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IMPACT ASSESSMENT REPORT

Accompanying the document

Proposal for a Directive of the European Parliament and of the Council

amending Directive 2009/16/EC on port State control

{COM(2023) 271 final} - {SEC(2023) 202 final} - {SWD(2023) 149 final}

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Glossary

Term or acronym	*Meaning or definition*
BWM	International Ballast Water Management Convention
EEA	European Economic Area
EC	European Commission
EGD	European Green Deal
EMSA	European Maritime Safety Agency
EU	European Union
ILO	International Labour Organisation
IMO	International Maritime Organization
MARPOL	International Convention for the Prevention of Pollution from ships
MED MoU	Mediterranean Memorandum of Understanding on port State control
MLC	Maritime Labour Convention 2006
MoU	Memorandum of Understanding
MRV	Monitoring reporting and verification of greenhouses gases
Paris MoU	Paris Memorandum of Understanding on port State control
PM	Policy Measure
PO	Policy Option
PSC	Port State Control
PSCO	Port State Control Officer
QMS	Quality Management System
REF2020	EU Reference scenario 2020
REFIT	The European Commission's regulatory fitness and performance programme
RO	Recognised Organisation
SafeSeaNet	The EU vessel traffic monitoring and information system
SDG	Sustainable Development Goal
SOLAS	International Convention for the Safety of Life at Sea
SRP	Ship Risk Profile
THETIS	EU/Paris MoU port State control database
WGB	White, Grey, Black list
VSMC	Very Serious Marine Casualty

1. 1. INTRODUCTION: POLITICAL AND LEGAL CONTEXT

This Impact Assessment accompanies a legislative proposal for a revision of **Directive 2009/16/EC on port State control**[1] (hereinafter "the PSC Directive" or "the Directive").

Maritime transport is a key sector for the EU economy as it embodies the main transport mode for European imports and exports to the rest of the world. Maritime transport is estimated[2] to represent around 80% of worldwide goods transported and around 30% of intra-EU transport activity. In 2019, 1.9 billon tonnes were transported by short sea shipping to/from the main EU ports. In addition, 418 million passengers aboard ferries and cruise vessels embarked and disembarked in EU ports in 2019.

At the same time, an average of 2,239 marine accidents were reported per year between 2014 and 2020 for EU Member States, of which 33% very serious and serious casualties. In addition, 370 cases of marine pollution have been reported in total during 2014-2020[3].

The revision of the PSC Directive has to be seen in the context of the Commission's Communication on a **Sustainable and Smart Mobility Strategy (SSMS)** which sets out the EU vision for the transport system of the future. The Strategy announced that the Commission is planning to initiate a major review of existing legislation on **flag State responsibilities, port State control and maritime accident investigation** in 2021. According to the SSMS, the overall objective of this review should be to enable safe, secure and efficient maritime transport and further stresses that "*safety and security of the transport system is paramount and should never be compromised and the EU should remain a world leader in this field. Continuous efforts with international, national and local authorities, stakeholders, and citizens is key […][4].*" The Strategy sets as one of the milestones that by 2050, the death toll for all modes of transport in the EU should be close to zero. The objective of the EU and its Member States to ensure a high and uniform level of maritime safety and environmental protection has also been underlined in several Council conclusions and in particular those from 2017[5] and 2020[6].

Port State Control (PSC) can be described as the inspection of foreign ships in ports of states other than the flag state by PSC officers to verify that the competency of the master, officers and crew on board, the condition of a ship, and its equipment comply with the requirements of international conventions - and in the European Union, applicable EU law. As such, PSC is an important element for ensuring maritime safety and protecting the marine environment.

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[1] Directive 2009/16/EC of the European Parliament and of the Council of 23 April 2009 on port State control, OJ L 131, 28.5.2009, pp. 57 – 100.

[2] European Commission (2021). The EU Blue Economy Report 2021

[3] http://www.emsa.europa.eu/newsroom/latest-news/item/4266-annual-overview-of-marine-casualties-and-incidents-2020.html

[4] COM(2020) 789 final - Sustainable and Smart Mobility Strategy – putting European transport on track for the future; FLAGSHIP 10 – ENHANCING TRANSPORT SAFETY AND SECURITY point 98 and 101.

[5] "Priorities for the EU's maritime transport policy until 2020: Competitiveness, Decarbonisation, Digitalisation to ensure global connectivity, an efficient internal market and a world-class maritime cluster"

[6] "EU Waterborne Transport Sector – Future outlook: Towards a carbon-neutral, zero accidents, automated and competitive EU Waterborne Transport Sector"

In relation to the protection of the marine environment, the initiative should contribute towards delivering the zero pollution ambitions of the European Green Deal (EGD)[7] and the SSMS. The initiative contributes towards Sustainable Development Goal (SDG) 3 ("Ensure healthy lives and promote well-being for all at all ages") and SDG 14 ("Conserve and sustainably use the oceans, seas and marine resources for sustainable development").

International and regional context

Due to its history and international nature, maritime transport has developed a specific regulatory structure. At the global level, maritime safety and protection of the environment are promoted through an international legal framework adopted under the auspices of the United Nations' specialised agency responsible for regulating shipping, the **International Maritime Organisation** (IMO)[8]. International rules related to working and living conditions on-board ships are promulgated by another UN agency, the **International Labour Organisation** (ILO)[9].

Each of the IMO Conventions provides that they can be enforced by State parties of the convention other than the flag State in their function of port State, this means that port States have an important role in policing how flag States do their work and can protect their ports and waters from unsafe or polluting ships. As certain owners and certain flag States have proved unwilling or unable to correctly apply and enforce their obligations deriving from the international conventions on their ships, systemic PSC whereby port states would work together was developed.

To improve effectiveness, port States carrying out PSC inspections coordinate their work on a regional basis. In 1978 a number of maritime authorities in Western Europe signed an agreement to provide for the joint enforcement of shipboard living and working conditions under a convention of the ILO. Subsequently, and as a response to a number of maritime accidents, the role and responsibilities were broadened and the **Paris Memorandum of Understanding on port State control**[10] (hereinafter the "**Paris MoU**") established in 1982 as the first of nine such intergovernmental structures to be established worldwide[11], with its membership spread across the North-Atlantic basin to deal with issues related to: (i) safety of life at sea, (ii) prevention of pollution by ships, and (iii) living and working conditions on board ships. Over time, the Paris MoU has been amended to accommodate new safety and marine environment requirements stemming from the IMO and ILO.

Paris MoU signatories apply common procedures to select vessels for inspection, the carrying out of PSC inspections to enforce the IMO and ILO conventions and to share inspection data. It has established an international PSC inspection regime carried out by national inspectors referred to as port State control officers (PSCOs).

[7] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en#documents

[8] International Maritime Organization (www.imo.org); all EU Member States are IMO members and the EU has Observer status through the Commission.

[9] International Labour Organization (www.ilo.org), the UN agency whose mandate is to advance social and economic justice through setting international labour standards, all EU Member States are members of the ILO but the EU is not.

[10] www.parismou.org. All 24 EEA Member States with seaports, as well as Canada, the Russian Federation and the United Kingdom, are members of the Paris MoU, which was established in 1982. The European Union is not a member. Following the Russian invasion of Ukraine, Russian Federation membership of the Paris MoU was suspended in May 2022.

[11] The Paris MoU, Tokyo MoU (Pacific Ocean) Indian Ocean MoU, Mediterranean MoU, Acuerdo de Viña del Mar (Central and South America), Caribbean MoU, Abuja MoU (West Africa), Black Sea MoU, and Riyadh MoU.

EU context

EU action in the field of maritime safety both complements and implements the international framework as defined within IMO and ILO. The transposition of IMO and ILO rules into the EU legal system makes these provisions actionable before the European Court of Justice thereby ensuring their uniform enforcement across the Union. In addition, the EU and its Member States play an important role in improving international standards, by initiating and contributing directly to their adoption at international level. The bulk of today's EU maritime safety policy was developed in the early 1990s, and was further worked upon between 2000-2009, in the wake of major maritime accidents causing substantial oil spills[12] and loss of life[13]. The overall objective of the EU has therefore been – and continues to be – a common policy on *safe seas*[14], and continuous work to improve safety and reduce accidents and pollution. It should be noted that while the EU Member States are members of the IMO and have ratified the conventions (enforced by PSC), the Union is not a party and cannot adhere to these Conventions. While EU MS as flag States apply the international conventions to the vessels flying their flag, PSC provides for a system of mutual enforcement whereby port States enforce the same conventions to foreign vessels (including other EU member States) calling at their ports. This ensures a harmonised application of the safety and environmental standards, and reduces any competitive advantage by disincentivising shipowners and/or flag States that may attempt to gain such advantage by not strictly following the rules and standards set out in the conventions. While over time the Paris MoU has developed a wide body of procedures for the inspection of ships, it has no means to oblige its members to follow these rules. The Member States of the Paris MoU accordingly have a wide margin of manoeuvre as the MoU can only count on their professionalism and goodwill to ensure a harmonised and coordinated approach.

EU involvement in port State control dates from 1995 when Directive 95/21/EC[15] (precursor of the existing Directive) was adopted, bringing PSC within the EU acquis and therefore making the obligations that EU Member States commit to in the context of the Paris MoU actionable before the EU courts as these are now included in the Directive. At that time, there was no system for targeting vessels for inspection and Paris MoU and EU Member States simply had to inspect at least 25% of the number of individual ships which entered their ports during a calendar year. The advent of improved information technology allowed the Member States to share more easily the inspection results by means of the THETIS database and these could be used to develop an individual ship risk profile for all ships eligible for PSC calling to EU and Paris MoU ports. The use of THETIS to record and share inspection results is mandatory under EU law - this is the major advantage that Directive 2009/16/EC brought. The inspection effort could be focused on the poorest performing ships and those ships which did well in previous PSC inspections would be inspected less frequently. EEA Member States are also provided with information regarding vessels scheduled to call to their ports by means of the Union

[12] e.g. Aegean Sea in 1992, ES (74,000 tonnes hydrocarbon), Braer accident in 1993, UK (85,000 tonnes), etc.

[13] e.g. the MV Estonia sinking in the Baltic sea in 1994 claiming 852 lives.

[14] COM (93) 66 'A common policy on safe seas' 1993

[15] Council Directive 95/21/EC of 19 June 1995 concerning the enforcement, in respect of shipping using Community ports and sailing in the waters under the jurisdiction of the Member States, of international standards for ship safety, pollution prevention and shipboard living and working conditions (port State control) OJ L 157, 7.7.1995, p. 1

maritime information exchange system 'SafeSeaNet'[16] to allow them to plan their inspections.

In the absence of the Directive, the Paris MoU States have committed themselves to carry out a required number of inspections (the inspection commitment) to an agreed harmonised level. These obligations however are on a best efforts basis and not enforceable in any way; the only pressure that can be exercised is moral. The Paris MoU provides that ships will be inspected on the basis of a ship risk profile but this was in reality implemented by the European Maritime Safety Agency (EMSA) in pursuit of the Directive. Absent the Directive it is likely that the Paris MoU would have a targeting system and inspection database. This would not have been mandatory to use for EU Member States and it would not however have the support provided by EMSA through training and the help desk provided by the Agency to national PSC administrations.

The main objectives of the 2009 PSC Directive are: (i) the continuous improvement of maritime safety and security; (ii) the continuous improvement of pollution prevention and of environmental impact; (iii) the continuous improvement of on-board living and working conditions; (iv) the avoidance of distortions of competition. The key elements of the EU PSC regime in this context are: (i) a harmonised approach to inspections and detentions; (ii) an annual inspection commitment for each Member State; (iii) the targeting of ships for inspection based on a ship risk profile (SRP) for each individual ship and (iv) record keeping and information sharing (inspection database).

The PSC Directive incorporates the procedures and tools of the Paris MoU as agreed in 2009. The Paris MoU and the PSC Directive have at their base the ideas of shared burden and targeted harmonised inspections. The fact that the results of PSC inspections are shared and publicly accessible means that there is a high level of mutual control. The owners and operators of well-run ships and their trade bodies view good PSC inspections as a mark of quality, and PSC inspection results are used by ship lessors in making business decisions about which vessels to charter.

Similarly, the flag State administrations (of good quality flags) are very aware of the port State control inspections being carried out on vessels flying their flag especially when these are unfavourable. Repeated poor inspection results lead to a negative impact on the ship risk profile and increased inspections. This has impact not only on the ship and the shipowner concerned but also on the flag State of the vessel and all vessels flying this flag by negatively impacting the flag State performance (the White Grey Black list) which is used for targeting and selecting vessels for inspection.

Subsequent to its entry into force, the Directive has been amended to provide for the enforcement by PSC of the Maritime Labour Convention 2006 (MLC 2006)[17]. Furthermore, in the EU particular rules apply to ferries in regular service,[18] insurance requirements,[19] the control of ship generated waste and cargo residues[20], the safe and

[16] This is a system hosted and developed by EMSA which enables Member States to provide and receive information on ships and their hazardous cargoes. It provides, among others, the identification, position and status of a ship; times of departure and arrival; incidents reports, details on hazardous cargoes.

[17] Directive 2013/38/EU of 12 August 2013 amending Directive 2009/16/EC on port State control (OJ L 218, 14.8.2013, p. 1)

[18] Directive (EU) 2017/2110 of 15 November 2017 on a system of inspections for the safe operation of ro-ro passenger ships and high-speed passenger craft in regular service and amending Directive 2009/16/EC and repealing Council Directive 1999/35/EC (OJ L 315, 30.11.2017)

[19] Directive 2009/20/EC of the European Parliament and of the Council of 23 April 2009 on the insurance of shipowners for maritime claims (OJ L 131, 28.5.2009, p.128)

environmentally sound recycling of ships[21] and the monitoring reporting and verification (MRV) of greenhouse gas (GHG) emissions[22] where enforcement of these rules is provided by means of PSC inspections. For other EU legal acts, such as the controls of the sulphur content of marine fuels, enforcement is also performed in the vast majority of the EU Member States by PSC[23]. However, these EU provisions do not apply to the non-EEA members of the Paris MoU. These provisions exist independently from the international conventions and EU Member States use port State control for their enforcement as regards foreign ships calling to EU ports. Absent the Directive the EU co-legislator would have had to find or create other enforcement tool(s).

Synergies with other EU policy instruments

The maintenance of the condition of the ship, and for ensuring that its equipment complies with the requirements of the international conventions applicable, is the responsibility of the ship-owner/shipping company.

However, at State level, the responsibility for maritime safety involves three overlapping lines of State intervention (see Figure 1). States have differing but complementary responsibilities either as a vessel's state of registration, a state which is being visited by a foreign flagged vessel or as a coastal state by which a vessel is travelling without calling. The *first "line of defence"* is provided by the flag State.

The primary responsibility for monitoring the compliance of ships with the IMO standards for safety, pollution prevention[24], and the ILO standards regarding on-board living and working conditions lies with the State where the ship is registered and whose nationality the ship holds – the flag State. However, as flag State rules only apply to vessels that fly that flag, many of the IMO's most important technical conventions contain provisions for ships to be inspected when the vessels visit foreign ports to ensure that they meet the international requirements. There were and are flag States allowing substandard vessels to operate under their flags or unable to adequately enforce the international rules. Therefore, systemic forms of PSC become a *second* but essential *line of defence*, to reduce the risks posed by substandard ships in national waters of EU Member States. Given that there are costs associated with complying with the relevant international Conventions, shipowners operating substandard ships can potentially undercut their competitors by operating below the necessary standards, and could consequently gain a competitive advantage, PSC levels the playing field by seeking to reduce the competitive advantage to ship owners may seek through non-compliance.

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[20] Directive (EU) 2019/883 of the European Parliament and of the Council of 17 April 2019 on port reception facilities for the delivery of waste from ships, amending Directive 2010/65/EU and repealing Directive 2000/59/EC (OJ L 151, 7.6.2019, p. 11)

[21] Regulation (EU) No 1257/2013 of the European Parliament and of the Council of 20 November 2013 on ship recycling and amending Regulation (EC) No 1013/2006 and Directive 2009/16/EC (OJ L 330, 10.12.2013, p. 1)

[22] Regulation (EU) 2015/757 of the European Parliament and of the Council of 29 April 2015 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC (OJ L 123, 19.5.2015, p. 55)

[23] Directive (EU) 2016/802 of the European Parliament and of the Council of 11 May 2016 relating to a reduction in the sulphur content of certain liquid fuels (codification) (OJ L 132, 21.5.2016, p.58)

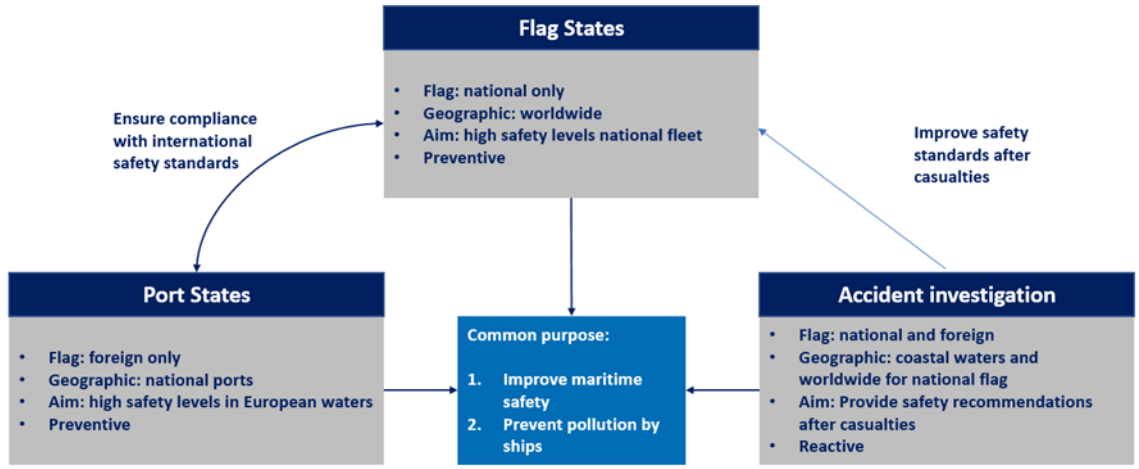
[24] International rules include for example the International Convention for the Safety of Life at Sea (SOLAS 74), International Convention for the Prevention of Pollution from Ships (MARPOL 73/78), Standards of Training, Certification and Watchkeeping (STCW), the International Convention on Load Lines, 1966, the Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREG 72) etc.

