both internally and between different agencies.

The main objective of the Task Force is to detect crimes along the entire fisheries value chain, detecting illegal fishing, corruption, tax and customs fraud, money laundering, embezzlement, document fraud, and human trafficking. MCS officials had found that detecting such crimes needed greater use of cross-sectoral analyses focusing on the actors, corporate structures, money flows and the commodity trade to get a fuller picture of the crimes taking place in the fisheries sector.

The term "IUU fishing" refers to conduct that undermines fisheries management and conservation measures, which may be criminal but need not be. The Norwegian experience is that it is easier to facilitate inter-agency co-operation between law enforcement agencies using the broader term "fisheries crime", for crimes committed by actors in the entire fisheries value chain.

The institutional setup

The Task Force secretariat is responsible for national co-ordination and following international processes in the field of fisheries crime. The secretariat collects, co-ordinates and distributes relevant information to the steering group and the contact group. It is led by a project leader in the ministry who reports to the steering group.

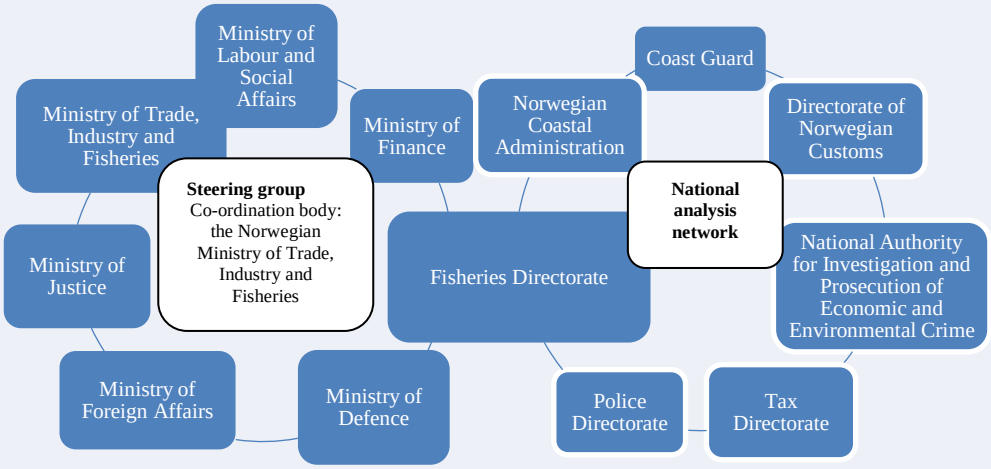
The steering group is composed of the Ministry of Labour and Social Affairs, the Ministry of Finance, the Ministry of Defence, the Ministry of Foreign Affairs, the Fisheries Directorate, the Ministry of Justice, the Ministry of Trade, Industry and Fisheries, and the Director of Public Prosecutions. The steering group approves the task force's annual work plan and makes necessary clarifications related to its work. The group meets as needed.

In addition, a national analysis network consisting of the relevant underlying agencies is established with the Fisheries Directorate, the Police Directorate, the Tax Directorate, the Directorate of Norwegian Customs, the Coast Guard and the Norwegian Coastal Administration. There is also a contact group led by the Directorate of Fisheries, which consist of members from the operative agencies. They meet around five times a year, and carry out the following tasks:

- facilitating cross-agency operational co-operation in potential cases of fisheries crime throughout the value chain
- assessing and recommending the use of intergovernmental operational co-operation between the agencies in the Task Force and involve other actors when relevant
- reporting to the steering group about co-operation and specific issues that are being addressed or initiated.

The contact group has established two working groups: the Crime Prevention group, which is led by the Tax Directorate, and the Tracking group, which is led by the Norwegian Unit of Analysis.

Figure 6.2. Institutional setup of the Norwegian Task Force against Organised Fisheries Crime and IUU Fishing



Key procedures for inter-institutional co-operation

The Task Force does not carry out operations, but works to improve co-operation and co-ordination between different agencies. For instance, it has carried out two workshops in which agencies come together and work on fisheries crime cases. These have been useful for identifying areas for mutual co-operation and information sharing, improving the co-ordination between agencies. Legislation for each agency has now set up guidelines for information exchange and co-operation. Since its start, the agencies in the Task Force have gained greater direct access to information from other government agencies, and much information is now automatically shared between agencies although some can still only be provided on request when there is suspicion of criminal activity.

Difficulties in the practicalities of co-operation

The Task Force has considered the risk of duplication since the start, and has previously adapted its mandate to avoid duplicating or conflict with other inter-agency groups, existing institutions or analysis networks. For instance, after the first review of the Task Force, it was decided to make the division of work between its co-ordinating and the operational bodies clearer. The Task Force has also identified certain laws and regulations related to privacy and data protection that impede information sharing and cross-agency co-operation.

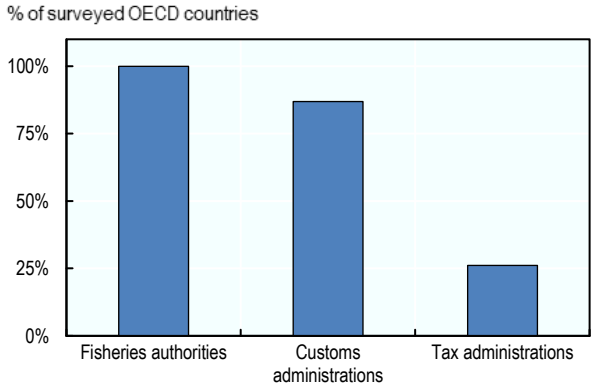
Benefits and results from inter-agency co-operation

The value chain approach, which follows the fish and collects data from each point of control – the financing and procurement of vessels and fishing gear, gaining participant access, registering and providing information about fishing, the actual catching of fish, and distribution and sales – makes it easier to analyse and gather intelligence and evidence, and has also spurred greater interest within the police in dealing with fisheries crime. Agencies have increased awareness and knowledge about the issue both nationally and internationally, improved their analytical capacities, improved their capacity to use surveillance tools, improved co-operation and co-ordination, and improved information sharing between institutions.

Good communication between different authorities can on its own reduce the overall cost of opposing IUU fishing by avoiding duplication of effort and enhancing enforcement capacity. As fisheries authorities' mandates are often limited, the involvement of other executive government bodies, in particular customs and tax authorities, can enhance the tracking of illicit trade and beneficial owners of IUU fishing activities, helping reveal the scale of tax evasion and speed up prosecution (Liddick, 2014[5]).

For inter-agency information sharing to occur, there must be legal gateways to do so that at the same time respect the confidentiality of information and the integrity of the work carried out by each agency. In 2016, all the OECD countries surveyed had fisheries authorities working on the detection of IUU fishing, but bridging communication gaps between executive government bodies and exchanging compatible data remained challenging: 87% reported exchanging information with customs, but only 26% with tax administrations (Figure 6.3).

Figure 6.3. Authorities involved in information sharing at the national level



Source: OECD 2017 data collection on measures against IUU fishing.

6.3. Fines for IUU fishing remain low compared to potential profits

While the FAO's IPOA-IUU urges countries to adopt sufficiently severe penalties, in 2005, fines for IUU fishing were considered too low to have a major deterrent effect, when compared to the value of IUU catches (OECD, 2005[22]; Sumaila, Alder and Keith, 2006[59]). Calls for tougher sanctions on operators (e.g. at the *Our Ocean Conference*, organised in 2017 by the European Union in Malta), have not yet been reflected in prompt regulatory changes (Druel and Polti, 2017[92]). Indeed, in many parts of the world, the high market value of many species is often sufficient to offsets the risk of being caught and fined, even when added to the other costs IUU fishing vessels typically face, such as the cost of avoiding being caught (including by bribing officials), and reputational costs when they are indeed caught or just sighted, such as being included in a list of IUU fishing vessels (Clarke, Milner-Gulland and Bjørndal, 2007[93]; Polacheck, 2012[94]; Purcell et al., 2013[95]; Valenzuela-Quiñonez et al., 2015[96]). Table 6.1 gives examples of the prices fetched by some high-value species threatened by illegal fishing, but many violations also occur in ordinary fisheries (Druel and Polti, 2017[92]).