As previously stated PSC involves the inspection of vessels to ensure compliance with international and EU standards relating to safety, environmental protection and working and living conditions on board. In the EU, there are four types of PSC inspections, (i) an initial inspection (ii) an expanded inspection (iii) a more detailed inspection and (iv) a ro-pax[25] inspection. An initial inspection is a general inspection of the vessel and of its certificates. An expanded inspection is a more complex inspection which is carried out on types of ships which are considered to be of higher risk either because they carry passengers, because of their cargo or their age. In this regard particular attention is paid to chemical tankships, gas carriers, oil tankers, bulk carriers, passenger ships and any vessel which is more than 12 years old. A more detailed inspection is carried out whenever there are clear grounds for believing, during an inspection, that the condition of the ship or of its equipment or crew does not substantially meet the relevant requirements. Ro-pax inspections arise due to specific EU legislation in this regard[26].

During a PSC inspection, the inspector may identify one or more deficiencies which are included in the PSC inspection report. The report also specifies by when the deficiency should be rectified which can be immediately, before departure, at the next port or within a certain number of days. In the case of serious deficiencies giving rise to danger to the safety, health, or the environment, the PSC inspector can decide to detain the ship. The detention of a ship indicates the seriousness of the deficiencies and the inspector will have to return to the ship to verify that the deficiencies have been rectified before departure. A vessel subject to multiple detentions over a certain period can be refused access (banned) from any port in the EU (or Paris MoU region).

The deficiencies and detentions recorded against individual ships as recorded and shared in the THETIS database are reflected thereafter in the vessel's SRP, meaning that the PSC system is risk-based; the poorest performing ships are the most often inspected.

Figure 1: The flag state, port state and accident investigation responsibilities of EU Member States



[25] A ro-pax ship is a passenger vessel which also has roll-on /roll-off capacity for the carriage of private cars and commercial vehicles along with space for passengers. Ro-pax inspections are specific to the EU.
[26] Directive (EU) 2017/2110 of 15 November 2017 on a system of inspections for the safe operation of ro-ro passenger ships and high-speed passenger craft in regular service and amending Directive 2009/16/EC and repealing Council Directive 1999/35/EC (OJ L 315, 30.11.2017)

This impact assessment has been initiated in parallel to the related impact assessments of the Maritime Accident Investigation Directive (Directive 2009/18/EC[27]) and the Flag State Directive (Directive 2009/21/EC[28]). All three Directives are based on IMO rules and standards. While they each reflect the differing responsibilities of the EU Member States in their various roles as flag, port and coastal states they have to be coherent with each other and any proposed change to one has to take the other two Directives and the broader international regulatory environment into account.

Although both the flag State control and the PSC Directives work to improve maritime safety and the marine environment, accidents can and do still occur. Once this happens, it is important to investigate what went wrong and draw lessons therefrom. To achieve this the third line of defence was created, via the Accident Investigation Directive'.

The Directives work together to contribute to a higher level of maritime safety and maritime transport efficiency as well as a stronger level playing field between Member States. The counter factual situation would be international obligations transposed into national legislation with no means for Member States to control each other or to cooperate with the support of EMSA. This would lead to less protection for EU citizens.

The impact assessment of the Directive on maritime accident investigation looks at extending the scope of the Directive to fishing vessels of below 15 metres in length – larger fishing vessels are already included. It also seeks to clarify certain unclear or ambiguous definitions and to update the EU legislation having regard to changes at IMO level. It also examines the possibilities for EMSA to provide operational support to Member States' accident investigation bodies.

The impact assessment of the flag State Directive aims to update and align it with international rules (the Implementation of IMO Instruments Code or III Code) maintaining the IMO-Audit provision and follow-up; to strengthen the flag States in performing their obligations, including monitoring of EU Recognised Organisations (Classification Societies)[29]. It also aims to digitalise the flag registers, to revise the flag State performance measurement and reward good quality.

These three Directives are also part of and have significant interaction with the larger maritime safety acquis which includes elements such as SafeSeaNet[30], the EMSA founding Regulation[31], the fishing vessel safety Directive[32], the EU legislation relating to Recognised Organisations (ROs)[33], the Marine Strategy Framework Directive[34] and other

[27] Directive 2009/18/EC of 23 April 2009 establishing the fundamental principles governing the investigation of accidents in the maritime transport sector and amending Council Directive 1999/35/EC and Directive 2002/59/EC of the European Parliament and of the Council (OJ L 131, 28.5.2009, p. 114)

[28] Directive 2009/21/EC of the European Parliament and of the Council of 23 April 2009 on compliance with flag State requirements (OJ L 131, 28.5.2009, p. 132)

[29] Classification societies are organisations which develop and apply technical standards for the design, construction and survey of ships and which carry out surveys and inspections on board ships. Flag states can delegate certain of their statutory ship survey and ship certification tasks to classification societies – when they do so the classification society becomes known as a 'recognised organisation' or RO.

[30] Directive 2002/59/EC establishing a Community vessel traffic monitoring and information system (OJ L 208, 5.8.2002, p. 10)

[31] (OJ L 208, 5.8.2002, p. 1) which is under possible revision see https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13049-European-Maritime-Safety-Agency-review-of-mandate_en

[32] (OJ L 34, 9.2.1998, p. 1) which is under evaluation see https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12522-Fisheries-Fishing-Vessel-Safety-Directive-evaluation-_en

[33] Regulation (EC) No 391/2009 on common rules and standards for ship inspection and survey organisations (OJ L 131, 28.5.2009, p.11) and Directive 2009/15/EC on common rules and standards for

EU environmental legislation[35]. The PSC Directive in particular is a major plank for the harmonised enforcement of standards applicable to ships calling in EU ports arising from international conventions but in particlar from EU acquis.

Evaluation of the Directive and visits carried out by EMSA

The 2018 REFIT ex-post evaluation[36] and Maritime Transport Fitness Check[37] concluded that, although the PSC Directive removes the flexibility of the Paris MoU to some extent, it adds value, by combining a PSC control framework with a legal enforcement mechanism, to ensure correct and consistent implementation in Member States. This has resulted in pressure to perform and continuously improve, and thus to a better resource allocation at Member State level for PSC. The evaluation concluded that the PSC Directive has contributed to the intended objectives to improve maritime safety, security, pollution prevention and ensuring better working and living conditions on-board.

The assistance of EMSA has supported the EU PSC regime in important ways. The evaluation highlighted the importance of the THETIS database. Over two-thirds of EU/EEA Member States carrying out PSC inspections exclusively use THETIS in deciding which vessels to inspect. The role of EMSA in managing and updating THETIS, as well the provision by the Agency of training of inspectors to harmonise the implementation inspections throughout the Paris MoU region, was also found to be very important. The results of the ex-post evaluation and the linkages to the present impact assessment are reflected in this impact assessment as set out in Annex 5.

In a similar vein, the Maritime Transport Fitness Check pointed to a number of possible improvements as regards PSC. As regards the scope of the Directive, the inclusion of some environmental legislation is adding to the workload of inspectors and the complexity of the system and several Member States have expressed concern that PSC is moving too far from its original goals and risks overburdening the system. On the other hand, some other Member States have expressed the wish that PSC be broadened in its scope to allow for the inspection of foreign fishing vessels for safety, environmental and working conditions issues. The Maritime Transport Fitness Check recommended digitalisation and EMSA digital systems, applications and databases to support enforcement, facilitate implementation and reduce burden on maritime administrations and shipping operators.

In addition, the Commission and EMSA have continuously monitored the implementation of the Directive. The fact that PSC inspection reports have to be uploaded to THETIS as soon as the inspection is completed means that EMSA has a near real-time and detailed overview of all inspections carried out. EMSA also provides a help-desk and technical assistance to Member States who require assistance. Furthermore, EMSA visits Member States to verify compliance and in 2019 EMSA completed a **Mid-Cycle Horizontal Analysis[38]**, based on visits to 14 Member States carried out between 2017-2019 to verify correct implementation of the Directive.

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ship inspection and survey organisations and for the relevant activities of maritime administrations (OJ L131, 28.5.2009, p.47)

[34] OJ L 164, 25.6.2008, p. 19

[35] Such as Directive 92/43/EEC (the "Habitats Directive"), Directive 2009/147/EC (the "EU Birds Directive", Directive (EU) 2019/904 (Single use Plastics Directive)

[36] SWD(2018) 230 final

[37] SWD(2018) 228 final

[38] Not yet published

The main findings of the horizontal analysis are that PSC function as it should. The number and rate of detentions varied slightly between Member States and that appears to follow a geographical pattern; Member States closer to EU's external borders, appear to have a higher probability of detecting and detaining substandard ships. Member States' compliance with the inspection commitment has improved significantly between 2013 and 2018. However, a number of weaknesses were identified, the results of EMSA horizontal analysis are summarised in Annex 5.

2. 2. PROBLEM DEFINITION

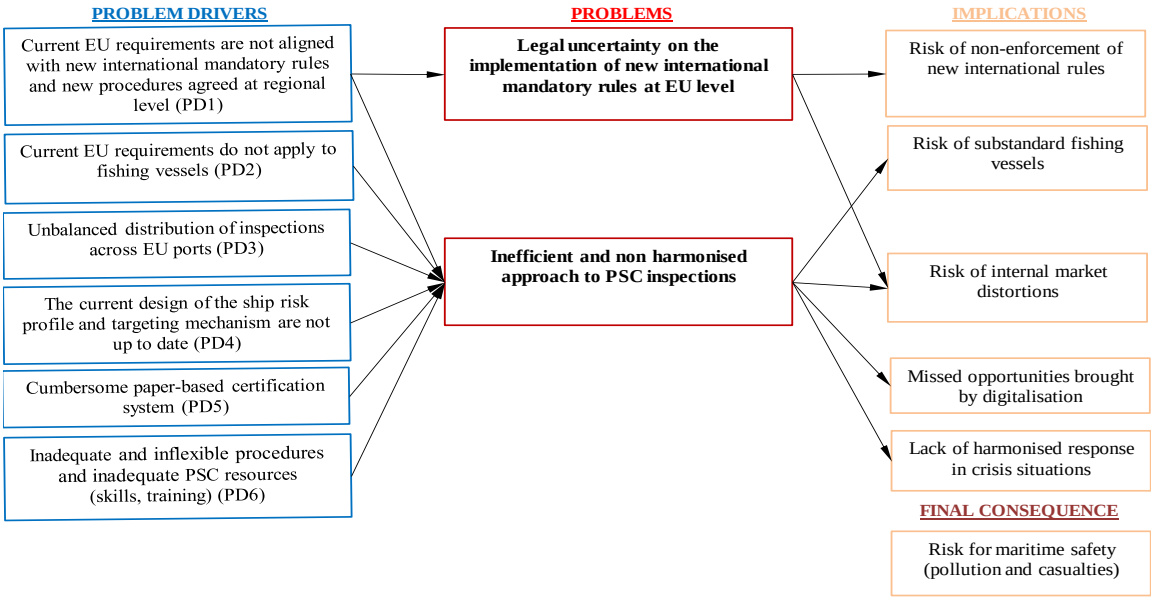
The underlying problems, problem drivers and implications that are relevant for the revision of the Directive are presented in Figure 2.

2.1. 2.1. What are the problems?

Problem 1 – Legal uncertainty on the implementation of new international mandatory rules at EU level

The PSC Directive refers to **IMO Conventions** and also to the procedures of the **Paris MoU**. Since the adoption of the Directive, both the IMO legislation as well as the Paris MoU procedures impacting on the Directive have changed (see Annex 6). As a result, the Directive does not always refer to the up-to-date legislation. This creates legal uncertainty on the implementation of new international mandatory rules at EU level.

Figure 2: Problem tree



In order for EU Member States to enforce international conventions by means of PSC these need to be listed in the Directive; all EU Member States should ratify and enforce the same international conventions within the PSC Directive to ensure coherence and a harmonised approach. As regards the Paris MoU, if Member States implement the changes already agreed at Paris MoU level by modifying their internal procedures this would put them in contradiction with the Directive and potentially in violation of EU law. Furthermore, such unilateral action by Member States would deprive the Directive of its coordinating and harmonising effect, leading to distortions in the internal market. Among the nine EU Member States interviewed as part of the stakeholders consultations (Bulgaria, Estonia, Denmark, France, Germany, Italy, Netherlands, Poland, Portugal) there is full agreement on the need for the alignment of the Directive with the Paris MoU amendments. Other

stakeholder groups (non-EU Member States, industry associations, international bodies, ROs, pilots, port operators and ship owners) also agree on the need for alignment.

Problem 2 – Inefficient and non-harmonised approach to PSC inspections

While PSC inspections are generally regarded as effective, several issues were identified as problematic since the entry into force of the Directive. These give rise to inefficiencies and a non-harmonised approach to PSC throughout the Union. Some of these issues have been identified by the Member States themselves as well as by the Commission and by EMSA, which functions as a training provider as well as the database manager for the THETIS ship targeting and database system. The obligation of the Member States to upload the inspection report to THETIS typically within 72 hours of the inspection allows EMSA and the Commission to have a near-real-time overview of the way these inspections are carried out.

The *first of these issues* relates to the scope of the Directive while all of the others relate to different aspects of the ways in which inspections are prepared for being carried out or followed up, which could be improved. As regards the scope of the Directive, there is a category of vessel (namely larger fishing vessels) operating in EU waters and calling to EU ports, which are subject to international conventions but are not subject to PSC in a harmonised and coordinated manner. The issue therefore arises as to whether these vessels should be subject to some form of PSC and what form this would take. The *other issues* around inefficient and non-harmonised PSC inspections relate to a multiplicity of aspects which have either been identified as problematic, such as what happens when Member States miss inspections either for operational reasons or due to force majeure situations (such as the COVID-19 pandemic) or how to deal with Member States that inspect more vessels than they have been allocated by their inspection commitment. Also identified as problematic are for example the validation of inspection reports, the absence of a quality management system (QMS) or the number of inspectors carrying out inspections.

For example, 58% of all inspections and 45% of expanded inspections (which themselves make up 21% of all PSC inspections) are carried out by a sole inspector. It is considered to be best practice by EMSA that inspections, and in particular expanded inspections, should be carried out by more than one inspector because of complexity of the inspections and the fire and/or evacuation drills which are involved. Nevertheless, this is not found in the Directive thus it is not legally enforceable.

Similarly, EMSA estimates that 71% of all inspection reports are not validated by someone other than the inspector carrying out the inspection and submitting the report. Validation by someone other than the inspector carrying out the inspection is considered to be best practice and although not currently required by the Directive provides for a significant and valuable level of quality control.

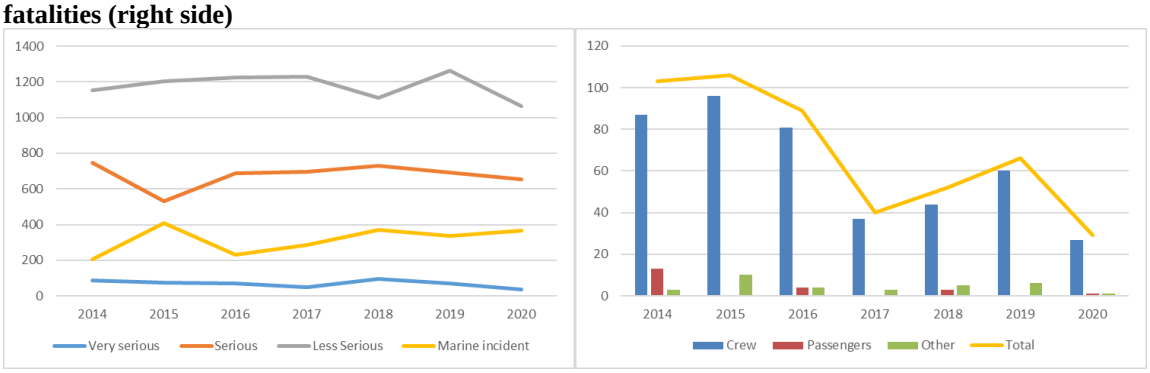
Therefore the inspections are not carried out in a harmonised manner in the EU Member States.

A *third category of issues* relates to developments either in terms of EU policy to take more account of environmental aspects of PSC or technology such as the increased use of electronic certificates in PSC.

The final consequence of the problems discussed above relates to risks for maritime safety (pollution and casualties). This should however be seen in the broader context of the flag State, PSC and accident investigation responsibilities for ensuring maritime safety and the protection of the marine environment.

During 2014-2020, an average of 2,239 marine casualties and incidents were reported per year showing a relatively stable evolution over time (see Figure 3). Very serious marine casualties[39] (VSMCs) represented 3.1% of the total while serious casualties[40] an additional 30.2%, resulting in an average of 69 fatalities. Crew is the most affected category of victims, representing around 89% of fatalities. Furthermore, a total of 145 ships were lost over the 2014-2020 period (21 per year on average)[41].

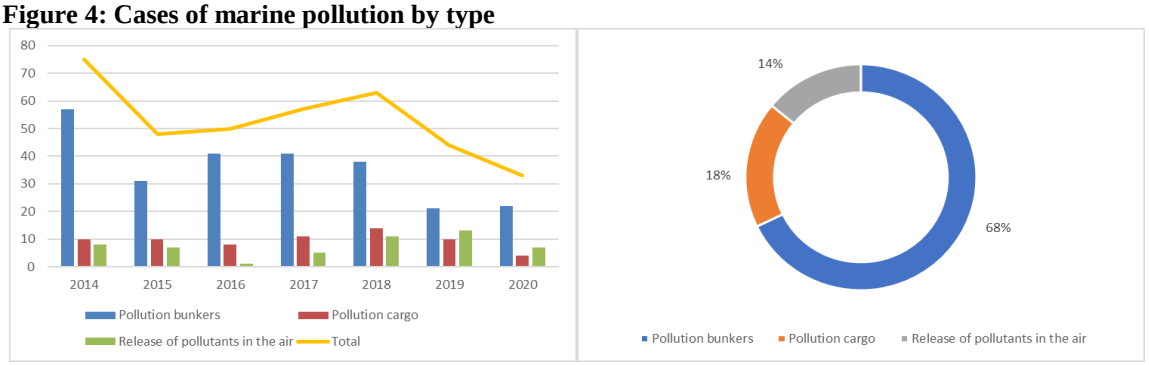
Figure 3: Number of reported marine casualties and incidents by type (left side) and number of fatalities (right side)



Source: European Maritime Safety Agency (2021)

A total of 370 cases of marine pollution have been reported during 2014-2020, showing a decreasing trend over time. Marine pollution in the form of ship bunkers (fuel) and other pollutants (e.g. cargo residues, lubricating or hydraulic oils) represented 68% and 18%, respectively, of the total number of cases of pollution (Figure 4)[42].

Figure 4: Cases of marine pollution by type



Source: European Maritime Safety Agency (2021)

2.2. 2.2. What are the problem drivers?

Problem Driver 1: Current EU requirements are not aligned with new international mandatory rules and new procedures agreed at regional level

IMO alignment: At the IMO level, a number of international conventions, in which enforcement would ordinarily be provided for by means of PSC, have entered into force or are in the process of ratification. However as these Conventions are not included as

[39] As defined by the IMO Code for the Investigation of Marine Casualties and Incidents – in effect loss of a ship, death or severe damage to environment - referred to in Article 3(2)(b) of Directive 2009/18/EC on maritime accident investigation.
[40] As defined by the IMO – in effect a fire, explosion, collision, grounding, contact, heavy weather damage, ice damage, hull cracking, or suspected hull defect, etc. referred to in Article 3(3) of Directive 2009/8/EC on maritime accident investigation
[41] European Maritime Safety Agency (2021), Annual overview of marine casualties and incidents 2021.
[42] European Maritime Safety Agency (2021), Annual overview of marine casualties and incidents 2021.

relevant instruments within Article 2 of the PSC Directive, they cannot be included within the EU PSC regime. Changes at IMO level are not as regular as those at the implementation level of the Paris MoU but given that the international Conventions underpin PSC it is essential that the PSC Directive be kept up to date with these changes.

The International *Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM)* entered into force since 2011 and has been ratified and is enforced by a number of EU Member States[43]. The aim of the convention is to help prevent the spread of potentially harmful aquatic organisms and pathogens in ships' ballast water. The *Nairobi International Convention on the Removal of Wrecks (Nairobi Convention)*[44] is a 2007 instrument which provides a legal basis for States to remove, or have removed, shipwrecks that may have the potential to affect adversely the safety of lives, goods and property at sea, as well as the marine environment. The fact that these Conventions are not included in the PSC Directive but have been ratified by some Member States means that they are enforced in a non-harmonised and non-coordinated way which could give rise to distortions in the internal market, and thus an uneven safety net is applied throughout the Union[45]. A majority of stakeholder groups consulted (i.e. EU Member States, industry associations, international bodies, non-EU countries, ROs) agree that it is a problem that there is no correct reference to the BWM Convention and the Nairobi Wreck Removal Convention in the PSC Directive, which then does not allow these Conventions from being enforced as a part of EU PSC.

The *Hong Kong International Convention for the safe and environmentally sound recycling of ships (Hong Kong Convention)*[46] is an international Convention, developed at IMO, aimed at ensuring that ships, when being recycled after reaching the end of their operational lives, do not pose any unnecessary risk to human health and safety or to the environment. However, while the Convention has not yet entered into force, given the importance that the EU attached to this issue, its essential elements have been incorporated into EU law and given effect in Regulation (EU) 1257/2013.[47] As regards ships calling to EU ports, enforcement of this Regulation is provided for by the PSC Directive. However, if the Hong Kong Convention were to enter into force it would be an important political signal that this convention could be formally incorporated into the Directive.

As regards the *International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS)* this is an international convention proving for the compensation for damages caused by spillage of hazardous and noxious substances during maritime transportation. This convention has also not yet entered into force. However if the HNS Convention were to enter into force it would be important to enforce it throughout the EU in a harmonised and coordinated manner without having to fully amend the PSC Directive.

[43] As of 26 October 2021 BWM has been ratified by 18 EU Member States. As of 2021 Finland has signed but not yet ratified the Convention and Italy, Romania, Ireland, Cyprus and Slovenia have not signed the Convention.

[44] As of 26 October 2021 the Nairobi Convention has been ratified by 14 EU Member States. Ireland, Greece, Spain, Italy, Latvia, Lithuania, Poland and Slovenia have not yet ratified the Convention.

[45] The BWMC and Nairobi Conventions are both "relevant instruments" for the purposes of the Paris MoU, meaning that if they have ratified them, the member states of the Paris MoU are expected to enforce them.

[46] As of 26 October 2021 the Hong Kong Convention (which has not yet entered into force) has been ratified by 9 EU Member States.

[47] The EU's Ship Recycling Regulation lays down requirements for ships and recycling facilities to ensure that ship recycling takes place in an environmentally safe and sound manner, restricts or prohibits the installation and use of hazardous materials on ships, such as asbestos or ozone-depleting substances and establishes a European list of ship recycling facilities.

The way in which international conventions are enforced by means of port state control depends largely on the subject matter. In relation to the four international conventions mentioned above, enforcement of the BWMC can involve a document check but may also involve sampling the ballast water or checking the ballast water tanks and the equipment used to neutralise alien and invasive species. Similarly for the Hong Kong Convention its provisions have been brought within EU law by means of the Ship Recycling Regulation (Regulation (EU) No 1257/2013) and port State control enforcement of ship recycling can be either 'light touch' as a document check or 'a detailed inspection' of the vessel to verify that it complies with the "inventory of hazardous" material or "ready to recycle certificates" which are issued by the flag State.

With regard to the other two conventions (Nairobi Wreck Removal and HNS), enforcement is mainly a document check. These two instruments are based on the concept of "polluter pays" and require that vessels have adequate insurance for the damage that they may cause. The HNS provides for the establishment of a fund to pay for damages caused by spills at sea of highly noxious substances while the Nairobi convention provides that the owner of a ship must take action to mitigate the damage caused by shipwrecks. If during an inspection, it is found that the vessel is not carrying the appropriate certificates under Nairobi or HNS then a deficiency can be recorded against the vessel.

The Paris MoU and EU PSC regimes operate a 'no more favourable treatment' clause so that even when a flag State chooses not to ratify a convention, vessels calling to EU ports and subject to PSC will still be expected to achieve substantial compliance with the conventions. This means that there is no incentive for these flag State not to comply and given that deficiencies can be recorded against their ships they are "encouraged" to ratify. Overall, this means that the standards of international shipping are maintained and improved.

Paris MoU alignment: Another significant area of divergence between the Directive and international rules concerns amendments to the Paris MoU and procedures negotiated and accepted within the context of the Paris MoU since 2009. The PSC Directive makes explicit references to the procedures of the Paris MoU but does not refer to the changes made to the Paris MoU since 2009. These changes (set out in Annex 6) concern key operational features of the PSC regime that have become obsolete since 2009 based on developments in the practice of PSC inspections as well as those based on operational experience. In a number of cases, the changes made at Paris MoU level can create incompatibilities with the Directive and in these cases, the adopted changes have been put into abeyance waiting for the PSC Directive to be adapted.

The key elements that have been changed in the Paris MoU include the calculation method of the so called White Grey Black ("WGB") list for targeting purposes, the method for drawing up the Ship Risk Profile, the certificates and documents to be checked during inspections, the inspection commitment, the 72-hour pre-reporting obligations for ships which are eligible for expanded inspections and procedures related to the banning of ships. However, these changes cannot be implemented by EU Member States as the PSC Directive has not been amended.

To take the example of the 72-hour pre-arrival notification obligation, prior to the adoption of the Directive the Paris MoU had introduced an obligation on vessels which are eligible for an expanded PSC inspection: (i) all ships with a high risk profile (regardless of type and age), which have not been inspected in the last five months; (ii) oil, gas and chemical tankers, bulk carriers or passenger ships more than 12 years old,

with a standard risk profile, which have not been inspected in the last 10 months; (iii) oil, gas and chemical tankers, bulk carriers or passenger ships more than 12 years old, with a low risk profile, which have not been inspected in the last 24 months. The obligation was to notify their estimated time of arrival to a port 72 hours in advance of their arrival. If the voyage was to take less than three days, the agent is to submit the data before departure from the previous port.

As the Directive was implemented, the members of the Paris MoU began to feel that that this obligation was too burdensome on the agent, operator or master and added no value as the national PSC authorities have the information required of the agent more easily available in THETIS. On this basis the Paris MoU abolished this pre-arrival notification obligation but this change cannot be implemented unless and until the Directive (which contains an identical obligation) is amended.

Problem Driver 2: Current EU requirements do not apply to fishing vessels

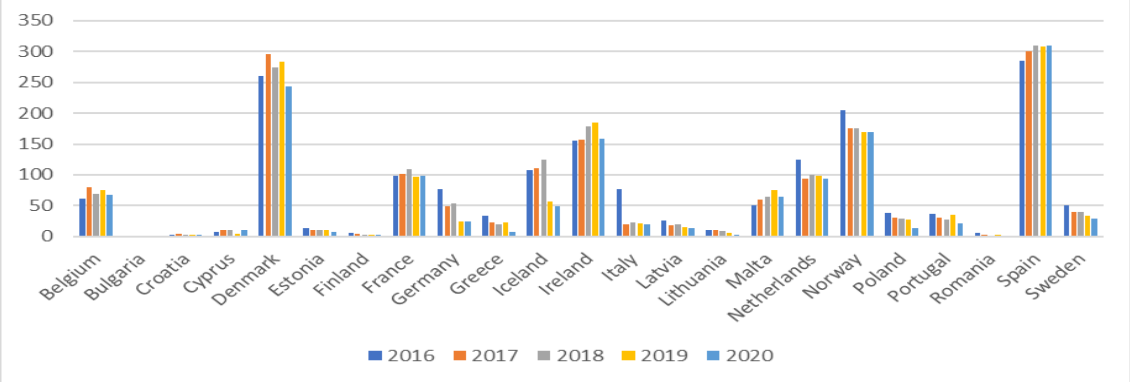
Article 3(4) of PSC Directive excludes certain types of vessels from the scope of PSC[48]. The reasons why these vessel types are excluded from the scope of the Directive are various, but relate mainly to the fact that these vessels either are not operated commercially/professionally or because the international conventions do not apply to them. However, the 2018 ex-post evaluation[49] and the stakeholders' consultation in the context of the impact assessment process, showed the need to assess further whether the Directive should apply to fishing vessels.

While within the maritime transport sector PSC provides for the inspection of foreign-flagged merchant ship in ports for conformity with relevant international Conventions no equivalent harmonised mechanism for foreign fishing vessels calling to ports in the EU exists. There are however legally binding international instruments, developed by IMO and ILO applying to larger fishing vessels (over 24 metres in length), fishing vessel personnel, and fishing operations that provide for their enforcement by means of PSC[50]. This means that every fishing vessel, to which the respective international instrument applies[51], when in a port of a State that is a Party to the respective instrument, could be subjected to PSC inspections by that State. It is however far from clear whether, and to what extent, such inspections take place. What can be said with some certainty is that if EU Member States are carrying out these inspections, they are not being carried out in a targeted, harmonised or coordinated manner and the results of these inspections are not shared with other Member States.

[48] The Directive excludes "Fishing vessels, warships, naval auxiliaries, wooden ships of a primitive built, government ships used for non-commercial purposes and pleasure yachts not engaged in trade".
[49] SWD(2018) 228 final
[50] The list of legally binding international instruments includes: International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, and as further amended by the Protocol of 1997 (MARPOL); International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW-F), 1995; ILO Work in Fishing Convention, 2007 (No.188); International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM). Cape Town Agreement of 2012 on the Implementation of the Provisions of the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977 (CTA). CTA is not yet in force.
[51] PSC of smaller fishing vessels (below 24 metres in length) is not considered here as (i) the international conventions do not apply to these vessels and so there would be no agreed standards against which the vessels could be inspected (ii) these vessels operate within national waters (including EEZs) and return to land their catch in their home port meaning that there is no foreign port call on which PSC is predicated.

Due to their small size, most fishing vessels in the EU operate in territorial waters. This means that in general, only larger fishing vessels above 24 meters in length are likely to engage in international waters and call at ports different than those in the country where they are registered[52] and therefore be subject to PSC. Only seven EEA countries (Denmark, France, Ireland, Iceland, Netherlands, Norway and Spain) were visited by a significant number of large foreign fishing vessels during 2016-2020[53]. In 2019, 1,328 individual foreign flagged fishing vessels above 24 meters called at EU ports (Figure 5).

Figure 5: Number of fishing vessels potentially eligible for PSC per country during 2016-2020



Source: EMSA

Fishing vessels in general show a relatively high incidence of serious and very serious casualties (VSMCs) as compared to maritime transport vessels. For 2014-2020, data reported to the European Maritime Casualty Information Platform (EMCIP) shows a share of VSMCs in total number of marine casualties of 6.8% and of serious casualties of 59%, well above the average for other ship types (2.6% and 24.3%, respectively). In terms of share in the number of VSMCs and serious casualties they come second after cargo ships, with 32% and 31% respectively. During 2014-2020, a total of 86 fatalities involving fishing vessels above 24 meters were registered (around 12 fatalities per year). This represents around 18% of the total number of fatalities involving all vessels (commercial transport and fishing) falling within the scope of the maritime accident investigation Directive.

There are different views among stakeholders as to the consequences of the current exclusion of fishing vessels from the PSC Directive. Europêche[54] is of the view that it is not the exclusion of these types of ships from the scope of the PSC Directive that generates negative consequences, but the reluctance of the flag States of fishing vessels to ratify relevant international agreements on safe fishing vessel construction, training and certification of crews, and decent working and living conditions. Europêche further stressed that fishing vessel operations should not be hampered by the PSC Directive since its application would directly affect the income of the fishermen concerned.

Some of the EU Member States consulted (Bulgaria, Germany, Italy, Poland, Portugal) as well as the Union of Greek Shipowners (UGS), Albania, Norway are in favour of applying some form of PSC regime to this sector due to the need for a harmonized approach, particularly for the sake of technical cooperation. There are however questions

[52] According to the EU fleet register 97% of the EU fishing fleet is below 24 meters. Source: Fleet Register (europa.eu)

[53] The figures do not account for the duration of the port call; some of the calls may be too short (less than 12 hours) to effectively carry out a PSC inspection.

[54] Europêche is the representative body for fishermen in the European Union representing around 45000 vessels

on how this should be done. Portugal, Albania, Norway and UGS consider that PSC on foreign fishing should be done differently from PSC of cargo and passenger ships, to avoid undermining the functioning of the PSC Directive.

Legal possibilities exist for individual EU Member States to inspect larger foreign-flagged fishing vessels calling to their ports as there are a number of legally binding international conventions, developed by the IMO and ILO which apply to these vessels and which include port State control provisions.

It is not possible to directly link the absence of such inspections with the poor safety record of this vessel type but it may be observed that port State control of merchant vessels has progressively improved the quality of vessels calling to EU ports over the last decade and a similar result could reasonably be expected if fishing vessels were to be systematically inspected. The absence of such inspections means that the poorest operators of larger fishing vessels (in many cases flagged in third countries) can call to EU ports with little risk of repercussions.

During the stakeholder consultation while several Member States said that the international conventions gave them the right to do so, no Member State has acknowledged carrying out such inspections in any systematic way. Ad hoc PSC inspections (of third country fishing vessels) particularly relating to working and living conditions on board may take place on the basis of complaints. The Commission services are not aware of any PSC inspections currently being carried out by EU Member States on foreign-flagged fishing vessels calling to their ports. It is possible that such inspections are being carried out but as there is no system to share the result of these inspections and the Commission has no information in this regard. Accordingly, if EU Member States are carrying out these inspections, they are not being carried out in a targeted, harmonised or coordinated manner and the results of these inspections are not shared with other Member States or the Commission/EMSA.

With regard to merchant shipping, PSC has undeniably led to better compliance by these ships with international conventions and standards, particularly as regards those vessels registered in flag States, which either cannot or will not discharge their obligations under the international conventions correctly. Such an effect could also be expected to occur with fishing vessels engaged internationally, if such ships were subject to PSC. Since the maritime fishing sector appears to have a significant safety issue, the inclusion of fishing vessels within the Directive or the creation of a PSC regime for fishing vessels may provide an effective control mechanism for these ships that are engaged internationally thereby calling at ports other than those in the State where they are registered.

Problem Driver 3: Unbalanced distribution of inspections across EU ports

The Directive (Article 5) imposes obligations on Member States to inspect ships based on their "priority" - which is determined by the length of time since the ship was last inspected. "Priority II" ships *may* be inspected while "Priority I" ships *must* be inspected[55]. The Directive requires that Member States carry out annually a total number of inspections of Priority I and Priority II ships corresponding to at least their 'fair share'.

[55] Ships are selected on the basis of priority, there are two priorities: Priority II: means that ships may be inspected because they are within the time window or the port State considers an unexpected factor warrants an inspection while with Priority I: ships must be inspected because either the time window has

The "fair share" mechanism provides for a system whereby the burden is distributed on a *pro rata* basis among the Member States of the Paris MoU and in this sense contributes to the stability of the PSC system. The Directive provides that a Member State is permitted to miss a certain number of "priority" inspections and still comply with its obligations[56]. The Directive also allows Member States to postpone inspections of Priority I ships under certain circumstances[57].

The 2018 ex-post evaluation found several issues in respect to the inspection commitment. Some Member States encountered difficulties in discharging their obligations under the Directive due to uneven distribution of vessels across EU ports. Due to changes in trade flows there are significant differences between the shares of inspections by priority for the sea basins, During the ex-post evaluation dissatisfaction was expressed about the way in which the inspection commitment (the "fair share") is calculated and how it can be complied with – arguing that it is unfairly inflexible for them.

The main issue that gives rise to problems is a perceived absence of flexibility for certain Member States because of the number of vessels that call to their ports as compared to their inspection commitment. Member States which have a low number of Priority I vessels saw it as unfair that they could not avail of flexibility when it comes to missed inspections. While the Directive obliges the Member States to have sufficient human resources to be able to discharge their obligations under the Directive, it does not take account of seasonal changes. Member States have expressed the view that increased flexibility to allow for more missed or postponed inspections could address this issue.