Table 6.1. Prices for species targeted by IUU fishing

Species	Price [USD per kg]	Source
Bluefin tuna	Up to 790	(Kurtenbach, 2018[97])
Shark fins	100 (up to 650)	(Havocscope, 2011[98]; Shark Truth, 2018[99])
Totoaba swim bladders	20 000	(Carrington, 2017[100])
Abalone (endangered white and black abalone)	50-100	(Havocscope, 2012[101]; Armstrong, 2016[102])
Raw black coral	350	(United States Department of Justice, 2011[103])
Sea cucumbers	435 - 1 000	(China Daily, 2016[104])

Note: These prices are intended to show the extent of the potential revenue from IUU fishing, but are not exhaustive.

All of the OECD countries surveyed reported that their national legal frameworks included sanctions for IUU fishing, while 83% allowed nationals to be sanctioned for IUU fishing violations, regardless of the vessel's flag. The various types of sanctions noted included monetary penalties, confiscations (of vessels, fishing gear and other equipment, or catches), rescinding fishing authorisations (temporarily and permanently), ordering the repayment of financial aid and imprisonment. However, the data about the specifics of prosecutions are fragmented and do not allow an assessment of whether the ratio of risks to benefits are in favour of the authorities. In order to improve transparency and impose reputational costs, 78% of survey participants reported they established lists of vessels engaged in IUU fishing that are maintained and used at national level.

7. Multilateral co-operation and co-ordinated actions are becoming the standard way to combat IUU fishing

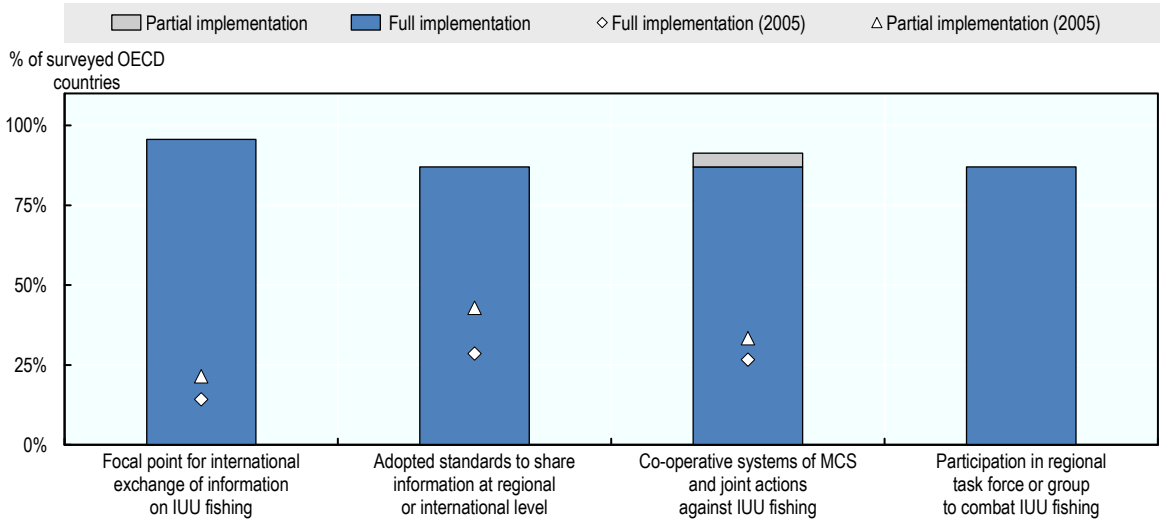
IUU fishing operators constantly adapt to the changing mix of economic incentives and regulatory environments. Their ability to swiftly move between jurisdictions enables them to exploit any weaknesses and loopholes in the relevant laws and enforcement systems. Thus, co-operative efforts against IUU fishing are vital to assure that conservation and management goals are achieved globally (Ardron et al., 2014[105]). However, domestic fisheries authorities and international bodies responsible for fisheries, such as the RFMOs, often act in relative isolation, with responsibilities limited to their respective jurisdictions or areas of management. This relative isolation is, in turn, an impediment to the gathering of data, MCS and imposition of sanctions (Gilman and Kingma, 2013[106]) – especially when it is possible to reflag a vessel if one country improves its responsiveness to IUU fishing-related violations (NAFIG and INTERPOL, 2017[26]; Liddick, 2014[5]).

It is therefore crucial to have co-operation among countries and between countries and RFMOs or other international organisations such as the International Criminal Police Organization (INTERPOL), as well as well-functioning international structures aimed at curbing IUU fishing, to limit the economic incentives for operators to engage in IUU fishing and improve the effectiveness of controls and sanctions along the entire global fisheries value chain. This section reviews the progress made among the countries surveyed in sharing information and co-operating on MCS (Section 7.1).

7.1. Countries are implementing provisions to support multilateral co-ordination and co-operation

The 2005 OECD report on fish piracy (OECD, 2005[22]) emphasised the importance of co-operation and the co-ordination of MCS and enforcement among countries. With fisheries management and the fight against IUU fishing high on the international agenda, notably in the context of SDG 14, the willingness of countries to engage with each other and with RFMOs to fight IUU fishing has increased substantially (Figure 7.1). Among the OECD countries surveyed for this project, 96% reported having designated channels to exchange information with RFMOs regarding owners, operators and crews of vessels suspected of IUU fishing in 2016, up from 21% in 2005. Improved readiness to co-operate is also reflected in the increased number of countries which have adopted standards for sharing information at regional or international level. Implementation of such standards was reported by 87% of surveyed countries, which is a considerable improvement on 2005 when 43% had done so. Co-operative systems on MCS and joint actions against alleged IUU operations were reported by 91% of countries, up from 33% in 2005. Participating in regional task forces or groups to combat IUU fishing was reported by 87% of the OECD countries surveyed.

Figure 7.1. Implementation of international co-operation measures (2005 and 2016)



Note: No data on participation in regional task forces or groups to combat IUU fishing were collected in 2005.
Source: OECD 2017 data collection on measures against IUU fishing.

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Annex A.

Evaluation methodology

The empirical analysis is based on answers provided through the survey by participating countries and economies. The survey consisted of three types of questions:

- contextual questions which were analysed qualitatively and not included in the quantitative analysis;
- questions on the implementation of policies and measures recognised as best practices in terms of deterring IUU fishing;
- multiple choice (checkbox) questions describing modalities associated with the implementation of policies and measures recognised as best practices in terms of deterring IUU fishing;

The criteria for quantitative assessment of the submitted answers are available in Table A.1. Questions are evaluated against established standards provided by the literature (as contained within the column 'Notes and references'). Each answer was assigned a numerical score according to the transparent key contained in the columns relating to score ("Score 0%", "Score 20%", "Score 50%", "Score 100%"). Responses to the multiple-choice (checkbox) questions were scored as a proportion of implemented options over the total number of possible options for the given question (Table A.2).

For each indicator presented in Table 1.1, scores were aggregated as a weighted average, with the weights provided in Table A.1 (Column "W"). Simple questions on implementation were assigned a weight of 1. Detailed questions on the implementation of each measure, therefore conveying a more comprehensive description of the measure, were assigned a weight of 2.

The final score represents a measure of implementation of a selection of policies intended to deter IUU fishing in percentage terms for participating country or economy. Comparison between 2005 and 2016 (reference year for 2017 data collection) was limited to the subset of questions where data was available for 2005 (Column "C"), based on responses to the previous OECD data collection on IUU fishing (OECD, 2005[22]).

The aggregation across surveyed countries was done by weighing individual indexes with their respective production values (OECD, 2017[21]). For countries with production values not available, values were estimated based on production volumes sourced from FAO (FAO, 2017[20]) and average price calculated based on OECD countries that provided data for the given year (OECD, 2017[21]).