Another issue which has given rise to concern is over-inspecting where Member States of Paris MoU inspect more vessels than their inspection commitment provides for. The allocation of an inspection commitment to each Member State of the Paris MoU is based on a shared burden and an efficiency of effort. Over-inspection involves the carrying out of inspections which are not necessary or justified and as the calculation of the inspection commitment is based on a three year rolling average of all inspections carried out in the Paris MoU region, this over-inspection has the effect over time of cumulatively ratcheting up the inspection commitment by 1-2% per year for all members for all members (including EU

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closed or there is an overriding factor. Ships become due for periodic inspection in the following time windows:
For High Risk Ships – between 5-6 months after the last inspection in the Paris MoU region. Standard Risk Ships – between 10-12 months after the last inspection. Low Risk Ships – between 24-36 months after the last inspection in the Paris MoU region.
For example a Standard Risk Ship ordinarily becomes Priority II after 10 months after the last inspection and may be inspected, if it is not inspected and 2 more elapse (12 months since the last inspection) it then becomes Priority I and must be inspected.

[56] According to the provisions of the PSC Directive, a Member State can, while still complying with its commitment, miss 5% of Priority I ships with a high-risk profile calling at its ports and anchorages, and 10% of Priority I ships other than those with a high-risk profile (Article 6). Furthermore, the PSC Directive foresees several modalities allowing a balanced inspection share within the EU (Article 7). First, a Member State in which the total number of calls of Priority I ships exceeds its inspection share may miss up to 30% of total number of Priority I ships calling at its ports and anchorages, and still comply with its inspection commitment. Second, a Member State in which the total number of calls of Priority I and Priority II ships is less than the inspection share can comply with the commitment if it carries out the inspections of Priority I ships and inspections on at least 85% of the total number of Priority II ships calling at is ports and anchorages.

[57] The PSC Directive allows Member States to postpone inspections of Priority I ships (Article 8) if (a) the inspection can be carried out at the next call of the ship in the same Member State, provided that the ship does not call at other ports in the Community or the Paris MoU States in between and the postponement is no more than 15 days, (b) if the inspection can be carried out in another port within 15 days, if the port has agreed in advance to perform the inspection.

Member States) over and above what would be caused by (for example) increased ship calls, due to increased maritime traffic.

Problem Driver 4: The current design of the ship risk profile and targeting mechanism are not up to date

Since the entry into force of the Directive, the quality of ships calling to EU and Paris MoU ports has improved – in part because of the effectiveness of the PSC system. Far fewer substandard ships operate in the Paris MoU region[58]. Data from THETIS shows that the number of deficiencies has decreased by 22% between 2014 and 2019 due to the PSC inspections. The consequence is that ships that call at EU ports are generally of a better standard as compared to those which were calling to these ports when SRP[59] was designed. The ship risk profile and targeting mechanisms are no longer up to date and need to be adapted.

The stakeholders interviewed in the impact assessment process generally confirmed the findings of the 2018 ex-post evaluation. They agreed that low-risk ships are sufficiently targeted and that sub-standard ships no longer operate in significant numbers in EU waters. In its written contribution, the Paris MoU Secretariat confirmed that most sub-standard ships no longer or hardly operate in the Paris MoU region. A majority of respondents to the survey questionnaire of all groups of respondents have rated the effectiveness of the targeting mechanism based on the ship risk profile as moderately to highly effective.

However, those interviewed (Bulgaria, Estonia, France, Germany, Italy, Netherlands, Poland, Albania, Norway, IMO, the Federation of European Private Port Companies and Terminals - FEPORT, Bureau Veritas, Croatian Register of Shipping and the International Association of Classification Societies - IACS) and surveyed stakeholders (from PSC authorities in EU and non-EU Member States, Flag State authorities, ROs, international bodies and others involved in the maritime transport industry) also pointed out that the ship risk profile could be improved with the addition of parameters or the adjustment of existing ones in order to perform more targeted inspections to vessels still bearing a higher risk, avoid targeting low-risk vessels and discourage sub-standard shipping. There is however a general understanding among the interviewed stakeholders that vessels still need to be inspected regularly, in order to maintain the current, generally high performing standards.

According to the targeted stakeholders' consultation there is still a level of unnecessary or poorly targeted vessels but with considerable divergence as to the perception of the stakeholders as to the size of the issue. Overall, stakeholders estimate that the number of unnecessary targeted ships is in the range of 10% to 25%. This may reflect geographical considerations where as previously referred to in the 2019 Mid-cycle Horizontal Analysis, Member States at the EU's external borders may be visited by more sub-standard ships.

[58] In 2019 the average detention rate – meaning the percentage of inspections resulting in a vessel being detained was 2.96% while in 2011 is was 3.61%. Over the same period the average number of deficiencies detected during an inspection went from 2.58 in 2011 to 2.37 in 2019 (source: EMSA).

[59] All ships in the ship information system are assigned either as high, standard or low risk based on generic and historic parameters. Each criterion has a weighting which reflects the relative influence of each parameter on the overall risk of the ship. High Risk Ships (HRS) are ships which meet criteria to a total value of 5 or more weighting points. Low Risk Ships (LRS) are ships which meet all the criteria of the low risk parameters and have had at least one inspection in the previous 36 months. Standard Risk Ships (SRS) are ships which are neither HRS nor LRS. A ship's risk profile is recalculated daily taking into account changes in the more dynamic parameters such as age, the 36-month deficiency and detention history and PSC performance of the company. Recalculation also occurs after every inspection and when the applicable performance tables for flag and recognised organisations are changed.

Data in THETIS however shows that over the period 2014-2019 the number of inspections of low risk ships giving rise to a finding of zero deficiencies was 34%.

Over the last decade PSC is being used increasingly to enforce environmental legislation (based on EU provisions[60]). However, the ship risk profile devised prior to 2009 had different priorities and is not fully adapted to focus more the PSC effort on the least environmentally performing vessels. This also needs to be seen in the context of the *"Fit for 55"* package proposed in July 2021[61] that aims to reduce the EU's total GHG emissions by 55% by 2030, paving the way to climate neutrality by 2050. Shipping is expected to contribute to this effort and four proposals have been put forward by the Commission that are relevant for the maritime transport sector: (i) the revision of the EU Emission Trading System Directive (ii) the FuelEU Maritime Regulation (iii) the Alternative Fuels Infrastructure Regulation and (iv) the revision of the Energy Taxation Directive.

On this basis, it may be appropriate to reconsider the way in which the ship risk profile is formulated to reflect environmental issues by attaching more importance to environmental related deficiencies and detentions. By changing the SRP to better reflect the environmental history the risk-based approach of the SRP is retained.

Problem Driver 5: Cumbersome paper-based certificate system

The PSC Directive does not provide for inspections based on electronic certificates and/or the electronic provision of information. The exchange of information is thus not efficient and it cannot be employed for refining the targeting of ships. The use of paper-based certificates implies more time spent on performing an inspection and extra-costs.

According to the IMO's Global Integrated Shipping Information System (GISIS) database, at present 23 out of 66 flag States provide statutory certificates in electronic form. The majority of these electronic certificates are issued on behalf of the flag States by 20 ROs[62] acting on their behalf. In addition, a number of EU flag administrations issue electronic certificates directly, including Denmark, Germany and Portugal.

The number of ships carrying electronic certificates is on the rise and expected to increase. For instance, Estonia confirmed that around 60% of ships visiting Estonian ports have at least some statutory certificates issued electronically. Similarly, Poland explained that today 40%-50% of ships entering Polish ports have electronic certificates but all of them still need to carry hard copies for inspection purposes.

At the international level, the IMO has produced guidance[63] regarding the acceptance by PSC authorities of electronic certificates, which provides a framework for regulating the use of electronic certificates. The Paris MoU has also issued similar guidelines, which state that PSC should accept electronic certificates if they can be verified using a unique tracking number. However, the PSC Directive lacks a framework for the use of electronic certificates and the electronic provision of information. This means that even if a vessel is equipped with electronic certificates it still has to carry paper versions in case the electric versions are not accepted. A framework is missing for the practical implementation of electronic certificates and the electronic provision of information. PSC inspectors are also not given guidance on

[60] For example sulphur emissions, ship generated waste and cargo residues, recycling of ships, and the monitoring reporting and verification of GHG emissions.
[61] Delivering the European Green Deal | European Commission (europa.eu)
[62] This includes all 12 of the ROs recognised by EU flag states which between them cover over 85% of world tonnage
[63] FAL.5/Circ.39/Rev.2

how to handle different types and forms of electronic certificates that ships can be required to carry and the extent to which they can be accepted during an inspection.

There is general agreement among all stakeholders consulted that electronic certificates are an inevitable development. A large majority of the PSC authorities of EEA countries and ROs responding to the survey stated that they are willing to consider using electronic certificates in the future. Despite this, the acceptance of electronic certificates by port States is in practice rather low (the share of inspections of ships having e-certificates is currently 20%, according to data from EMSA) between EU Member States and even ships issued with electronic certificates systematically print out the certificates and carry them on board to avoid problems.

Most stakeholders interviewed (Germany, Italy, Netherlands, Poland, Estonia, France, Portugal, European Community Shipowners Association - ECSA, International Chamber of Shipping- ICS, UGS, Albania, Norway, European Sea Ports Organisation - ESPO, Bureau Veritas, Croatian Register of Shipping, IACS) also agreed that targeting of inspections can be improved if electronic certificates are available for (automatic) validation prior to inspections, an idea that is widely supported by respondents to the survey.

The fact that statutory certificates can be issued in an electronic format by flag authorities or by ROs acting on their behalf could change and improve the way that PSC inspections are carried out. Under existing arrangements, ROs recognised by the European Union provide information on statutory certificates directly to EMSA by means of a deep hyper-link between the ROs' databases and the THETIS database. The information currently provided only relates to the identity of the vessel concerned, the existence of a certificate and the period of validity of the certificate.

The current partial introduction of electronic certificates is seen as inefficient in situations where ships still have to print out electronic certificates, making the validation process even more cumbersome than paper-based ones. Both the Netherlands and Poland raised this issue during the stakeholders' consultation. They further emphasised the current lack of an operational standard for exchanging and validating electronic certificate. This leads to a complicated validation process that also does not protect sufficiently against falsifying a certificate.

Problem Driver 6: Inadequate and inflexible procedures and inadequate PSC resources (skills, training)

Article 24(3) of the Directive requires that Member States provide the actual time of the arrival and the time of departure of any ship calling at their ports and anchorages through the Union maritime information exchange system 'SafeSeaNet'. The 2018 ex-post evaluation identified difficulties concerning the implementation of such provision of the PSC Directive. Estimated time of arrival and of departure is challenging as it depends on the information from various parties. Thus, 'port call optimisation' is still ongoing in many ports as a point of continuous improvement of port operations. However, if the required information on the time of arrival and departure is not provided into the system, port States do not have sufficient time to prepare and allocate appropriate resources for inspections. The countries that expressed an opinion on this matter (Bulgaria, Poland and Norway) confirmed that more clarity, guidance and training is needed concerning the reporting of arrival and departure time.

The PSC Directive requires that the inspectors follow harmonized procedures and guidelines when it comes to performing inspections and controlling the ships. However,

EMSA identified that there are issues when it comes to the level of implementation and the extent to which such guidelines and procedures are followed by inspectors. As the scope of inspections has increased over time in terms of content and complexity, it is necessary to ensure realignment of the guidelines and procedures followed by inspector and ensure that the level of training is adequate.

The stakeholders interviewed generally acknowledge that inspections will inevitably become increasingly complex as new inspection requirements are added, either by EU law or via the IMO. They tend to agree that, whereas PSC guidelines and procedure have so far been effective to provide guidance to PSCOs in performing inspections, they also present weaknesses that could be improved in particular as they do not keep the pace with the increasing scope and complexity of PSC inspections.

More specifically, Germany noted that PSCOs are not always aware of the provisions of the guidelines and that the system may be time constrained, due to the short duration of port calls combined with the wide scope of inspections. The Netherlands has highlighted the importance of keeping guidelines as practical and supportive as possible to the work of PSCOs. Accordingly, guidelines should not be prescriptive on procedures but rather lay down the key principles of the inspection regime. Portugal mentioned that guidelines need to be more quickly accessible, user-friendly, clear and well-structured. France noted that inspection guidelines do not reflect recent developments in the context of the IMO and the shipping sector. There is lack of guidance for inspections performed on "non-fully conventional" ships, namely vessels that are not subject to all of the international conventions[64].

In its written contribution, the Paris MoU Secretariat suggested that amending the guidelines is at times hindered and/or held back by the constraints imposed by the PSC Directive and the fact that the requirements of the Directive are very detailed. This lack of flexibility would contribute to opposition to updating the guidelines. Nevertheless, the Paris MoU Secretariat specified that the Committee has already identified the need to improve PSC guidelines and some measures have already been taken. More specifically, the Paris MoU aims at enhancing the consistency, user-friendliness, clarity and effectiveness of the current Paris MoU PSC procedures, in order to reduce fragmentation, duplication, ambiguity and administrative burden. In this respect, Norway claimed that the inclusion of recent changes to the Paris MoU guidelines in the PSC Directive would already be sufficient to improve the efficiency of PSC guidelines and procedures.

Respondents to the survey questionnaire generally acknowledged that guidelines do not keep the pace with the increasing scope and complexity of PSC inspections. This idea was strongly supported by Member State authorities and, to some extent, by respondents in the category 'other actors involved in the maritime industry'. According to France and Germany, further training on technologies, such as the use of LNG for propulsion, the implementation of new international Conventions (e.g., BWM, MLC, Nairobi Wreck Removal Convention) and EU legislation (e.g., the Monitoring, Reporting and Verifying of greenhouses gases and the Ship Recycling Regulations need to be developed.

Expanded inspections as provided for by Article 14 of the Directive present particular difficulties. These inspections are carried out on high risk ships or on certain ship types (passenger ships, oil tankers, gas or chemical tankers or bulk carriers of more than 12 years of age). Expanded inspections of vessels involve detailed checks of construction

[64] See footnote 22

elements and safety systems by inspectors and in 2019 made up about 21%[65] of all PSC inspections carried out[66].

The specific requirements[67] of an expanded inspection are set out in Commission Regulation 428/2010 (which has a mirror text within the MoU) depending on the vessel type. Given their complexity, inspections of this complexity which involve evacuation or fire drills cannot usefully be carried out by a single inspector. This is however not an issue that the Paris MoU (as a good efforts organisation) has shown any determination in tackling. It is only by imposing this requirement through legislation that such change can be effectuated.

As set out above, expanded inspections include a number of exercises and drills and checks which can be difficult for a single inspector to correctly monitor. Due to their complexity[68] and the fire and/or evacuation drills which are involved, expanded inspections are planned and in 79%[69] of cases are carried out by more than one inspector which is considered by EMSA to a best practice. Ideally all expanded inspections should be carried out by more than one inspector because of complexity of the inspections but absent a legally enforceable obligation to do so this it is not mandatory.

An important aspect of the Directive is that it requires Member States to share the results of inspections. Information related to inspections has to be transferred to THETIS as soon as the inspection report is completed or the detention lifted and validated for publication purposes within 72 hours. EMSA noted that in 2019 the validation of the inspection reports in THETIS was carried out 72% of the time (4,091 out of 14,026 inspections) by someone else than the person submitting the report. This is considered to be a best practice and although not currently required by the Directive provides for a significant and valuable level of quality control.

On the other hand, Member States are not required to have a quality management system for their PSC activities under EU law, while EU Flag State administrations already implement such system in line with Directive 2009/21/EC; such a quality management system (QMS) is a de facto if not a de jure requirement for compliance with IMO requirements as regards Flag State requirements. A QMS will allow PSC administrations to identify system problems such as resource or personnel allocation issues before these become problematic.

Since the entry into force of the PSC Directive, PSC is more used as an enforcement tool to ensure compliance of vessels calling to EU ports with respect to international standards but in particular with new EU acquis – particularly in the environmental field. PSC is regarded as an efficient and cost-effective means of enforcement as it ensures a significant number of similar inspections throughout the EU. With these growing requirements and the accompanying complexity of procedures, PSC inspectors have to perform more administratively heavy and time-consuming inspections, this has resource as well as capacity-building implications. Most of the stakeholders interviewed and surveyed confirmed that the training of inspectors offered by EMSA and the Paris MoU

[65] Source EMSA
[66] Initial inspections made up approximately 39% of inspections and more detailed inspections 40%.
[67] See Annex YY
[68] See Commission Regulation (EU) No 428/2010 of 20 May 2010 implementing Article 14 of Directive 2009/16/EC of the European Parliament and of the Council as regards expanded inspections of ships (OJ L 125, 21.5.2010, p.2)
[69] Source EMSA

is generally effective; however, the stakeholders recognized that training is limited considering the widened scope of PSC. As a consequence, according to them, improvements are needed, to update trainings and make them more effective.

Some Member States have nevertheless underlined that the training and in particular the certification of PSCOs is a Member States' responsibility and some Member States argue that there should be more flexibility as regards training, especially when it comes to granting inspectors' authorization and revalidation of qualifications. For instance, in Italy PSC activities are handled by the Italian Coast Guard. This implies specific training and tasks that Italian PSCOs have due to their status as military personnel. During the interview, Italy mentioned that more flexibility in trainings should be allowed to Member States, especially when it comes to authorization and revalidation of qualifications. A more flexible approach in terms of qualification requirements is also supported by Norway and France. The former explained that the system has little flexibility when it comes to maintaining a PSCO's authorization, in particular with respect to the annual number of inspections to be carried out, which can especially be a challenge during unexpected events as well as for PSCOs on maternity/paternity leave for longer periods.

The COVID-19 pandemic has raised doubts on the resilience of the PSC regime to force majeure events having regard to issues such as (i) postponement of inspections, (ii) remote inspections, (iii) difficulties for shipowners to arrange vessel surveys and update certificates (iv) difficulties for seafarers to attend the required training courses and to revalidate their certificates, etc. The COVID-19 pandemic disrupted the PSC inspection system and temporarily reduced the number of PSC inspections due to safety concerns. While most Paris MoU (and EU) states were eventually able to reach their inspection commitment for 2020, the second quarter of 2020 in particular saw very little inspection activity and PSC inspections were resumed in a piecemeal and non-harmonised manner.