Table A.1. Evaluation table for the survey on implementation of internationally recognised best policies and practices against IUU fishing

Q	Policy indicator	Criteria	W	C	Score 0%	Score 20%	Score 50%	Score 100%	Notes and references
1	Responsibilities as a flag state	Registration of national vessels fishing in the areas under the jurisdiction of foreign countries or in the ABNJ	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	NA if there is no long-distance fleet; (FAO, 1993[107]; FAO, 2014[16]; Englender et al., 2014[31]; Churchill, 2012[32]; Erceg, 2006[33]; Erikstein and Swan, 2014[30])
2	Responsibilities as a flag state	Registration of national vessels conducting fishing-related activities in the areas under the jurisdiction of foreign countries or in the ABNJ	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	NA if there is no long-distance fleet; (FAO, 2014[16]; Kroodsma, Miller and Roan, 2017[108])
3	Responsibilities as a flag state	Registration requirements for national vessels fishing in the areas under the jurisdiction of foreign countries or in the ABNJ	2		Multiple-choice (checkbox) question (score depends on the number of checked options) – details in Table A.2				NA if there is no long-distance fleet; (FAO, 2014[16])
4	Responsibilities as a flag state	Updating of the registry of vessels flying the national flag	1		No updating; irregular updating (e.g. less than once a year); no registry	NA	Updating is periodical; updating follows a predefined schedule	Updating in real or near-real time	(FAO, 2014[16])
5	Responsibilities as a flag state	Public availability of the registry of vessels flying the national flag	1		Registry is not public	NA	Registry has a limited availability to the public or registry is not complete due to poorly implemented registration system	Registry is public	Refers to basic information allowing vessel identification, e.g. name, IMO, etc.; publication can be at national or supra-national level; limited availability include: limitation to a subset of vessels (e.g. vessel size criteria), availability upon request; (FAO, 2014[16])
6	Responsibilities as a flag state	Prohibition of registration of vessels with a history of IUU fishing	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	(FAO, 2014[16])
7	Responsibilities as a flag state	Prohibition of registration of vessels already registered by another state, except on a temporary basis	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	(FAO, 2014[16])
8	Responsibilities as a flag state	Sanctions on vessels engaged in IUU fishing before deregistration	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	(FAO, 2014[16])

Q	Policy indicator	Criteria	W	C	Score 0%	Score 20%	Score 50%	Score 100%	Notes and references
9	Responsibilities as a flag state	Authorisation of national vessels to fish in the areas under the jurisdiction of foreign countries or in the ABNJ	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	NA if there is no long-distance fleet; (FAO, 2014[16]; Morin, 2015[109]; Erceg, 2006[33])
10	Responsibilities as a flag state	Authorisation of national vessels to engage in fishing-related activities in the areas under the jurisdiction of foreign countries or in the ABNJ	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	NA if there is no long-distance fleet; (FAO, 2014[16]; Kroodsma, Miller and Roan, 2017[108])
11	Responsibilities as a flag state	Information required for issuing a national vessel with an authorisation to fish in the areas under the jurisdiction of foreign countries or in the ABNJ	2		Multiple-choice (checkbox) question (score depends on the number of checked options) – details in Table A.2				NA if there is no long-distance fleet; (FAO, 1993[107]; FAO, 2014[16])
12	Responsibilities as a flag state	Public availability of the list of vessels flying the national flag authorised to fish (i.e. fishing licence holders) in the areas under the jurisdiction of foreign countries or in the ABNJ	1		List is not public	NA	List has a limited availability to the public or list is not complete due to poorly implemented authorisation system	List is public	Publication can be at national or supra-national level; limited availability include: limitation to a subset of vessels (e.g. vessel size criteria), availability upon request; NA if there is no long-distance fleet; (FAO, 2014[16]; Kroodsma, Miller and Roan, 2017[108])
13	Responsibilities as a flag state	Public availability of the list of bilateral agreements with foreign countries on fishing in the areas under their jurisdiction	1		List is not public	NA	List is public but content or coverage is limited	List is public and its content is comprehensive (e.g. includes details on financial terms)	Includes agreements negotiated at national and supra-national level; NA if there are no such agreements in place; limited coverage includes e.g. no details on financial terms if such are part of the agreement; (FAO, 2014[16])
14	Responsibilities as a coastal state	Authorisation of foreign vessels to fish in the country's EEZ	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	Consider a ban as an applicable legislation
15	Responsibilities as a coastal state	Record-keeping of the activity of foreign vessels authorised to fish in the country's EEZ	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	E.g. keeping a record of catch, used gear, areas fished etc.; NA if no foreign vessels allowed in the country's EEZ
16	Responsibilities as a coastal state	Public availability of the list of foreign vessels authorised to fish in the country's EEZ	1		List is not public	NA	List has a limited availability to the public or list is not complete due to poorly implemented authorisation system	List is public	Limited availability include: limitation to a subset of vessels (e.g. vessel size criteria), availability upon request; NA if foreign vessels banned in the country's EEZ

Q	Policy indicator	Criteria	W	C	Score 0%	Score 20%	Score 50%	Score 100%	Notes and references
17	Responsibilities as a coastal state	Chartering arrangements	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	(EJF; OCEANA; Pew Charitable Trusts; WWF, 2016[110])
18	Responsibilities as a coastal state	Registration requirements for large-scale vessels fishing in the country's EEZ	2		Multiple-choice (checkbox) question (score depends on the number of checked options) – details in Table A.2				NA if no large-scale fleet
19	Responsibilities as a coastal state	Information required for issuing a large-scale vessel with an authorisation to fish in the country's EEZ	2		Multiple-choice (checkbox) question (score depends on the number of checked options) – details in Table A.2				NA if no large-scale fleet
20	Responsibilities as a coastal state	Measures applicable to small-scale fisheries	2		Multiple-choice (checkbox) question (score depends on the number of checked options) – details in Table A.2				(Suebpala et al., 2015[111]; FAO, 2015[17])
21	Responsibilities as a port state	Designation of ports with sufficient capacity to conduct inspections for use by foreign-flagged vessels and publication of such lists	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	(FAO, 2009[15]; Swan, 2016[112]; Witbooi, 2014[113])
22	Responsibilities as a port state	Advance request for port entry by foreign-flagged vessels and confirmation requirement from the flag state	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	(FAO, 2009[15]; Swan, 2016[112]; Witbooi, 2014[113])
23	Responsibilities as a port state	Denial of port entry or use (including landing, transhipments and access to other port services or inspection) to vessels suspected of IUU fishing	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	(FAO, 2009[15]; Swan, 2016[112]; Witbooi, 2014[113])
24	Responsibilities as a port state	Risk based management approach to vessels entering ports	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	(FAO, 2009[15]; Swan, 2016[112]; Witbooi, 2014[113])
25	Responsibilities as a port state	Definition of a minimum number of vessel inspections in ports	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	(FAO, 2009[15]; Swan, 2016[112]; Witbooi, 2014[113])
26	Responsibilities as a port state	Designation of an authority that act as focal point for exchange of information on port state measures with other national authorities, international organisations and RFMOs	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	(FAO, 2009[15]; Swan, 2016[112]; Witbooi, 2014[113])
27	Responsibilities as a port state	Implementation of RFMO's ports state measures	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	(Swan, 2016[112]; Witbooi, 2014[113]; Flothmann et al., 2010[58])