The lack of flexibility to cater for unexpected events was widely acknowledged by respondents to the survey questionnaire, in particular by industry associations and PSC authorities of non-EU countries and, to some extent, by PSC authorities of EU and other EEA countries and respondents in the category 'other actors involved in maritime industry'. According to Germany, the lack of guidance resulted in an unbalanced inspection regime with an indicated "overburden status" for almost all Member States. Accordingly, inspection commitments based on the fair share were not adjusted to the situation. Other stakeholders, such as the UGS, have called for digital solutions to cater for such unexpected events.

The Paris MoU Secretariat has developed temporary guidance for its Member Authorities during the COVID-19 crisis. The guidance recognised the need to apply flexibility under the special circumstances. Guidance for the PSC authorities has been drafted regarding impact of delays for surveys, inspections and audits; extensions of validity of the ship's certificates; extended periods of service on board; delaying periods for seafarers' certification. According to the Paris MoU Secretariat, such unexpected events can be dealt with in PSC Circulars. The first revision of the Circular dealing with the pandemic was released within three weeks after the first inspection-related COVID-19 issue.

Other potential disruptive elements which may have an impact on PSC include new technologies such as autonomous shipping and new fuels. It is important that PSC as a system can remain responsive to technological and legislative developments either at IMO or EU level (e.g. in the field of environmental protection standards).

2.3. 2.3. How will the problem evolve?

Problem 1 – Legal uncertainty on the implementation of new international mandatory rules at EU level. The legal uncertainty on the implementation of new international mandatory rules at EU level is likely to persist as long as the PSC Directive includes outdated IMO and Paris MoU references. Without amendments to the Directive, Member States will continue to be unable to implement the changes already agreed at Paris MoU level. They may modify their internal procedures but, if they do this, it will be in contradiction with the Directive. Unilateral action by Member States will deprive the Directive of its coordinating and harmonising effect, leading to distortions in the internal market.

Problem 2 – Inefficient and non-harmonised approach to PSC inspections. Without further EU level intervention, the issues related to the unbalanced distribution of inspections, of missed inspections as well as those of the SRP and targeting of vessels for inspection will persist and remain unresolved. Similarly the identified problems of the inefficiencies and non-harmonised approach to PSC inspections will continue. The issue is not one of the number of inspections being carried out but rather involves the lack of a harmonised quality thereof.

Larger fishing vessels will continue to operate in EU waters and call to EU ports either without any control or only subject to such controls as the port States wish to implement in an uncoordinated and haphazard manner. A failure to push on the digitalisation of ship certificates will mean that the potential of this valuable technology will not be harvested and little progress will be made on this issue.

3. 3. WHY SHOULD THE EU ACT?

3.1. 3.1. Legal basis

Title VI (Articles 90-100) of the Treaty on the Functioning of the EU (TFEU) establishes the EU's prerogative to make provisions for the Common Transport Policy. Pursuant to Article 100(2) TFEU, the Union legislator may lay down appropriate provisions for sea transport. Article 91(1)(c) of the TFEU provides that the Union has competence in the field of transport to lay down measures to improve transport safety.

Within this legal framework, the EU provides for a coordinated and harmonised safety standard, protecting life and the marine environment across the Union, instead of relying on the uncoordinated action of individual Member States only. Travellers, workers and citizens in general can be reassured that vessels are inspected to the same high standard across the Union.

3.2. 3.2. Subsidiarity: Necessity of EU action

Under the principle of subsidiarity, in areas which do not fall within its exclusive competence, the Union shall act only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States. To the extent that international instruments in the field of PSC in the maritime transport sector are an exclusive Union competence pursuant to Article 3(2) TFEU, the subsidiarity principle does not apply, either to those instruments or to Union rules implementing those agreements.

In the absence of the PSC Directive, the Member States of the Paris MoU would carry out PSC inspections but it is unlikely that those inspections which derive from the EU acquis (insurance, sulphur, ship-recycling, port reception facilities, GHG emissions

monitoring, etc.) and which rely on EU PSC for their enforcement would be carried out in a harmonised or coordinated manner. Different and piecemeal solutions would have had to be found. The Directive has therefore addressed a safety and environmental protection need with "Union relevance".

Shipping is an international sector, operating in different EU and international waters and regulated at the global as well as regional and national instances. Therefore, it has by nature a strong cross-border dimension. The PSC Directive has been demonstrated to work well, through an improved and enhanced implementation of safety and environmental protection in EU waters.

The identified problems apply across the entire Union and have the same underlying causes. At the same time, the current Directive is no longer aligned with the international mandatory rules (IMO and Paris MoU). In the absence of EU action, EU Member States may implement national solutions and will work in an uncoordinated and non-harmonised way. This could damage the harmonised safety standard which exists across EU ports, it could result in a lower safety standard and also distort completion between ports.

3.3. 3.3. Subsidiarity: Added value of EU action

Shipping is an international sector, operating in different EU and international waters and regulated at the global as well as regional and national instances. Therefore, it has by nature a strong cross-border dimension. The 2018 ex-post evaluation of this Directive and the Maritime Fitness Check underlined the EU added value of the intervention in the sector, in terms of its effectiveness, efficiency and synergies that it brings.

Given the international nature of maritime transport and the need for a coordinated and harmonised approach to maritime safety, a multiplicity of Member State responses to the issues identified is not appropriate. If EU Member States were to align their domestic legal orders to the changes at IMO or Paris MoU standards this would call into question the coordinated and harmonised standards that the Directive provides for. With respect to larger fishing vessels, the example of the Paris MoU and of the Directive as it applies to commercial transport vessels demonstrates that only harmonised procedures and common criteria for PSC of these vessels can address this issue. Failure to adapt the Directive would remove the synergistic benefits gained through its implementation.

4. 4. OBJECTIVES: WHAT IS TO BE ACHIEVED?

4.1. 4.1. General objectives

In view of the Problems, as described in Section 2, the general objectives of the revision of the PSC Directive are: (i) to maintain a level playing field and avoid market distortions, (ii) to ensure high levels of maritime safety (iii) to ensure prevention of maritime pollution. The revision should thus also contribute towards Sustainable Development Goal (SDG) 3 ("Ensure healthy lives and promote well-being for all at all ages") and SDG 14 ("Conserve and sustainably use the oceans, seas and marine resources for sustainable development").

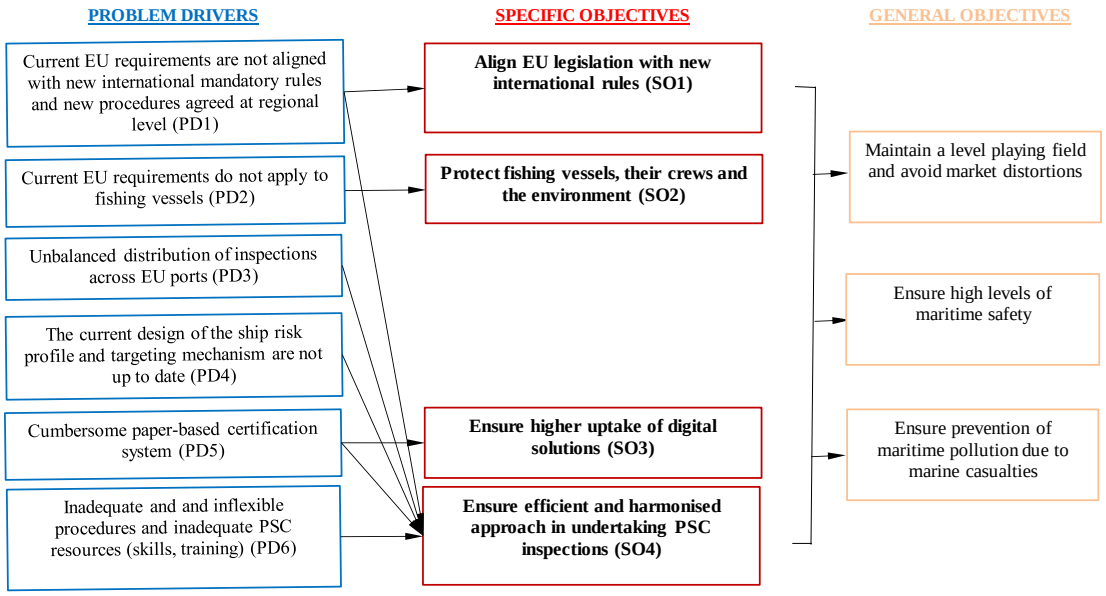
To this end the revision should take into account: (i) changes in the EU and international regulatory framework (in particular Paris MoU) since its entry into force, (ii) lessons learned during the implementation of the Directive, including the need for digitalisation and unexpected and force majeure situations (such as COVID-19 pandemic), (ii) address the issue of whether the correct vessels are being targeted for inspection and whether

more emphasis needs to be placed on environmental concerns and (iv) examine whether the scope of the Directive should be broadened to include fishing vessels.

4.2. 4.2. Specific objectives

This initiative is designed to effectively address the problems previously set out and to improve the way PSC inspections are carried out in the Union. The specific objectives (SOs) and their correspondence with the problem drivers are presented in Figure 6.

Figure 6: Correspondence between the specific objectives and the problem drivers



SO1: Align EU legislation with new international rules. Keeping the PSC Directive aligned and up to date with the relevant instruments and developments at international level (IMO and Paris MoU) is essential to guarantee a harmonised and high safety level across the Union. The Directive needs to be flexible and dynamic to adapt to developments in the international regulatory environment. The IMO has added international Conventions to respond to safety and environmental concerns and these need to be enforced by means of PSC. As regards Paris MoU changes, there should be no divergence between Member States obligations under the Directive and their international obligations.

SO2: Protect fishing vessel, their crews and the environment. While the international Conventions applicable to the fishing vessels provide for PSC, this is not being done in a systemic and harmonised way. The possible expansion of the PSC Directive to cover larger fishing vessels, which are subject to the international Conventions, would allow for a coordinated and harmonised system of control of this vessel type which overall has a poor safety record. This control should thereby increase the level of compliance of the latter with the international standards of safety and environmental protection applicable to these vessels. On the other hand, there may be possible trade-offs with SO4 in terms of impacts on the white grey black list flag state performance and on the risk profile of all vessels in the flagged fleet that need to be taken into account.

SO3: Ensure higher uptake of digital solutions: The opportunities offered by electronic certificates are not currently being taken full advantage of. Although the technology to issue, validate and inspect electronic certificates is already available, the PSC Directive does not facilitate or incentivise the use of electronic statutory certificates. The reliance on paper-based checks of statutory certificates does not allow to use the certificates for

targeting purposes or to prepare for inspections nor does it allow these certificates to be checked digitally prior to the inspection allowing for more ship-centric inspections. Accordingly, a digitalized system would further increase the efficiency of ship risk targeting, better prepared inspections, more time to focus the inspection on operational aspects as well as an easier and faster exchange of relevant information.

SO4: Ensure efficient and harmonised approach in undertaking PSC inspections: Taking EU action in this area should allow for better targeting of vessels for inspection by restructuring the out-dated aspects of the ship risk profile and add new components to it, so that the targeting mechanism can work more effectively. Any changes to the ship risk profile should maintain the risk based approach whereby the inspection effort is concentrated on poor performing, higher risk ships.

Targeting of vessels for inspection should take account of improvement in the safety profile of the ships calling to EU ports and also the increased importance attached to environmental aspects of PSC. Changes to the inspection commitment and to the way in which missed inspections (for operational reasons related to the uneven distribution of ships across the Union or for *force majeure* reasons such as COVID-19) are postponed or accounted for will provide Member States with more flexibility to comply with their obligations under the Directive without compromising on safety.

The stipulations regarding the numbers of PSCOs who should carry out inspections and on the validation of inspection reports should improve quality. Measures derived from the lessons learned in implementation should allow for more substantive ship inspections by having (i) more clear rules, (ii) better allocated resources, (iii) up to date guidelines and procedures for PSC inspections including the use of electronic certificates, to allow for more efficient and better prepared PSCOs and less time wasted. The introduction of a QMS similar to what is required by Directive 2009/21/EC as regards flag state responsibilities should also improve this aspect. By ensuring more harmonised inspections, any competitive advantages (relative lower costs) that a PSC authority has in case inspections are not required to be carried out by more than one inspector and inspection reports to be validated by someone other than the inspector carrying out the inspection will incur to other PSC authorities, will be addressed. As a consequence, PSC inspections will not only ensure high quality in terms of safety, environmental protection and working and living conditions on board but will also help to level the playing field between the ship operators and the PSC authorities.

5. 5. WHAT ARE THE AVAILABLE POLICY OPTIONS?

5.1. 5.1. What is the baseline from which options are assessed?

The EU Reference scenario 2020 (REF2020) is the starting point for the impact assessment of this initiative. The REF2020 takes into account the impacts of the COVID-19 pandemic that had a significant impact on the transport sector. More detailed information about the preparation process, assumptions and results are included in the Reference scenario publication[70]. Building on REF2020, the baseline has been designed to include the initiatives of the 'Fit for 55' package proposed by the Commission on 14 July 2021. A common baseline was developed for this impact assessment, as well as for the Flag State and maritime accident investigation impact assessments to ensure consistency. More details on the baseline are provided in Annex 4.

[70] EU Reference Scenario 2020 (europa.eu)

The Baseline scenario assumes no further EU level intervention beyond the current PSC Directive. It assumes the continuation of the work of the Paris MoU without the incorporation of any amendments adopted since 2009 and the PSC Directive under its 2009 scope. Fishing vessels would continue to be outside the scope of the Directive and Member States could inspect foreign fishing vessels calling to their ports if they wished to do so under national law. Slow progress would take place with respect to the uptake of electronic certificates in the baseline scenario, without further EU level intervention. The share of inspections of ships having e-certificates is currently 20%, according to data from EMSA, and is projected to go up to 30% by 2050 in the baseline scenario.

The COVID-19 pandemic had a major impact on global shipping, affecting all segments. In the baseline scenario, international maritime freight transport activity (intra and extra-EU) is projected to be 21% lower in 2020 relative to 2015. From 2021 onwards, however it is projected to start recovering and grow strongly by 2025 and beyond (i.e. 19% growth for 2015-2030 and 48% for 2015-2050), due to the rising demand for primary resources and container shipping. Relative to 2019, this is equivalent to an 8% increase in transport activity by 2030 and 33% growth by 2050.

The number of port calls for 2025-2050 is projected to grow at lower rate than transport activity, following similar evolution over the historical period[71]. This reflects the fact that transport activity is also driven by other factors such as the increase in the size of vessels over time, and of the distance travelled. In the baseline scenario, the number of port calls is projected to go up by 14% by 2030 relative to 2015 and by 36% by 2050 (equivalent to 6% growth by 2030 relative to 2019 and 26% increase by 2050), following the recovery from the COVID-19 pandemic.

Driven by the increase in the transport activity and the number of vessels, the number of marine casualties is projected to increase over time in the baseline scenario. The number of casualties, including those involving fishing vessels, is projected to increase by 14% by 2030 relative to 2019 and by 45% by 2050 without further EU level action. At the same time, the degree of severity of marine casualties is projected to decrease, leading to a relative stabilisation of the number of fatalities by 2050 (11% decrease for 2019-2030 and 3% increase for 2019-2050). This is still far from the milestone of the Sustainable and Smart Mobility Strategy to achieve a close to zero death toll for all modes of transport in the EU.

The tonnes of bunker fuel lost at sea due to very serious marine casualties is estimated to go up from around 650 tonnes in 2019 to 740 tonnes in 2030 and 890 tonnes in 2050[72].

In the baseline scenario, the total number of inspections performed by PSCOs is projected to increase from 13,446 in 2019 to 14,985 in 2030 and 17,974 in 2050. As a result, the total costs for the EU port State authorities for performing inspections and administrative tasks are projected to increase from EUR 2.9 million in 2019 to EUR 3.2 million in 2030 and EUR 3.8 million in 2050. The lower increase in costs relative to that of inspections is explained by the slight reduction in the man-hour per inspection over time, driven by the slow uptake of electronic certificates. More details are provided in Annex 4.

[71] The same ratio between the growth in the number of port calls and the transport activity as for the historical period (2014-2019) has been assumed for the projection period.

[72] An average level of 30 tonnes of bunker fuels lost per vessel (excluding fishing vessels) has been used for the estimations in the context of the impact assessment support study. For fishing vessels an average level of 22 tonnes of bunker fuels lost per vessel has been assumed, based on data from EMSA.

5.2. 5.2. Description of the policy measures and policy options

As a first step, a comprehensive list of possible policy measures was established after extensive consultations with stakeholders, expert meetings, and independent research in the context of the impact assessment support study and the Commission's own analysis. This list was subsequently screened based on the likely effectiveness, efficiency and proportionality of the proposed measures in relation to the given objectives, as well as their legal, political and technical feasibility.

Discarded policy measures

A number of possible measures were considered during the impact assessment process but were discarded either because the identified problem driver was not validated by the stakeholders consulted, because the problem was not susceptible to a solution by means of EU legislation or because proposing an action to address the issue at EU level will not yield any additional results.

The issue of accidents involving port and dock workers on ships in port has been raised during the stakeholder consultation by the Sectoral Social Dialogue for Ports. The idea of tackling this by means of a vessel safety checklist has been examined but has been discarded as the checklist would need to be used before each loading and unloading operation involving a cargo ship in an EU port while PSC inspection are carried out on a targeted spot check basis. A full list of discarded policy options along with the reasons for which these were not retained is set out in Annex 7.

Retained policy measures and policy options overview

The retained policy measures have been grouped in 3 policy options (PO A, PO B and PO C) as presented in Table 1. The table presents the links of the retained policy measures with the specific policy objectives and the POs. A detailed description of the policy measures is provided in Annex 9.

Table 1: Overview of specific objectives, measures and policy options

Specific objective	Policy measure	PO A	PO B	PO C
SO1	**PM1A:** Expand the scope of the Directive and align with IMO and Paris MoU by adding **Ballast Water Management Convention (BWM)** as a relevant international instrument to the Directive	√	√	√
	PM1B: Expand the scope of the Directive and align with IMO by adding **Nairobi International Convention on the Removal of Wrecks (Nairobi)** as a relevant instrument to the Directive	√	√	√
	PM1C: Expand the scope of the Directive by providing for other Conventions (HNS and Hong Kong) which are open for ratification and have been ratified by at least one EU Member State. These are to be added to the Directive "once they enter into force"			√
	PM2: Align the Directive to the Paris MoU new Ship Risk Profile (SRP) including the new calculation method for the **White Grey Black (WGB) list formula used for targeting ships**	√	√	√
	PM3: Align the Directive to the (i) **Paris MoU list of certificates and documents** to be checked during an inspection (ii) to the changes in the **Paris MoU refusal of access (banning) procedures** and (iii) incorporate all current **Paris MoU Procedures and Guidelines**	√	√	√
	PM4: Align the Directive to the Paris MoU changes to the	√	√	√

	inspection commitment			
	PM5: Align the Directive to the Paris MoU changes which abolishing the **72 hour reporting obligation** for vessels eligible for an expanded inspection	√	√	√
SO2	**PM6A:** Encourage Member States to carry out **PSC on eligible fishing vessels** (over 24 metres) by means of **development of guidelines, workshops**	√		
	PM6B: Provide for a **voluntary PSC system for fishing vessels** of above 24 metres which will exist in parallel to the Directive by means of guidelines, training and an inspection database for targeting ships and reporting on inspections		√	
	PM6C: Amend the Directive to **fully incorporate larger fishing vessels** (over 24 metres in length) within its scope			√
SO3	**PM7A: Encourage the uptake and use of electronic certificates** in PSC by means of guidelines, workshops, etc.	√		
	PM7B: Amend the Directive to make e-certificates the default for PSC in the EU providing for a common data model, a validation/verification tool and repository at EU level			√
	PM7C: Amend the Directive to provide for electronic certificates, common data model, a validation tool and repository at EU level - linking the use of electronic certificates with the ship risk profile		√	
SO4	**PM8:** Amend the Directive to clarify and fix the time-frame within which the ship **arrival and departure notifications** have to be carried out		√	√
	PM9: Amend the Directive to allow **more flexibility for missed inspections**		√	√
	PM10: Amend the Directive to prevent unwanted spill-over effects of Member States which **exceed their inspection commitment**		√	√
	PM11: Amend the Directive by **adding environmental parameters to the ship risk profile** used to target ships		√	√
	PM12: Commission to **develop enhanced training tools/capacity development** for inspectors	√	√	√
	PM13: Amend the Directive to require Member States to develop and apply a **Quality Management System for their PSC activities**	√	√	√
	PM14: Amend the Directive to allow for **inspections to be missed in force majeure situations**		√	√
	PM15A: Recommend that all **inspections are carried out by more than one inspector**	√		
	PM15B: Amend the Directive to **require that all expanded inspections are carried out by more than one inspector**		√	√
	PM16A: Recommend that all PSC inspection reports are **validated** by a validator other than the inspector who carried out the inspection	√		
	PM16B: Amend the Directive to require that all PSC inspection reports are **validated** by a validator other than the inspector who carried out the inspection before the inspection report is transferred to the database		√	√
SO1	**PM17:** Encourage all EU States who are eligible (EL, ES, FR, HR, IT, SI) to join the **Mediterranean MoU on Port State control**	√	√	√

All three policy options contain ***eight common policy measures***: PM1A, PM1B, PM2, PM3, PM4, PM5, PM12, PM13 and PM17. PM1 to PM5 and PM17 contribute towards SO1 (aligning EU legislation with new international rules). These are alignment measures that have to be implemented to prevent the Directive going out of date. Developments at the international level at the IMO but most particularly at the Paris MoU means that the Directive was diverging from these standards almost as soon as it

was adopted and certainly by the time it had been transposed. The issues were minor at first but with the passage of time this has been exacerbated. The Directive has within it certain flexibility and those Paris MoU changes that have been put in place since 2009 which could be accommodated within the text of the Directive have been implemented. For others the Directive will have to be amended before these can be actioned.

With regard to the ***proposed addition of international conventions (PM1)***, the PMs fall into two categories. **PM1A and PM1B** refer to the Ballast Water Management Convention (BWMC) and the Nairobi Wreck Removal Convention which have already been added to the list of conventions enforced by the Paris MoU – adding these to the Directive is simply a question of alignment – removing any divergence between MS obligations to the Directive and to the MoU. **PM1C** proposes to add two further international conventions to the Directive namely the HNS Convention (dealing with compensation for spills of highly noxious substances) and the Hong Kong Convention on the safe recycling of ships. Although the conventions are open for ratification (as they have not attained yet the ratification threshold to enter into force), PM1C proposes to add these to the Directive on a provisional basis so that if they do enter into force they can be enforced immediately through PSC without having to amend the Directive. This was done in PM1C as PO C is the highest ambition option and this would be a means of sending the political signal that the EU attaches importance to these Conventions entering into force.

The other two common measures (PM12 and PM13) contribute towards SO4 (Ensure efficient and harmonised approach in undertaking PSC inspections).

The requirement to develop enhanced training tools/capacity development for inspectors (**PM12**) relates to other policy measures but also to changes that will arise due to developments in technology and the shipping world in general. As regards the other policy measures these include those involving new international conventions (PM1) or the new procedures of the Paris MoU (PM2-PM5) but also PM6 relating to PSC for fishing vessels or PM7 the use of electronic certificates in PSC. In the context of the European Green Deal and the "Fit for 55" package, it is likely that there will be a significant change in ship propulsion and fuels used in the coming decades as shipping moves from hydrocarbon based propulsion systems to low carbon fuels. This is expect to have significant implications for the entire shipping and fishing industries and can be expected to have an impact on the way vessels are powered, operated and therefore on the way in which PSC inspections are conducted.

The requirement to have a quality management system (QMS) is also included in all policy options (**PM13**). This requirement does not have to be seen as a (significant) burden but rather as an aid to allow for more efficient inspections, better management of resources and systems and to identify problems before these become serious. The need for such a QMS is to allow for better management of resources to identify system problems and to allow these to be addressed by making the case for additional resources at the national level. A key part of improvements in efficiency is to establish control conditions and a QMS supports this as it is supposed to indicate with more precision where there is a 'problem' or systematic 'fault' so that the administration can take action. It is to be noted that this includes availability of sufficient and adequate (technical) resources.

Article 8 of Directive 2009/21/EC on flag State requirements requires that EU Member S flag State administrations have a QMS. Since the Implementation of the IMO Code on the Implementation of International Instruments (the "III-code") became mandatory in

2017, it is acknowledged that a QMS ensures better adherence with the III-code requirements. Therefore, and as PSC is a key tool to ensure correct implementation of the international Conventions, it is appropriate to ensure coherence between the different parts of the MS maritime administrations that this requirement is extended to the MS port State control functions (as it has been also proposed for the MS accident investigation bodies in the accident investigation Impact Assessment report). It is thus included in all policy options.

Policy option A

This option is mainly focussed on keeping the Directive aligned with international legal instruments. Most of the other changes proposed are non-regulatory measures making use of recommendations, guidelines and workshops organised by Commission and/or EMSA. This option will leave the scope of the Directive as it is. The Directive is **fully aligned** with the changes already decided by the Member States of the **Paris MoU.** The changes envisaged will ease legal uncertainty as the decisions of the Paris MoU taken since 2009 will update the Directive. **The IMO BWM and Nairobi Conventions** are added and this option requires that Member States put in place a **quality management system (QMS)** for their PSC administration. The main impacts of this measure will be on the Member States' PSC administrations.

In addition, non-regulatory measures to encourage **PSC of fishing vessels** and the use of **electronic certificates** are proposed. PM6A will involve a recommendation that those Member States who wish, could PSC inspect eligible foreign fishing vessels (over 24 metres in length) for safety, environmental and working conditions related issues. This will be supported by EU guidelines, while EMSA will provide training and workshops. The system will not be risk based and Member States will have full discretion on what fishing vessels to inspect. There will be few obligations on the port State. These two measures will impact on the Member States PSC administrations, on EMSA as well as on fishing vessel operators. Similarly, recommendations are provided with regard to the validation of inspections and the carrying out of inspections by more than one inspector. EU Member States who are eligible will be encouraged to join the Mediterranean MoU on Port State control.

Policy option B

The **same alignment** as in policy option A (on **IMO and Paris MoU**) is provided for as is the requirement for a **QMS** as the measure on the **Mediterranean MoU**. In this policy option, flexibility for PSC administrations is balanced with harmonisation.

On **PSC for fishing vessels** a voluntary PSC system for fishing vessels of above 24 metres is proposed in parallel to (but outside) the current Directive. Guidelines, EMSA training and an EMSA inspection database for targeting ships and reporting on inspections are foreseen. The reference to "voluntary" refers on the port State: any foreign vessel calling to a port in another State effectively acknowledges the jurisdiction of the port State and has no choice as to whether and how it is inspected under the international conventions that apply to it, the choice to inspect is for the port State. A risk-based system rather than a quota-based system whereby participating Member States simply have to inspect a predefined number of vessels is felt to be a better use of resources and has a more significant positive impact on safety. This will impact on Member States' PSC administrations as well as on fishing vessel operators and should allow for the development of this inspection type for those Member States who are interested, working with the Paris MoU and avoiding undesired spill-over effects on the current EU PSC regime. EMSA will develop a THETIS module whereby all PSC reports

relating to fishing vessels are reported and a ship risk profile (SRP) for each fishing vessel would be developed based on the age, flag and previous PSC history of the vessel. It is on the basis of this SRP that vessels will be selected for inspection. This means that Member States can benefit from previous inspections carried out by other Member States and because the inspection results are shared via EMSA the Member States can control each other while EMSA can monitor all activity. The EU has a long and productive association (since 1995) with the Paris MoU in the joint development of PSC standards, since it and the preferred measure would allow for the development of fishing vessels PSC in a gradual and organic manner which takes account of the required flexibility.

PM6B provides for a voluntary system for those Member States that are interested to have a risk-based approach to fishing vessel PSC. This would mean that EMSA would develop a THETIS module whereby all PSC reports relating to fishing vessels are reported and a ship risk profile (SRP) for each fishing vessel would be developed based on the age, flag and previous PSC history of the vessel. It is on the basis of this SRP that vessel will be selected for inspection. This means that Member States can benefit from previous inspections carried out by other Member State and because the inspection results are shared via EMSA the Member States can control each other while EMSA can monitor all activity. A risk based system rather than a quota based system whereby participating states simply have to inspect a predefined number of vessels is felt to be a better use of resources and has a more significant positive impact on safety.

This is proposed as a voluntary separate system rather than a compulsory free standing system due to flexibility and the way that standards are developed within the PSC community by consensus. By providing for a voluntary system for those EU Member States that wish to carry out these inspections a system of PSC can be developed organically by Member States, the MoU, the Commission and EMSA. This will retain the necessary flexibility for the new system in its early phase when it is subject to the most change. Creating a compulsory stand-alone system means that the parameters will be fixed from its date of adoption and will make it difficult to adapt and develop.

The use of **electronic certificates** will be provided for in the Directive but their use will not be obligatory. This will impact on flag State administrations while EMSA working with flag States, ROs and IMO will develop a common data model, a validation tool and repository. The use of electronic certificates will be encouraged by linking them with the ship risk profile. EMSA will develop enhanced **training tools/capacity development for inspectors** especially as regards new technologies and in relation to the additional obligations arising from new IMO conventions. This is justified for political as well as practical reasons.

On the political level, if the Commission were to propose the total phase-out of paper certificates by mandating their replacement with electronic certificates there would be significant resistance both from within the EU flag States but also from third country flags and the IMO. As mentioned in section 2.2 of the Impact Assessment report the current take up rate of electronic certificates in the EU is about 20%. EU legislation lacks a framework for the use of electronic certificates and the electronic provision of ships statutory certificates. This means that even an EU ship equipped with electronic certificates calling to a port in another EU Member State (where the trust level between administrations should objectively be high) still has to carry paper versions in case the electronic versions are not accepted. As PSC applies to both EU and third country foreign flagged vessels calling to EU ports and as approximately 70% of vessels operating internationally in EU waters are flagged in third countries, if the EU were to unilaterally move to refusing to accept paper certificates in PSC, EU flag and port States would fear

retaliation from those third countries which are either unwilling or unable to move to electronic certificates. This is a matter which needs to be progressed but it will need to be handled taking account of the concerns of EU flag States, the Paris MoU, the IMO, the recognised organisations (which act for most flag States) and the third countries.

The incentivisation of electronic certificates by linking their usage to the SRP nonetheless clearly indicates the EU preference in this matter but allows for those third countries that do not wish to work on this issue not to do so.

On issues relating to **better functioning of the Directive** such as **ship arrival and departure notifications, missed inspections, over-inspecting, expanded inspections** being carried out by more than one inspector, **validation of inspection reports** and **force majeure** situations, this option is prescriptive and will propose amendments to the Directive. This will mainly impact on PSC administrations.

Policy option C

This policy option is the most ambitious in terms of increased administrative burden for the PSC administrations but it will also ensure the highest level of harmonisation of inspections.

The **same alignment as in Policy options A and B** (on **IMO** and **Paris MoU**) is provided for as is the requirement for a **QMS** as the measure on the **Mediterranean MoU**.

PSC for fishing vessels of above 24 metres will be incorporated fully into the Directive, impacting on the owners/operators of these vessels as well as on Member States' PSC administrations. The use of **electronic certificates** will be mandated in the Directive and a phase-out of paper certificates by 2035 will be provided for. EMSA working with flag States, ROs and IMO will develop a common data model, a validation tool and repository. EMSA will develop **enhanced training tools/capacity development for inspectors,** especially as regards new technologies and in relation to the additional obligations arising from new IMO conventions.

On issues relating to **better functioning of the Directive** such as **ship arrival and departure notifications, missed inspections, expanded inspections** being carried out by more than one inspector, **validation of inspection reports** and **force majeure** situations, this option is prescriptive and will propose amendments to the Directive.

6. 6. WHAT ARE THE IMPACTS OF THE POLICY OPTIONS?

This section summarizes the main expected economic, social and environmental impacts of each PO[73]. The proposed measures are assumed to be implemented from 2025 onwards, so the assessment has been undertaken for the 2025-2050 period and refers to EU27. Costs and benefits are expressed as present value over the 2025-2050 period, using a 3% discount rate. Further details on the methodological approach and impacts on costs by measure for the policy options are provided in Annex 4.

[73] The analysis in this section is based on the COWI et al. (2022), *Impact assessment support study concerning possible revision of Directive 2009/16/EC on port State Control*, and on the analysis of stakeholders' feedback.

6.1. 6.1. Economic impacts

This section provides the economic impacts of the policy options on the public authorities (i.e. PSC authorities and flag State authorities), ship operators and EMSA. It also provides an assessment of impacts on small and medium enterprises (SMEs), the functioning of the internal market and competition, and on competitiveness.

6.1.1. Impacts on public authorities

Impacts on port State authorities. All three policy options lead to an increase in the enforcement costs, adjustments costs and administrative costs for the EU PSC authorities relative to the baseline. They also result in enforcement costs savings (see Table 2). More explanations on each category of costs by policy option are provided below, while the detailed costs and costs savings by policy measure, including the assumptions used to derive them, are provided in Annex 4.

Enforcement costs for port State authorities. The increase in enforcement costs relative to the baseline are driven by: i) expanding the scope of the Directive and aligning with IMO and Paris MoU (i.e. measures PM1A and PM1B in PO A and PO B, and measures PM1A, PM1B and PM1C in PO C); ii) measures related to PSC inspections on fishing vessels (i.e. PM6A in PO A, PM6B in PO B and PM6C in PO C); iii) measures adding environmental parameters to the ship risk profile used to target ships (i.e. PM11 in PO B and PO C); and, iv) measures for ensuring that inspections are carried out by more than one inspector (PM15A in PO A and PM15B in PO B and PO C).

Table 2: Costs for EU port State authorities by policy option relative to the baseline (in million EUR), in 2020 prices

	Difference to the baseline								
	PO A			PO B			PO C		
	2030	2040	2050	2030	2040	2050	2030	2040	2050
Total additional costs	0.697	0.740	0.797	0.932	0.992	1.076	1.014	1.077	1.162
Administrative costs	0.218	0.238	0.261	0.442	0.483	0.530	0.445	0.486	0.531
Adjustment costs	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140
Enforcement costs	0.339	0.362	0.397	0.350	0.369	0.407	0.430	0.452	0.491
Enforcement costs savings	0.132	0.190	0.175	0.366	0.556	0.578	0.401	0.631	0.661
Net costs	**0.565**	**0.550**	**0.622**	**0.566**	**0.436**	**0.498**	**0.614**	**0.445**	**0.501**

Source: COWI (2022), Impact assessment support study

PO C shows the highest increase in enforcement costs relative to the baseline (EUR 0.430 million in 2030 and EUR 0.491 million in 2050), followed by PO B (EUR 0.350 million in 2030 and EUR 0.407 million in 2050) and PO A (EUR 0.339 million in 2030 and EUR 0.397 million in 2050). In terms of present value over 2025-2050, the additional enforcement costs are estimated at EUR 8.174 million in PO C, EUR 6.697 million in PO B and EUR 6.508 million in PO A. The highest shares of additional enforcement costs relative to the baseline are given by measures for ensuring that inspections are carried out by more than one inspector (i.e. around 87% of the additional enforcement costs in PO A, around 46% in PO B and 38% in PO C), followed by measures adding environmental parameters to the ship risk profile used to target ships in PO B and PO C (i.e. around 40% of the additional enforcement costs in PO B and 32% in PO C). In addition, in PO C expanding the scope of the PSC Directive by adding other Conventions (HNS and Hong Kong) would drive around 17% of the additional enforcement costs. Measures related to PSC inspections on fishing vessels only represent around 4% of the additional enforcement costs in PO A, 5% in PO B and 6% in PO C.

Enforcement costs savings for port State authorities. Enforcement costs savings relative to the baseline are driven by: i) measures on aligning the Directive to the Paris MoU new Ship Risk Profile (i.e. measure PM2 in PO A, PO B and PO C); ii) measures related to the use of electronic certificates (i.e. measure PM7A in PO A, measure PM7C in PO B and PM7B in PO C); and measures to prevent unwanted spill-over effects of Member States which exceed their inspection commitment (i.e. PM10 in PO B and PO C).