Q	Policy indicator	Criteria	W	C	Score 0%	Score 20%	Score 50%	Score 100%	Notes and references
28	Responsibilities as a market	Prevention of trade of fish caught by vessels identified as engaged in IUU fishing	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	(Le Gallic, 2008[57]; Stokke, 2009[67]; Lövin, 2011[114]; Young, 2016[115]; Hosch, 2016[63])
29	Responsibilities as a market	System of multilateral catch documentation and certification requirements for traded fish products	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	(FAO, 2017[18])
30	Responsibilities as a market	Use of trade information to target IUU fishing trade	1		No process in place	NA	Process in place for main species only	Process in place for all species	Applicable process include, e.g., cross-check of trade data or risk analysis conducted to directly target IUU fishing; (FAO, 2001[6])
31	Responsibilities as a market	Inclusiveness of stakeholders along the value chain and awareness-raising among stakeholders to deter trade of IUU fishing products	1	1	No relevant programs	There are provisions for relevant programs, but no implementation in practice	Relevant programs in place, but with limited reach	Relevant programs in place	(FAO, 2017[18]; Petrossian, Weis and Pires, 2015[65])
32	Responsibilities as a market	Consideration of IUU fishing as a predicate offense for money laundering	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	Partial implementation may include inclusion of relevant provisions in regulation on broader set of products (i.e. not specifically referring to IUU fishing) (UNODC, 2011[11]; OECD, 2013[25]; Griggs and Lugten, 2007[68]; Österblom, 2014[3])
33	Responsibilities as a market	Examination of a vessels and operators' history of non-compliance when applying for financial transfers/support from the government	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation or no subsidies	NA if no governmental support available to fishers; (Griggs and Lugten, 2007[68])
34	Responsibilities as a market	Restrictions on public support for operators convicted of IUU fishing offences	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation or no subsidies	NA if no governmental support available to fishers; (Sumaila, 2013[116]; Schmidt, 2017[117])
35	Enforcement	Existence of task force or inter-agency group to combat IUU fishing	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	(OECD, 2013[25]; Szigeti and Lugten, 2015[118])
36	Enforcement	Authorities involved in sharing information on IUU fishing at national level	2		Multiple-choice (checkbox) question (score depends on the number of checked options) – details in Table A.2				(OECD, 2013[25]; Szigeti and Lugten, 2015[118])
37	Enforcement	Control regime over vessels in the EEZ and the ABNJ	2		Multiple-choice (checkbox) question (score depends on the number of checked options) – details in Table A.2				

Q	Policy indicator	Criteria	W	C	Score 0%	Score 20%	Score 50%	Score 100%	Notes and references
38	Enforcement	Fisheries monitoring centre and near real-time controls of fishing vessels in the EEZ and the ABNJ	1		No monitoring	NA	Monitoring is limited (e.g. to domestic EEZ)	Monitoring in real time, 24/7	Monitoring limitations may include (1) no full coverage, (2) delayed processing of information, (3) limited monitoring time frame; (Beke, Ackermann and Blomeyer, 2014[82]; Cacaud, Kuruc and Spreij, 2003[119])
39	Enforcement	Publication of IUU vessel list	1		No lists published	NA	Country contributes to RFMOs' IUU vessel lists	Lists published (nationally or by supra-nationally)	(Beke, Ackermann and Blomeyer, 2014[82]; Cacaud, Kuruc and Spreij, 2003[119]; Erceg, 2006[33])
40	Enforcement	IUU fishing sanctions within the national legal framework	1		No legislation	NA	NA	Legislation available	(Putt and Nelson, 2009[85]; Kao, 2015[34]; Selbe, 2014[120])
41	Enforcement	Sanctions on nationals	1		Not included in legislation	NA	NA	Included in legislation	Refers to legislation including sanctions on nationals on-board of fishing vessels on the high seas and BO, regardless where the vessel is registered; (Putt and Nelson, 2009[85]; Kao, 2015[34]; Selbe, 2014[120]; Erceg, 2006[33])
42	International co-operation	Adoption of standards to share information at international level	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	(Gilman and Kingma, 2013[106])
43	International co-operation	Existence of a focal point to exchange information with other countries on matters relevant to IUU fishing	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	(Gilman and Kingma, 2013[106])
44	International co-operation	Participation in an international task force or group to combat IUU fishing	1		No participation	NA	NA	Participation	(OECD, 2016[121])
45	International co-operation	Co-operative systems of monitoring, control and surveillance at regional level	1	1	No legislation	Legislation but no implementation	Partial implementation of legislation	Full implementation of legislation	(Lodge et al., 2007[122])

Note: Column 'W' indicates weight of given question in calculation of indicator score. Column 'C' indicates whether question is part of quantitative comparative analysis between 2005 and 2016, i.e. whether data was collected in 2005. Partial implementation implies either (1) implementation to limited subset of fisheries, (2) no sufficient enforcement tools to assure full implementation of the policy. NA indicates no applicability.
Source: OECD 2017 data collection on measures against IUU fishing.

Table A.2. Options for multiple-choice (checkbox) questions presented in Table A.1

Question	Option	Option
3	a	Characteristics of the vessel e.g. length, tonnage, fishing methods, powers, date of build
3	b	Name and nationality of legal or natural person in whose name the vessel is registered
3	c	Name and nationality of legal or natural person responsible for managing the operations of the vessels
3	d	Name and nationality of legal or natural person with beneficial ownership of the vessel
3	e	IMO number when registering the vessels
3	f	History of the vessel
3	g	Requirements also applying to fishing-related activities
11	a	Definition of area, scope and duration of the authorisation
11	b	VMS
11	c	UVI
11	d	Observer coverage
11	e	Maintenance of fishing logbooks
11	f	Reporting of catch
11	g	Reporting of transhipment (when permitted)
11	h	History of compliance with regulations and IUU fishing
11	i	Working conditions on-board
11	j	Sustainability criteria
18	a	Characteristics of the vessel e.g. length, tonnage, fishing methods, powers, date of build
18	b	Name and nationality of legal or natural person whose name the vessel is registered
18	c	Name and nationality of legal or natural person responsible for managing the operations of the vessels
18	d	Name and nationality of legal or natural person with beneficial ownership of the vessel
18	e	IMO number when registering the vessels
18	f	History of the vessel
18	g	Requirements also applying to fishing-related activities
19	a	Definition of area, scope and duration of the authorisation
19	b	VMS
19	c	UVI
19	d	Maintenance of fishing logbooks
19	e	Reporting of catch
19	f	Reporting of transhipment (when permitted)
19	g	History of compliance with regulations and IUU fishing
20	a	Registration of the vessel
20	b	Authorisation to fish
20	c	Empowerment programs to combat IUU fishing
20	d	Other traditional practices in place*
36	a	Fisheries authorities
36	b	Customs administrations
36	c	Tax administrations
36	d	Any other relevant authority or agency with interests in the fisheries sector*

Question	Option	Option
37	a	Catch documentation scheme
37	b	VMS (where appropriate)
37	c	AIS (where appropriate)
37	d	Observer programs (where appropriate)
37	e	MCS of transhipment operations
37	f	Cross-check of authenticity of trade certificates
37	g	Storage of MCS data
37	h	Risk based management approach to MCS
37	i	Training programs for MCS staff
37	j	Co-operative participation of industry
37	k	Other*

Note: * Option "Other" or similar, when available, was not used in quantitative assessment. [1]Only taken into account if a system of such payments is in place.
Source: OECD Data Collection 2017.

Annex B.
Compilation of answers to the survey

Table B.1. Compilation of the survey results – answers to the questions presented in Table A.1

Q	AUS	BEL	CAN	DEU	DNK	EST	GBR	GRC	IRL	ISL	ITA	JPN	KOR	LTU	LVA	NLD	NOR	NZL	POL	SVN	SWE	TUR	USA	ALB	COL	LBN	LBY	MLT	THA	TUN	TWN
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	NA	NA	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	NA	NA	1	1	1	1
3	1.4	2	1.7	1.7	1.7	1.4	1.4	0.9	1.7	1.4	1.7	1.7	2	1.4	1.1	1.7	1.7	2	1.7	2	2	1.4	1.7	1.7	1.7	NA	NA	2	1.1	1.7	2
4	0.5	1	1	1	1	1	0.5	1	1	1	1	1	1	1	0.5	1	1	1	1	1	1	0.5	1	1	1	0	0.5	0.5	0.5	1	0
5	0.5	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1	1	1	1	1	1	1	0	1	0	1	0	0	1	0.5	0	0
6	1	1	1	1	1	1	0.2	0.2	1	1	0.2	0.5	1	1	1	0.5	1	1	1	1	1	1	0	1	1	0	0	1	1	NA	1
7	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0.5	1	1
8	1	1	1	1	1	0.5	0.2	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1	1	1	0.5	1	1	0.5	NA	NA	1	1	0	1
10	1	1	1	0.2	1	0.2	0.2	0.2	1	0	1	1	1	0.5	1	1	0	0	1	0.2	0.2	0	0	1	0.5	NA	NA	1	1	1	1
11	1.8	1.6	2	1.2	1.6	1.6	1.8	1.4	1.6	1.8	1.8	2	2	1.2	1.4	1	1.4	1.8	2	1.6	1	1	0.6	1.6	1.8	NA	NA	1.2	0	NA	2
12	0.5	NA	1	0.5	0.5	1	0.5	1	0.5	1	0.5	1	0	0.5	1	0.5	1	0.5	0	NA	0.5	0	1	1	0.5	NA	NA	1	0	0	1
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	NA	1	1	1	0	0	NA	NA	NA	NA	1	NA	NA	0.5
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	NA	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	NA	1	1	1	NA	1	NA	1	NA	1	1	NA	NA	NA
16	NA	0	0	0	0	NA	0	NA	0	1	0	0.5	0	0	0	0	0.5	NA	0	NA	0	NA	0	NA	1	NA	1	0	NA	NA	NA
17	1	0	1	1	1	1	0	0	1	1	0	1	1	1	1	1	1	1	1	0	1	1	M	0	1	0	1	1	0	1	1
18	1.4	2	1.7	0.9	1.1	1.4	0.6	1.1	1.7	1.4	1.7	1.7	1.7	0.6	1.1	1.7	1.7	1.7	1.1	2	2	1.4	1.7	NA	2	NA	2	1.7	1.7	0	2
19	1.7	0.9	2	0.9	1.7	2	1.7	1.7	1.7	1.7	1.7	2	1.7	1.7	1.7	0.9	1.7	1.1	2	1.4	1.7	1.4	2	NA	1.4	NA	2	1.7	2	2	2
20	1.3	0.7	1.3	1.3	1.3	1.3	1.3	1.3	1.3	2	2	2	2	0.7	1.3	1.3	1.3	1.3	2	1.3	2	1.3	1.3	1.3	2	1.3	0.7	0.7	2	2	1.3
21	1	0.2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.2	1	0	1	1	0	1	0	1	1	1	1
22	1	1	1	1	1	1	1	0.2	1	1	1	1	1	1	0.5	1	1	1	1	0.2	1	0	1	1	1	1	0	1	1	1	1
23	1	1	1	1	1	1	1	1	1	1	0.2	1	1	1	1	1	1	1	1	0.2	1	0	1	1	1	1	1	1	1	1	1
24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.2	1	0.5	1	1	1	0	0	1	1	1	1
25	1	1	1	1	1	1	1	0.2	0.2	0.5	0.5	1	1	1	1	1	1	1	1	0.2	0.2	0	1	1	1	0	0	0.5	1	0.5	1

26	1	0	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0.2	1	0	0	1	1	1	1
27	1	1	1	0.5	1	1	1	0.2	1	1	0.5	0	1	1	1	1	1	1	1	0.2	1	0	0	1	1	0	0	1	1	1	1
28	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1	1	1	1	1	1	0	0.5	1	1	1	1	1
29	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1	1	1	1	1	0.5	1	1	1	1	1	1	0	0.2	1	1	1	1
30	0.5	0	1	0	1	1	1	0	1	1	1	1	1	1	0.5	1	1	0	0.5	1	1	0	1	1	0	0	0	1	1	0	0.5
31	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1	1	1	1	1	0	1	1	0.5	1	1	1	1	1	1	1
32	0.5	0.5	1	0.5	1	1	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0	0	0.5	0	0	0
33	NA	0.5	0.5	1	1	1	1	1	1	0	1	0.5	1	1	1	0.5	1	NA	1	1	1	NA	1	NA	0	NA	0	1	1	1	0
34	NA	0.5	0.5	1	1	1	0.2	0.2	1	0	1	0	1	1	1	1	1	NA	1	1	1	NA	1	NA	0	NA	0	1	0	1	0
35	1	0	1	0.5	1	0	0	0.5	0.5	0	1	0.5	1	0	1	1	1	1	0	1	0	0.5	1	1	1	0.5	0.5	1	1	1	1
36	2	0.7	2	1.3	2	2	2	1.3	1.3	1.3	1.3	1.3	0.7	1.3	1.3	1.3	2	1.3	1.3	1.3	1.3	0.7	1.3	2	2	1.3	1.3	1.3	1.3	1.3	1.3
37	2	1.8	2	1.8	1.8	1.8	2	1.4	1	2	1.6	2	2	1.8	1.6	1.8	2	2	2	1.6	1.2	1.6	2	1.8	1.4	0	1.8	1.6	2	1.8	2
38	1	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	0	0	1	1	0	0.5
39	0.5	1	0.5	1	1	1	1	1	1	1	1	0.5	1	1	1	1	1	1	1	1	1	0.5	0.5	0.5	0	0.5	0.5	1	0	1	0.5
40	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
41	1	1	1	0	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	0	1
42	1	1	1	1	1	0.2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.2	1	0	1	0	1	0.5	0.5	1	1	0
43	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
44	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	0
45	1	1	1	1	1	1	0	1	1	1	1	1	0.5	1	1	1	1	1	1	1	0	1	1	0	0	1	0.5	1	0	1	1

Note: Follows criteria presented in Table A.1. NA indicates non-applicability; M indicates missing data.
Source: OECD 2017 data collection on measures against IUU fishing.

Table B.2. Compilation of survey results – answers to the multiple-choice (checkbox) questions presented in Table A.2

Q	O	AUS	BEL	CAN	DEU	DNK	EST	GBR	GRC	IRL	ISL	ITA	JPN	KOR	LTU	LVA	NLD	NOR	NZL	POL	SVN	SWE	TUR	USA	ALB	COL	LBN	LBY	MLT	THA	TUN	TWN
3	a	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	NA	NA	1	1	1	1
3	b	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	NA	NA	1	1	1	1
3	c	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	NA	NA	1	1	1	1
3	d	0	1	1	0	1	0	0	0	1	1	1	0	1	0	0	0	1	1	0	1	1	0	0	1	0	NA	NA	1	0	1	1
3	e	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	NA	NA	1	0	1	1
3	f	0	1	1	1	1	1	1	0	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	NA	NA	1	0	1	1
3	g	1	1	1	1	0	0	1	0	0	0	0	1	1	0	0	1	1	1	1	1	1	0	1	1	1	NA	NA	1	1	0	1
11	a	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	NA	NA	1	0	1	1
11	b	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	NA	NA	1	0	1	1
11	c	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	0	0	0	1	NA	NA	1	0	1	1
11	d	1	0	1	0	0	1	1	0	0	1	1	1	1	0	0	0	0	1	1	0	0	0	0	0	1	NA	NA	0	0	1	1
11	e	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	NA	NA	1	0	1	1
11	f	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	NA	NA	1	0	1	1
11	g	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	0	1	1	1	0	0	0	0	1	0	NA	NA	1	0	1	1
11	h	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	NA	NA	0	0	1	1
11	i	0	1	1	0	0	0	1	0	1	1	1	1	1	0	0	0	1	1	1	1	0	0	0	1	1	NA	NA	0	0	1	1
11	j	1	0	1	0	1	0	0	1	0	1	1	1	1	0	0	0	0	0	1	1	0	0	0	1	1	NA	NA	0	0	0	1
18	a	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	NA	1	NA	1	1	1	0	1
18	b	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	NA	1	NA	1	1	1	0	1
18	c	1	1	1	0	0	1	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	NA	1	NA	1	1	0	0	1
18	d	0	1	1	0	0	0	0	0	1	0	1	0	1	0	0	0	1	1	0	1	1	0	0	NA	1	NA	1	0	1	0	1
18	e	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	1	1	1	1	1	NA	1	NA	1	1	1	0	1
18	f	0	1	1	0	1	1	0	1	0	1	1	1	1	0	0	1	1	1	1	1	1	1	1	NA	1	NA	1	1	1	0	1
18	g	1	1	1	0	1	0	0	0	1	0	0	1	1	0	0	1	1	1	0	1	1	0	1	NA	1	NA	1	1	1	0	1
19	a	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	NA	1	NA	1	1	1	1	1
19	b	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	NA	1	NA	1	1	1	1	1
19	c	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	0	1	NA	1	NA	1	1	1	1	1
19	d	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	NA	0	NA	1	1	1	1	1
19	e	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	NA	1	NA	1	1	1	1	1
19	f	1	0	1	0	1	1	1	1	1	0	0	1	1	1	1	0	1	1	1	0	0	0	1	NA	0	NA	1	1	1	1	1
19	g	0	0	1	1	0	1	0	0	0	1	1	1	1	0	0	0	0	1	1	0	1	1	1	NA	1	NA	1	0	1	1	1
20	a	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	b	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1
20	c	1	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	1	1	0
20	d	0	0	1	0	0	1	0	0	1	0	0	1	1	1	0	0	1	0	1	1	1	0	0	0	1	0	0	0	0	1	0
36	a	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
36	b	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
36	c	1	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0