PO C shows the highest enforcement costs savings (see Table 2) relative to the baseline (EUR 0.401 million in 2030 and EUR 0.661 million in 2050), followed by PO B (EUR 0.366 million in 2030 and EUR 0.578 million in 2050) and PO A (EUR 0.132 million in 2030 and EUR 0.175 million in 2050). In terms of present value over 2025-2050, the enforcement costs savings are estimated at EUR 9.503 million in PO C, EUR 8.406 million in PO B and EUR 2.887 million in PO A. The highest shares of enforcement costs savings relative to the baseline are given by measures related to the use of electronic certificates (i.e. around 97% of the enforcement costs savings in PO A or EUR 2.804 million, 86% in PO B or EUR 7.260 million and 88% in PO C or EUR 8.385 million), followed by measures to prevent unwanted spill-over effects of Member States which exceed their inspection commitment in PO B and PO C (i.e. around 13% of the enforcement costs savings in PO B and 11% in PO C).

In terms of number of inspections (see Table 3), PO A results in a slight decrease in the total number of inspections relative to the baseline despite the fact that the number of PSC inspections on fishing vessels and the number of expanded inspections on commercial vessels increase. On the other hand, PO B and PO C would lead to an increase in the number of inspections. Cumulatively, over the 2025-2050 period, the total number of PSC inspections is projected to increase by 7,461 in PO C relative to the baseline (5,010 increase of PSC inspections on fishing vessels and 2,451 increase of PSC inspections on commercial vessels), by 5,727 in PO B (3,276 increase of PSC inspections on fishing vessels and 2,451 increase of PSC inspections on commercial vessels) and to slightly decrease by 77 in PO A (2,250 increase of PSC inspections on fishing vessels and 2,327 decrease of PSC inspections on commercial vessels). The increase is however limited, to around 1.4% in PO B relative to the baseline and 1.8% in PO C.

Table 3: Number of PSC inspections by policy option relative to the baseline

	Difference to the baseline								
	PO A			PO B			PO C		
	2030	2040	2050	2030	2040	2050	2030	2040	2050
PSC inspections on commercial vessels	-84	-91	-100	88	96	105	88	96	105
Initial inspection	-77	-84	-92	-195	-212	-234	-195	-212	-234
More detailed inspection	-86	-93	-103	-206	-224	-247	-206	-224	-247
Expanded inspection	79	86	95	488	532	586	488	532	586
PSC inspections on fishing vessels	80	95	96	103	138	157	173	212	198
Total number of PSC inspections	**-4**	**4**	**-4**	**191**	**234**	**262**	**261**	**308**	**303**

Source: COWI (2022), Impact assessment support study

Adjustment costs for port State authorities. Adjustment costs for PSC authorities relative to the baseline are driven by: i) the requirement to develop and apply a QMS for the PSC activities (i.e. PM13 in all policy options); and ii) measure encouraging the port State authorities to join the Med MoU (i.e. PM17 in all policy options). All POs are estimated to result in the same adjustment costs (see Table 2) relative to the baseline (EUR 0.140 million in 2030 and EUR 0.140 million in 2050). In addition, one-off costs of EUR 0.100 million for implementing the QMS are foreseen in 2025. In terms of present value over 2025-2050, the adjustment costs are estimated at EUR 2.570 million in PO A, PO B and

PO C. The highest share of adjustment costs relative to the baseline is given by the requirement to develop and apply a QMS for the PSC activities (i.e. around 72% of the adjustment costs relative to the baseline).

Administrative costs for port State authorities. Administrative costs for PSC authorities relative to the baseline are driven by measures that recommend or require the PSC inspection reports to be validated by a validator other than the inspector who carried out the inspection (i.e. measure PM16A in PO A, and measure PM16B in PO B and PO C). PO C shows the highest additional administrative costs (see Table 2) relative to the baseline (EUR 0.445 million in 2030 and EUR 0.531 million in 2050), followed by PO B (EUR 0.442 million in 2030 and EUR 0.530 million in 2050) and PO A (EUR 0.218 million in 2030 and EUR 0.261 million in 2050). The higher administrative costs in PO C relative to PO B are explained by the higher number of inspections in PO C, and thus a higher number of PSC reports. In terms of present value over 2025-2050, the administrative costs relative to the baseline are estimated at EUR 8.643 million in PO C, EUR 8.595 million in PO B and EUR 4.235 million in PO A.

Net costs for port State authorities. Overall, the total additional costs for PSC authorities outweigh the costs savings. In terms of present value over 2025-2050, the net costs relative to the baseline are estimated at EUR 10.427 million in PO A, EUR 9.885 million in PO C and EUR 9.456 million in PO B. The higher net costs in PO A are mainly because of the lower cost savings due to the use of electronic certificates.

Impacts on flag State authorities. *Adjustment costs for flag State authorities* relative to the baseline are expected due to measures related to the use of electronic certificates (i.e. measure PM7C in PO B and PM7B in PO C). Flag State authorities (or the Recognised Organisations which act on their behalf) will need to communicate their statutory certificates to a central repository managed by EMSA. The adjustment costs involved are expected to be quite limited as the ROs already communicate directly with EMSA the existence of and dates of validity of the statutory certificates but not the certificates (together with their conditions, endorsements etc.). The adjustment costs are expected to be the same in PO B and PO C and to amount to EUR 10,000 per year per flag State authority from 2026 onwards (EUR 0.220 million per year for all flag State authorities). In addition, one-off investment costs of EUR 1 million are expected in 2025 so that a common and mutually acceptable model for the statutory certificates can be put in place for all flag States either by the flag State authorities or the Recognised Organisations. In terms of present value over 2025-2050, the adjustment costs relative to the baseline are estimated at EUR 4.831 million in PO B and PO C.

6.1.2. Impacts on ship operators

All policy options result in an increase in the enforcement costs for ship operators that are however largely overcompensated by administrative costs savings (see Table 4). The assumptions used for deriving the costs and costs savings, are provided in Annex 4.

Table 4: Costs and costs savings for ship operators by policy option relative to the baseline (in million EUR), in 2020 prices

	Difference to the baseline								
	PO A			PO B			PO C		
	2030	2040	2050	2030	2040	2050	2030	2040	2050
Enforcement costs	0.026	0.030	0.031	0.033	0.044	0.050	0.055	0.068	0.063
Administrative costs savings	0.286	0.309	0.339	0.286	0.309	0.339	0.286	0.309	0.339
Net cost savings	**0.260**	**0.279**	**0.309**	**0.253**	**0.265**	**0.289**	**0.231**	**0.241**	**0.276**

Source: COWI (2022), Impact assessment support study

Enforcement costs for ship operators. The increase in enforcement costs relative to the baseline are driven by measures related to PSC inspections on fishing vessels (i.e. PM6A in PO A, PM6B in PO B and PM6C in PO C). While subject to a PSC inspection, the vessel will be obliged to remain in port and to make the captain or his/her representative available. Having regard to the smaller size of fishing vessels (even those over 24 metres) as compared with vessels currently subject to PSC and the number of conventions applicable to fishing vessels, EMSA assessed the average time necessary for a PSC inspection of a large fishing vessel as currently being 4.5 hours. This is over time reduced taking account of savings brought about by digitalisation, depending on the policy option.

PO C shows the highest increase in enforcement costs relative to the baseline (EUR 0.055 million in 2030 and EUR 0.063 million in 2050), followed by PO B (EUR 0.033 million in 2030 and EUR 0.050 million in 2050) and PO A (EUR 0.026 million in 2030 and EUR 0.031 million in 2050). In terms of present value over 2025-2050, the additional enforcement costs are estimated at EUR 1.105 million in PO C, EUR 0.715 million in PO B and EUR 0.496 million in PO A.

Administrative costs savings. Administrative costs savings relative to the baseline stem from the abolition of the 72-hour advance reporting obligation for the operator, agent or master of a ship eligible for an expanded inspection in all policy options. This obligation covered 85,764 ship calls involving ships which were eligible for an expanded inspection in 2019, representing 11.9% of the total number of port calls. A rough estimation of the time taken for a ship agent/operator/master to report the estimated time of arrival within 72-hour through the National Single Window system of each Member State is around 5 minutes. Therefore, also taking into account the projected evolution of the number of port calls over time, removing the restriction could result in administrative cost savings for shipping operators of EUR 0.286 million in 2030 and EUR 0.339 million in 2050 relative to the baseline. Expressed as present value over 2025-2050 the total costs savings relative to the baseline are estimated at EUR 5.53 million. On average per year, the total costs savings expressed as present value are estimated at EUR 0.221 million, while the average number of port calls would be 96,637 per year during 2025-2050.

Net costs savings for ship operators. Overall, the administrative costs savings outweigh the additional enforcement costs. In terms of present value over 2025-2050, the net costs savings relative to the baseline are estimated at EUR 5.035 million in PO A, EUR 4.816 million in PO B and EUR 4.425 million in PO C.

6.1.3. Impact on EMSA

The changes to the Directive related to alignment either as regards IMO instruments or the Paris MoU are not expected to give rise to additional costs for EMSA. On the other hand, measures related to PSC inspections on fishing vessels (i.e. PM6A in PO A, PM6B in PO B and PM6C in PO C), measures related to the use of electronic certificates (i.e. measure PM7A in PO A, measure PM7C in PO B and PM7B in PO C) and developing enhanced training tools/capacity development for inspectors (i.e. PM12 in all POs) are expected to lead to adjustment costs for EMSA relative to the baseline.

The costs related to the introduction of PSC for larger fishing vessels will arise as a result of training offered by the Agency to Member States' inspectors and by the provision of a fishing vessels specific module for the THETIS ship targeting and inspection reports database. PO A will involve training costs for EMSA. The training of PSC inspectors will mainly focus on the relevant EU guidelines. The development of such a course would be done by EMSA in house but a budget of EUR 36,000 per year is foreseen for the in-person

training from 2025 onwards. In addition, online training through the setup of the virtual reality platform (VRESI) would involve a one-off cost of EUR 50,000 in 2025. PO B and PO C include the same costs as PO A, but in addition they also cover the costs related to the development of a THETIS module for fishing vessels (i.e. one-off costs of EUR 100,000 in 2025). This also involves the development of a dedicated common core curriculum (CCC) for PSC of fishing vessels which will cover all the relevant instructions and guidance.

In relation to the use of electronic statutory certificates in PSC, PO A will involve training costs for EMSA of EUR 36,000 per year for training the PSC inspectors. PO B and PO C would have similar training costs as PO A. In addition, in PO B and PO C one-off investment costs of EUR 500,000 are foreseen in 2025 to develop a validation tool and repository, followed by maintenance costs of EUR 100,000 per year from 2026 onwards (equivalent to 0.9 additional full time equivalents relative to the baseline).

With respect to developing enhanced training tools/capacity development for inspectors, training of PSCOs is foreseen on new technologies, including but not limited to renewable and low carbon fuels, which are particularly relevant in view of the "Fit for 55" package, and automation. This is expected to amount to EUR 150,000 per year in all three policy options, made up of EUR 36,000 for in person training, a further EUR 34,000 to cover enhancement (related to PSC) of EMSA's online training tools and EUR 80,000 for the recruitment of experts from a pool of expertise that EMSA has developed to address very specialised matters (such as new technologies) for which the Agency does not have the expertise in house. This is equivalent to one additional full time equivalent (FTE) for EMSA in all three policy options relative to the baseline.

Overall, the adjustment costs for EMSA in PO B and PO C are estimated at EUR 0.322 million per year from 2025 onwards relative to the baseline, plus one-off costs of EUR 0.650 million in 2025. In PO A the costs are estimated to be lower, at EUR 0.222 million per year from 2025 onwards relative to the baseline, plus one-off costs of EUR 0.050 million in 2025. Of these costs, one additional full time equivalent is estimated to be needed by EMSA in PO A and close to 2 FTEs in PO B and PO C. In terms of present value over 2025-2050, the net costs relative to the baseline are estimated at EUR 4.138 million in PO A and EUR 6.479 million in PO B and PO C.

6.1.4. Impacts on SMEs

The creation of a PSC regime for larger fishing vessels of above 24 metres in all policy options (i.e. PM6A in PO A, PM6B in PO B and PM6C in PO C) is relevant for SMEs as it can be assumed that all fishing vessels of above 24 metres eligible for PSC would qualify as small enterprises[74]. Fishermen's groups have been consulted as part of the impact assessment process, and while they are in favour of safety inspections, they stress that PSC inspections should not hamper vessel operations since PSC would directly affect the income of the fishermen concerned.

The analysis in section 6.1.2 has shown that, in PO A the additional enforcement costs for fishing vessels operators are estimated at around EUR 0.026 million at EU level in 2030 and EUR 0.031 million in 2050 relative to the baseline. PO B shows higher costs than PO A (EUR 0.033 million in 2030 and EUR 0.050 million in 2050). For PO C, the additional enforcement costs are estimated at EUR 0.055 million in 2030 and at EUR 0.063 million in

[74] Small companies have less than 50 employees and either a net turnover or balance sheet of €10 million. Large fishing vessels would typically be operated as single vessels companies and have a crew of less than 20.

2050. Considering the projected number of fishing vessels above 24 meters in 2030 and 2050 at EU level, the additional enforcement costs relative to the baseline are estimated in PO A at 12 EUR per vessel in 2030 and 18 EUR per vessel in 2050. For PO B, the additional costs are estimated at 16 EUR per vessel in 2030 and 29 EUR per vessel in 2050, while in PO C they would be 27 EUR per vessel in 2030 and 37 EUR per vessel in 2050. These costs can however be regarded as the upper bound as it has been assumed that for the duration of the PSC inspection no other on-board operations can take place which is not necessarily the case.

On the other hand, all policy options will have positive impacts in terms of safety for operators of fishing vessels above 24 metres in length, which are mainly small enterprises, as shown in section 6.2.1.

6.1.5. Functioning of the internal market and competition

All policy options are expected to have a positive impact on the functioning of the internal market, both by improving overall maritime safety for the benefit of freight customers and passengers throughout the Union as well as by ensuring that the same safety level applies throughout the Union. The positive impacts of PO B are expected to be higher than those of PO A and PO C, because of the easier path towards digitalisation and the quicker uptake of a voluntary creation of a PSC regime for larger fishing vessels resulting in a higher degree of harmonisation between Member States. This is particularly the case as only 10 Member States are visited by significant numbers of larger foreign flagged fishing vessels. All policy options provide for a level playing field as all policy options improve safety and the performance of the Member States in the performance of their PSC functions.

6.1.6. Impacts on competitiveness

As explained in section 6.1.2, the additional enforcement costs relative to the baseline for ship operators are expected to be limited in all three policy options. No other additional costs are expected for the industry (i.e. ship operators) in the three policy options. On the other hand, all policy options are expected to lead to administrative costs savings for ship operators, in particular commercial vessels operators, which outweigh the costs. Therefore, it can be concluded that all policy options may improve the competitiveness of the operators.

6.2. 6.2. Social impacts

Social impacts are mainly assessed in terms of impacts of the policy options on maritime safety (in terms of lives saved and injuries avoided), working conditions and fundamental rights. Costs impacts for consumers from any of the policy options have not proved quantifiable but are expected to be negligible.

6.2.1. Maritime safety

As deficiencies identified during PSC inspections typically have to be rectified before the vessel leaves the port or shortly thereafter, PSC inspections are expected to lead to a reduction in the number of deficiencies and thereby to improve safety and environmental performance. This should result in a reduction in the number of marine casualties and thus of lives lost and injuries. With regard to marine casualties involving transport vessels, PO B and PO C are estimated to lead to the same impact in terms of number of lives saved and injuries avoided during 2025-2050 (3 lives saved and 27 injuries avoided relative to the baseline)

while PO A would not lead to any significant impact relative to the baseline[75]. With respect to marine casualties involving fishing vessels, PO C leads to the highest number of lives saved and injuries avoided (4 lives saved and 53 injuries avoided) relative to the baseline, followed by PO B (3 lives saved and 34 injuries avoided) and PO A (3 lives saved and 25 injuries avoided). Thus, all policy options contribute towards Sustainable Development Goal 3 ("Ensure healthy lives and promote well-being for all at all ages"), although the impact of PO C is the highest.

All policy options are estimated to result in a reduction in the external costs of accidents relative to the baseline (Table 5) although the impact would be highest in PO C (EUR 43.7 million, expressed as present value over 2025-2050) relative to PO A (EUR 15.6 million) and PO B (EUR 35 million)[76].

Table 5: Reduction in the external costs of accidents, present value over 2025-2050 (in million EUR), in 2020 prices

	Baseline	Difference to the baseline		
		PO A	PO B	PO C
Fatalities and injuries in which commercial vessels are involved	8,095	0.0	16.4	16.4
Fatalities	2,987	0.0	6.9	6.9
Injuries	5,107	0.0	9.6	9.6
Fatalities and injuries in which fishing vessels are involved	1,823	15.6	18.6	27.3
Fatalities	884	6.9	6.9	9.1
Injuries	939	8.8	11.8	18.2
Total fatalities and injuries	9,918	15.6	35.0	43.7
Fatalities	3,872	6.9	13.7	15.9
Injuries	6,046	8.8	21.3	27.8

Source: COWI (2022), Impact assessment support study

It should be noted however that there is high uncertainty regarding these estimates. This is because the impacts of the PSC Directive on safety are indirect, through inspections that are aimed to address ship deficiencies. For this reason, sensitivity analysis has been performed, assuming 10% and 15% lower value in absolute terms of the elasticity used to derive the impacts. Table 6 shows that even with lower value of the elasticity all policy options are projected to result in lives saved and injuries avoided, although the positive impacts on safety would be more limited.

Table 6: Results of the sensitivity analysis on the reduction in the number of fatalities and injuries over 2025-2050 relative to the baseline and on the external costs of accidents, expressed as present value over 2025-2050 (in million EUR) relative to the baseline

	Difference to the baseline		
	PO A	PO B	PO C
Total number of fatalities and injuries			
Central case	28	67	87

[75] In the context of the impact assessment support study a log-log relationship between the number of inspections conducted in year t and the number of marine casualties in year t+2 has been estimated. The elasticity has been estimated at -1.031 meaning that "a 1% increase in inspections in year t reduces the number of marine casualties in year 2 by 1.031%". However, as the number of ship deficiencies decreases over time, it is expected that the impact on marine casualties and thus on the number of fatalities and injuries avoided would also decrease over time. Therefore, it has been assumed that the elasticity decreases in a non-linear way by 2050, the impacts being significantly smaller post-2040 (at less than 0.2%). More explanations are provided in Annex 4.