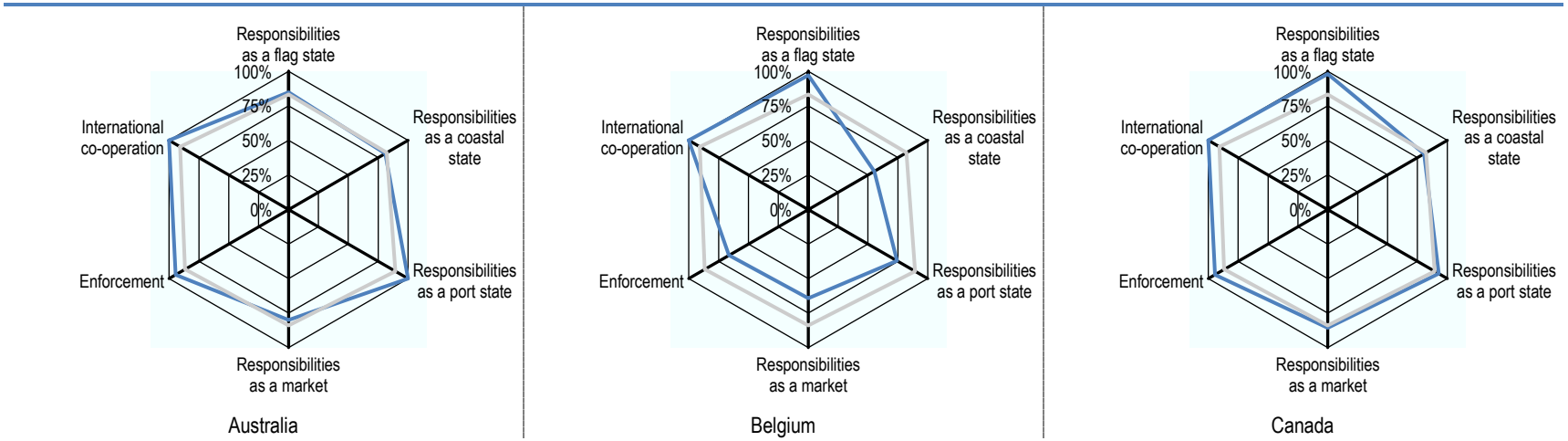
36	d	0	0	1	0	1	0	1	1	1	0	1	1	1	0	1	0	1	0	0	0	0	1	1	0	1	1	0	1	0	1	1
37	a	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1
37	b	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1
37	c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1
37	d	1	0	1	0	0	1	1	0	0	1	1	1	1	1	0	1	1	1	1	0	0	1	1	1	1	0	1	1	1	1	1
37	e	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	1	1	1	1	1
37	f	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1
37	g	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1
37	h	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0	1	0	1
37	i	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1
37	j	1	1	1	1	1	0	1	0	0	1	0	1	1	1	0	1	1	1	1	0	0	1	1	0	1	0	1	0	1	1	1
37	k	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1

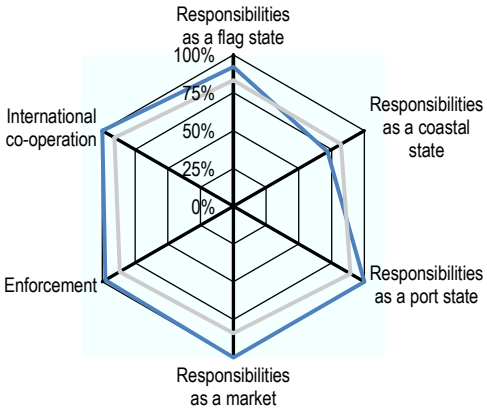
Note: Follows criteria presented in Table A.2. NA indicates non-applicability; M indicates missing data.
Source: OECD 2017 data collection on measures against IUU fishing.

Annex C.

Individual country results

Figure C.1. OECD indicators of policies and practices against IUU fishing– results by country in comparison with OECD average (grey line)





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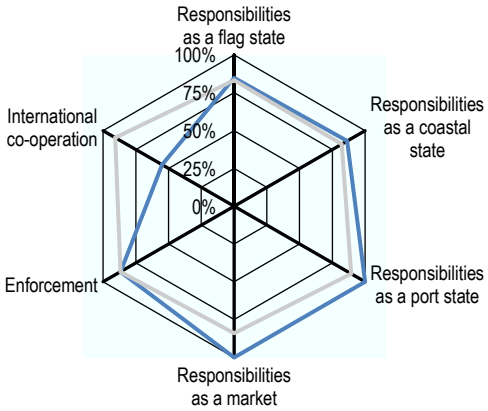
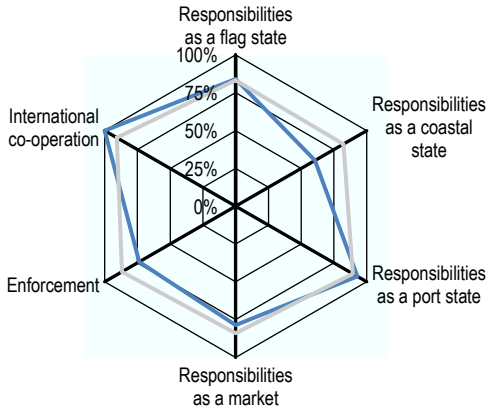
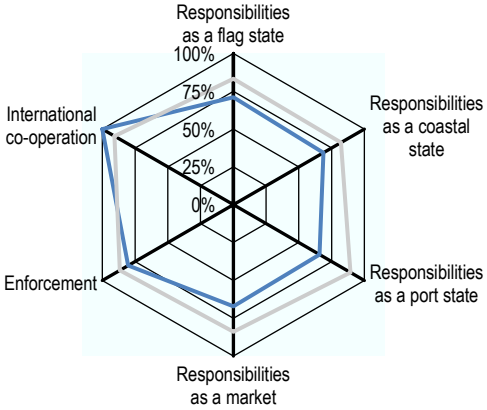


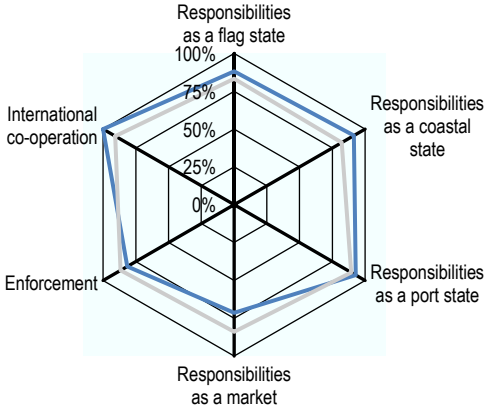
Estonia



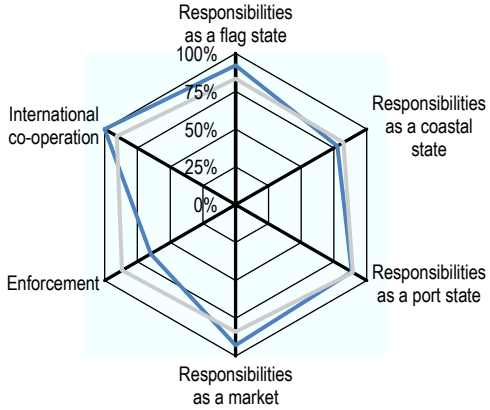
Germany



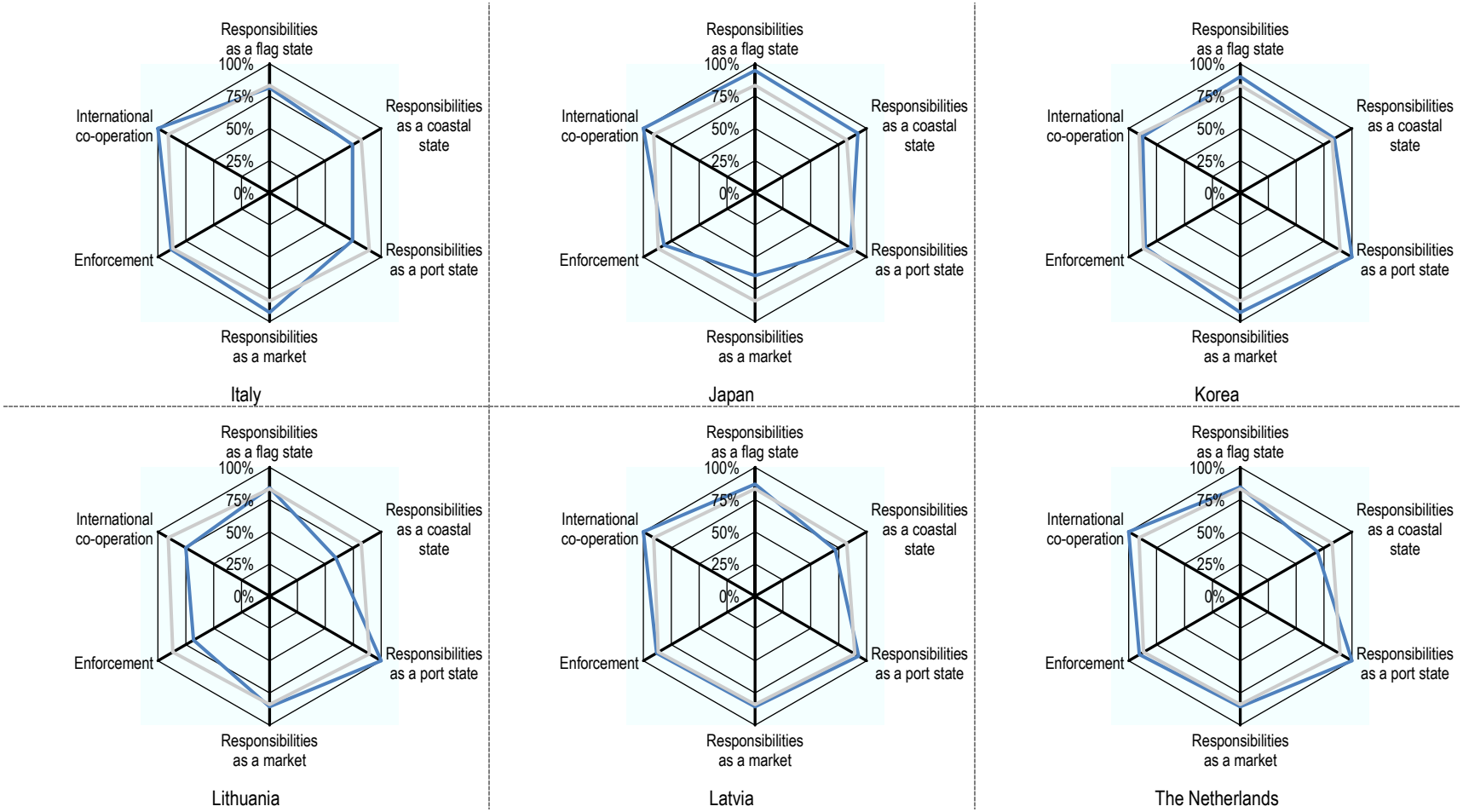
Greece

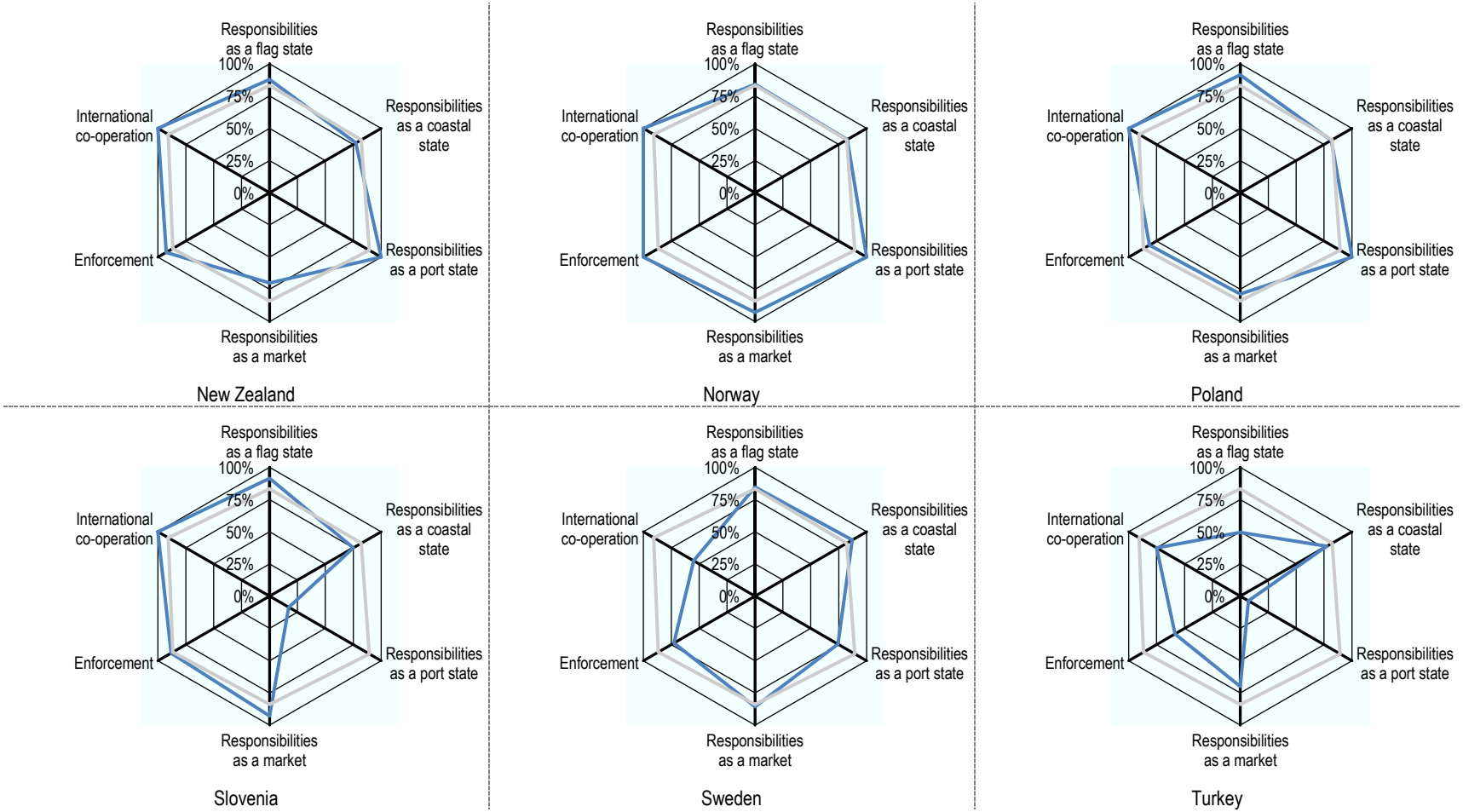


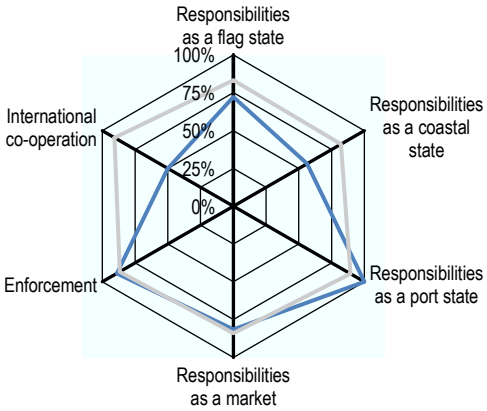
Iceland



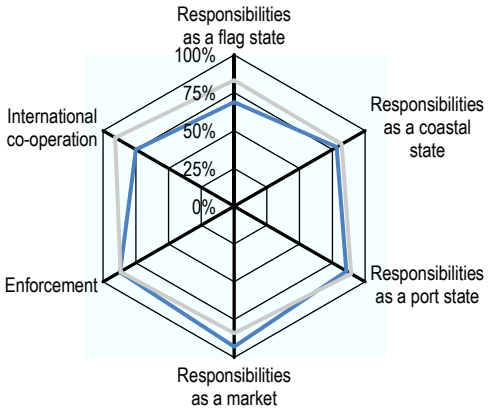
Ireland


Responsibilities as a flag state
Responsibilities as a coastal state
Responsibilities as a port state
Responsibilities as a market
Enforcement
International co-operation
100%
75%
50%
25%
0%
Italy
Japan
Korea
Lithuania
Latvia
The Netherlands

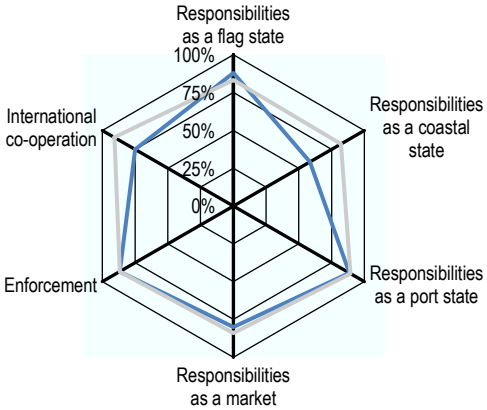

Responsibilities as a flag state
Responsibilities as a coastal state
Responsibilities as a port state
Responsibilities as a market
Enforcement
International co-operation
100%
75%
50%
25%
0%
New Zealand
Norway
Poland
Slovenia
Sweden
Turkey



The United Kingdom



The United States



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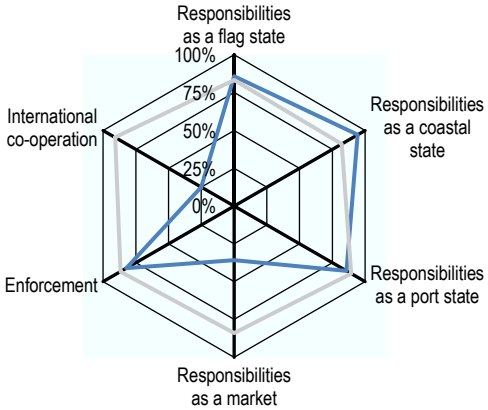
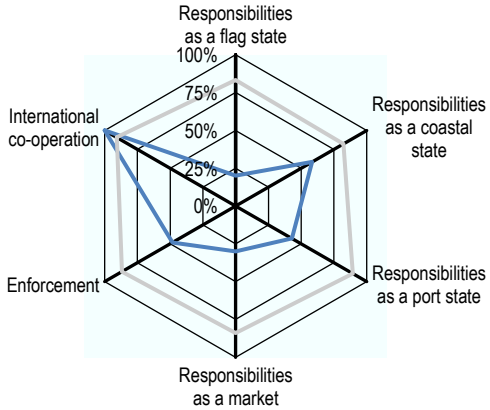
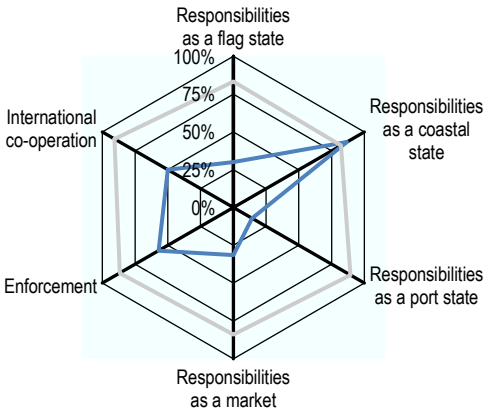


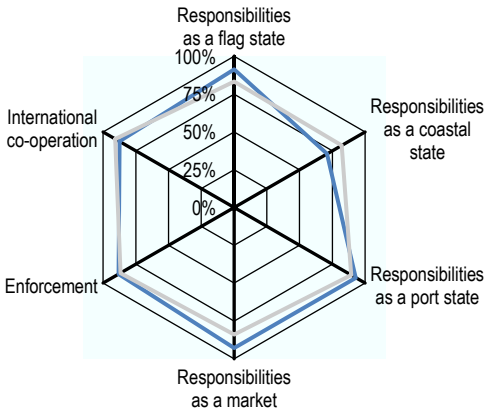
Colombia



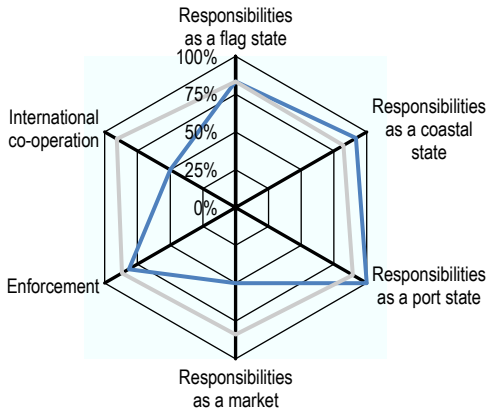
Lebanon



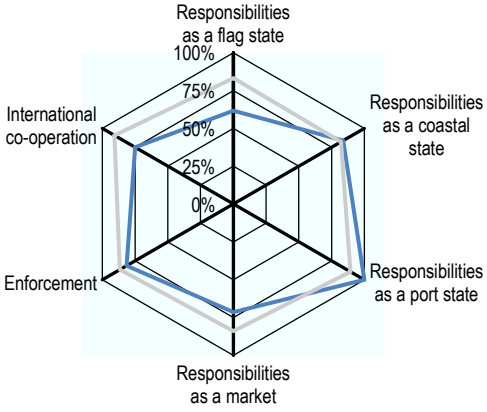
Libya



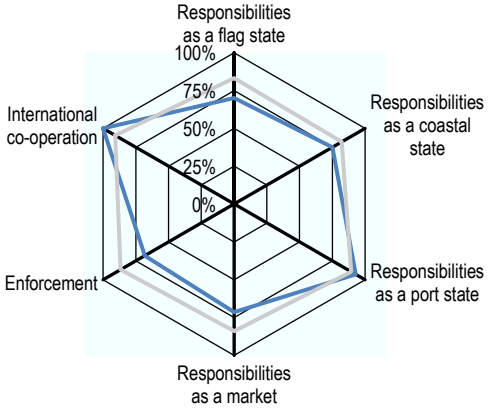
Malta



Chinese Taipei



Thailand



Tunisia