[76] The 2019 Handbook on the external costs of transport has been used to monetise the costs. According to the Handbook, the external costs of a fatality in 2020 prices is estimated at around EUR 3.5 million and that of an injury at around EUR 0.5 million.

10% lower elasticity	18	46	60
15% lower elasticity	14	35	44
Reduction in external costs of accidents (present value 2025-2050, in million EUR)			
Central case	15.6	35.0	43.7
10% lower elasticity	11.0	26.0	34.0
15% lower elasticity	9.9	22.4	25.7

Source: COWI (2022), Impact assessment support study

6.2.2. Impacts on working conditions and skills

The impact of the policy options on working conditions is expected to be positive, although it has not been possible to quantify it. By improving safety, the policy options will result in saved lives (of passengers but in particular of crew), avoid injuries and improve the attractiveness of employment in the sector. The creation of a PSC regime for fishing vessels is in particular expected to improve the working and living conditions on board fishing vessels subject to PSC.

The impact is expected to be higher in PO C and PO B than in PO A, resulting in the highest number of lives saved and injuries avoided in PO C. In addition, the knowledge sharing and training organised by EMSA will improve the skills of PSCOs in light of new developments which may be relevant for PSC inspections in the future, including but not limited to renewable and low carbon fuels, automation and autonomous shipping.

6.2.3. Impacts on fundamental rights

The policy options were assessed to determine if they have an impact on the fundamental rights and/or equal treatment of EU citizens. The starting point of the assessment of the fundamental rights is the Charter of Fundamental Rights of the European Union[77]. All three of the POs were assessed having regard to the relevant EU instrument and it was concluded that they maintain full respect for human and fundamental rights and none will have any negative impact thereon.

6.3. 6.3. Environmental impacts

The impact of the policy options on the environment is also an indirect one, as it depends on the PSC inspections as explained in section 6.2.1, that are expected to lead to a reduction in the number of ship deficiencies over time, to an improvement in safety and as a consequence to a reduction in accidents and pollution. The environmental impact of maritime casualties derives from ships sinking, cargoes lost and oil spills (either as cargo or from bunker fuels). While there has not been a single significant oil spill similar to that of the Erika (1999) or Prestige (2002) accidents in EU waters for almost 20 years, the possibility of such an incident is nonetheless present and has to be mitigated against. Similarly and in the context of the European Green Deal and the "Fit for 55" package, it is likely that there will be a significant change in ship propulsion and fuels used in the coming decades. This will have implications for the entire shipping and fishing industries and can be expected to have an impact on the way PSC inspections are conducted.

Furthermore, 23 cases of pollution due to bunker fuel lost were recorded in 2019 for commercial and larger fishing vessels. In the baseline scenario, the cumulative number of tonnes of bunker fuels lost between 2025 and 2050 is estimated at 20.2 thousand (see Table 7). PO C would result in 98 tonnes of bunker fuel lost avoided (33 tonnes

[77] OJ C 326 of 26.10.2012 p.2

involving commercial vessels and 65 tonnes involving fishing vessels) during 2025-2050 relative to the baseline, followed by PO B (75 tonnes of bunker fuel lost avoided, 33 tonnes involving commercial vessels and 42 tonnes involving fishing vessels) and PO A (30 tonnes of bunker fuel lost avoided, involving fishing vessels). This is expected to positively impact on the quality of marine water and on biodiversity. Thus, all policy options contribute towards Sustainable Development Goal 14 ("Conserve and sustainably use the oceans, seas and marine resources for sustainable development"), although the positive impact of PO C is the highest.

Table 7: Bunker fuel lost cumulative for 2025-2050 (in tonnes)

	Baseline	Difference to the baseline		
		PO A	PO B	PO C
Bunker fuels lost	20,200	30	75	98

Source: COWI (2022), Impact assessment support study

No significant harm is expected on the environment in any of the three policy options, in particular in the area of sustainable use and protection of water and marine resources to which the initiative relates. On the contrary, as explained above, all three policy options are expected to have small positive impacts on the quality of water and biodiversity – with the highest impact among the three projected in PO C.

7. 7. HOW DO THE OPTIONS COMPARE?

7.1. 7.1. Effectiveness

The assessment of effectiveness looks at the extent to which the general and specific objectives (SO) of the intervention, as previously described, are met. Table 8 provides the link between policy objectives and assessment criteria.

Table 8: Link between objectives and assessment criteria

General objectives	Specific objective	Assessment criteria
The general objectives are: (i) to maintain a level playing field and avoid market distortions, (ii) to ensure high levels of maritime safety (iii) to ensure prevention of maritime pollution	**SO1** - Align EU legislation with new international rules	Expected improvement in clarity and functioning of the internal market
	SO2 - Protect fishing vessel, their crews and the environment	Changes in the number of fatalities and injuries involving fishing vessels Changes in the number of tonnes of bunker fuel lost at sea involving fishing vessels
	SO3 - Ensure higher uptake of digital solutions	Enforcement costs savings for port State authorities due to the uptake of digital solutions
	SO4 - Ensure efficient and harmonised approach in undertaking PSC inspections	Administrative costs savings for ship operators Changes in the number of fatalities and injuries involving commercial and fishing vessels Changes in the number of tonnes of bunker fuel lost at sea involving commercial and fishing vessels

Concerning **SO1**, all three policy options incorporate the changes already adopted with the context of the Paris MoU and allow for full alignment of the EU legislation with the international body on whose practice and policies the Directive is largely based. As previously stated although the Paris MoU has made changes to the way PSC should be carried out throughout the region these cannot be implemented unless and until the Directive is amended. Alignment and update of the Directive to incorporate the most up to date international instruments and MoU decisions will improve the Directive but will also improve the practice of PSC throughout the EU. This can be expected to strengthen the safety net across the Union, improve harmonisation and the functioning of the internal market.

As regards alignment with and incorporation of IMO Conventions, all three options provide for the inclusion of the BWM and Nairobi Wreck Conventions which have entered into force and been incorporated into the Paris MoU. Option C goes slightly further and provides for the possible inclusion of two further Conventions if and when they ever enter into force. This would mean that the Directive could be kept up-to-date without having to undergo a full co-decision procedure. Overall and given that neither the HNS nor the Hong Kong Convention have entered into force all three options are equally effective at achieving SO1.

Concerning **SO2**, PO C would be the most effective in that it fully incorporates larger fishing vessels (over 24 metres in length) within the scope of the PSC Directive, with the largest positive effects on safety and protection of marine environment. However, the full incorporation of larger fishing vessels into the PSC Directive may lead to undesired effects on **SO4**. The international conventions applicable to fishing vessels are not the same as those applicable to commercial (cargo or passenger) vessels. This means that direct comparisons and the use of inspection results to target the general merchant fleet is problematic. This issue is exacerbated by the fact that only a rather small number of EU Member States have significant numbers of fishing vessels of over 24 metres in length. Full incorporation of the fishing vessel segment into the PSC Directive would mean that poor results from the PSC inspections of their flagged fishing vessels would impact on their white grey black list flag state performance and on the risk profile of all vessels in the flagged fleet, not just on the fishing vessels. It is clear from the stakeholder consultations that, for the reasons stated above the PSC administrations are in favour of developing (together with the Paris MoU) a voluntary PSC system in parallel to the Directive, rather than extending the scope of the Directive.

PO B, through the creation of a voluntary PSC system for fishing vessels of above 24 metres parallel to the Directive, is also effective in addressing SO2 although the positive effects on safety and protection of marine environment are somewhat lower than those of PO C. On the other hand, PO B does not have undesired effects on **SO4**. The least effective in addressing SO2 is PO A, that only focuses on guidelines and training, and achieves the lowest positive impacts on safety and protection of marine environment. For the reasons identified above, PO B is regarded as the most effective in achieving SO2, while at the same time avoiding undesired effects on SO4.

Concerning **SO3**, PO C is the most effective in terms of enforcement costs savings for PSC authorities due to the uptake of digital solutions (EUR 8.385 million savings relative to the baseline, expressed as present value over 2025-2050). PO B is also effective in addressing SO3, leading to enforcement costs savings for PSC authorities due to the uptake of digital solutions of EUR 7.260 million relative to the baseline, expressed as present value over 2025-2050. Incentivising the use of electronic certificates by linking their use to the ship risk profile means that third countries continue to have a choice and can continue to call to EU ports with paper certificates – albeit with a disadvantage. PO A is the least effective in addressing SO3, leading to enforcement costs savings of EUR 2.804 million relative to the baseline, expressed as present value over 2025-2050.

Concerning **SO4,** all three POs require a QMS to allow PSC administrations to identify systemic weaknesses. PO B and PO C will have similar effects, making provisions for dealing with identified problems relating to reporting the actual time of arrival/departure, over-inspection, missed inspections caused by force majeure situations (such as the Covid-19 pandemic). Similarly PO B and PO C also address the issue of re-focussing PSC on environmental issues while retaining the risk based approach. With regard to the issues of the numbers of inspectors carrying out inspections and the validation of inspection reports

PO A makes recommendations while PO B and PO C amend the Directive to formalise what is considered best practice. On this basis, PO B and PO C are regarded as more effective in achieving SO4 than PO A.

7.2. 7.2. Efficiency

Efficiency concerns "the extent to which objectives can be achieved for a given level of resource/at least cost". The major costs of the policy options come in the form of enforcement costs and administrative costs for PSC authorities and costs for EMSA. They are summarised in Table 9 below.

PO C leads to the highest total costs among the three policy options, estimated at EUR 31.803 million in addition to the baseline costs, expressed as present value over 2025-2050. The highest total costs in PO C are the enforcement costs and administrative costs for PSC authorities, and adjustment costs for EMSA. A large part of enforcement costs are linked to the requirement that all expanded inspections are carried out by more than one inspector, and adding environmental parameters to the ship risk profile used to target ships, while the administrative costs are linked to the requirement that all PSC inspection reports are validated by a validator other than the inspector who carried out the inspection (see section 6.1.1). PO B shows lower costs than PO C, estimated at EUR 29.887 million in addition to the baseline costs, expressed as present value over 2025-2050. The highest cost categories are the same as in PO C. Finally, PO A shows the lowest total costs among the POs, estimated at EUR 17.947 million in addition to the baseline costs.

Table 9: Summary of costs and benefits of policy options – present value for 2025-2050 compared to the baseline (in million EUR), in 2020 prices

	PO A	PO B	PO C
Total costs	**17.947**	**29.887**	**31.803**
PSC authorities			
Administrative costs	4.235	8.595	8.643
Adjustment costs	2.570	2.570	2.570
Enforcement costs	6.508	6.697	8.174
Flag State authorities			
Adjustment costs	0.000	4.831	4.831
EMSA			
Adjustment costs	4.138	6.479	6.479
Ship operators			
Enforcement costs	0.496	0.715	1.105
Total benefits	**24.038**	**48.985**	**58.752**
PSC authorities			
Enforcement costs savings	2.887	8.406	9.503
Ship operators			
Administrative costs savings	5.530	5.530	5.530
Reduction in external costs of accidents	15.621	35.048	43.718
Net benefits	**6.092**	**19.098**	**26.949**

Source: COWI (2022), Impact assessment support study

In terms of total benefits, PO C shows the highest benefits among the three policy options mainly due to the reduction in the external costs of accidents. Total benefits, including enforcement costs savings for PSC authorities and administrative costs savings for ship operators, are estimated at EUR 58.752 million relative to the baseline, expressed as present value over 2025-2050. PO B shows somewhat lower benefits than PO C, estimated at EUR 48.985 million, while PO A is estimated to result in the lowest benefits of the three options (EUR 24.038 million). The impact of the avoided pollution due to the tonnes of bunker fuel lost was not possible to be monetise but also in this case the highest benefits are projected in PO C, as shown in section 6.3.

All policy options result in net benefits. The net benefits are largest in PO C, estimated at EUR 26.949 million relative to the baseline, expressed as present value over 2025-2050, followed by PO B (EUR 19.098 million) and PO A (EUR 6.092 million). PO C also shows higher benefits to costs ratio (1.85) relative to PO B (1.64) and PO A (1.34).

Considering the sensitivity analysis on the impacts of the policy options on external costs of accidents, provided in section 6.2.1, the net benefits and the benefit to cost ratio have been calculated for each case and are provided in Table 10. The table shows that even with lower values of the elasticity, all policy options would still result in net benefits and PO C would result in the highest benefit to cost ratio, followed by PO B.

Table 10: Results of the sensitivity anaysis on net benefits and benefit to cost ratio of policy options

	Difference to the baseline		
	PO A	PO B	PO C
Net benefits (in million EUR)			
Central case	6.092	19.098	26.949
10% lower elasticity	1.514	10.010	17.203
15% lower elasticity	0.335	6.407	8.977
Benefit cost ratio			
Central case	1.34	1.64	1.85
10% lower elasticity	1.08	1.33	1.54
15% lower elasticity	1.02	1.21	1.28

Source: COWI (2022), Impact assessment support study

7.3. 7.3. Coherence

Internal coherence. The internal coherence concentrates on how the different elements within the Directive work together to achieve the objectives. It should be noted that this does not only concern the Directive itself, but also its accompanying secondary legislation (delegated and/or implementing acts) and rules as well as interpretative guidelines. Although all three POs address the identified problems, they do so in different ways. PO A addresses the problems and objectives in such a way that room for flexibility remains, meaning that while there is alignment with the international instruments the majority of guidance is by recommendation. PO B and PO C propose amendments to the Directive itself for all aspects that require further harmonisation and thus ensure a higher degree of internal coherence than PO A.

External coherence. The external coherence concentrates on the compliance of the Directive with key EU policy objectives and international legislation. Revising the Directive and aligning with the most up-to-date Paris MoU and IMO provisions ensure a modern harmonised approach. As such, all three legal regimes will be consistent. As PO A, PO B and PO C all seek alignment with the current international legal regime, external coherence will be guaranteed in all three policy options.

7.4. 7.4. Subsidiarity and proportionality

As highlighted in section 2 there is a clear need for EU action on all the problems identified, and their drivers. The current Directive does not apply to larger fishing vessels and refers to outdated legislation and procedures. In addition, experience with the Directive has shown PSC is not always being carried out in the most efficient manner, notably as regards the use of electronic certificates and having regard to environmental issues. Member States individually are not able to tackle all the problems identified. As PSC is based on a shared inspection burden and a common system for targeting and selection of vessels for inspection and the carrying out of inspections, common action to improve the Directive is essential. To avoid a fragmented legal framework, there is a

need for EU action. As such, there is a right for the EU to act. As all policy options ensure harmonisation of the legal framework, the subsidiarity requirement is fulfilled. In any event, as stated in Section 3.2, the principle of subsidiarity does not apply to areas subject to EU exclusive competence pursuant to Article 3(2) TFEU.

In relation to proportionality, the objectives are achieved by improving the way that PSC inspections are carried out. PO A contributes to the objectives by focusing on improving the ability of national PSC administrations to inspect ships. Apart from alignment and the requirements for a QMS the focus is on recommendations.

PO B additionally contributes to the objectives by providing for a voluntary PSC system for fishing vessels, while PO C fully incorporates larger fishing vessels within the scope of the PSC Directive. As fewer than 10 of the 22 EU Member States which apply the PSC Directive (those with sea-ports) are visited by larger foreign fishing vessels, this is likely to result in political resistance or reluctance in taking this measure forward and making the necessary changes to national legislation and investments in training for inspections that will not be carried out. On electronic certificates PO B links their use with the ship risk profile and in this way provides a real and achievable incentive for flag states to make the digital move. PO C is more ambitious, mandating the use of electronic certificates, and thereby phasing out paper certificates. However, while it is desirable to move to electronic statutory certificates, the effective banning of paper certificates provided for in PO C may prove difficult to implement politically and may provoke negative reactions in third countries and within the IMO. EU Member States as flag states may fear that their vessels when operating in third country ports may be subject to retaliatory action by states which continue to use paper certificates and may therefore be reluctant to take the step to end all use of paper certificates.

During the stakeholder consultation, it became clear that provision of some sort of PSC for fishing vessels is an important aspect of change but that the Member States administrations would prefer that this was done voluntarily and with the cooperation of the Paris MoU. Similarly, while all stakeholders see the need for more digitalisation unwanted spill over effects should be avoided. For this reason, PO B is seen as more proportional than PO C, while contributing more towards the objectives than PO A

8. 8. PREFERRED OPTION

8.1. 8.1. Identification of the preferred policy option and stakeholders views

Although each of the options addresses the problems identified, their drivers and the specific objectives, some options are more effective in achieving the specific and general objectives. Based on the assessment done, PO B is equally effective with PO A and PO C in addressing SO1. PO B is regarded as the most effective in addressing SO2, while at the same time avoiding undesired effects on SO4. PO B is also effective in addressing SO3, although the most effective option is PO C. With regard to SO4, PO B and PO C are equally effective and more effective than PO A.

With respect to efficiency, PO C has the highest additional costs, followed by PO B and PO A. When linking costs to benefits, PO C also yields the highest benefits in terms of improving maritime safety and thus monetised benefits, and enforcement cost savings for the PSC authorities. As the additional benefits outweigh the additional costs, PO C is seen as the most efficient of the options proposed. None of the options leads to excessive

costs in achieving the objectives set, while PO B is relatively close in terms of net benefits and benefit to cost ratio to PO C.

On internal coherence, as PO B proposes amendments to the Directive itself for all aspects that require further harmonisation, it ensures a higher degree of internal coherence than PO A, and equal to that of PO C. External coherence will be guaranteed for all policy options, including PO B, as they all seek alignment with the current international legal regime.

The subsidiarity requirement is fulfilled for all options, including PO B, as they all ensure harmonisation of the legal framework. However, PO B is seen as more proportional than PO C, while contributing more towards the objectives than PO A.

Stakeholder consultations showed that PSC administrations are in favour of developing (together and within the Paris MoU) a voluntary PSC system in parallel to the Directive (as in PO B), rather than extending the scope of the Directive to incorporate large fishing vessels (as in PO C). All PSC authorities are in favour of the increased and enhanced use of electronic certificates in PSC. However, the effective phasing out of paper certificates provided for in PO C may prove difficult to implement politically and may provoke negative reactions within the IMO and in third countries. EU Member States as flag states may fear that their vessels when operating in third country ports may be subject to retaliatory action by those states and therefore be reluctant to take the step to end all use of paper certificates.

On the issue of electronic certificates the preference for PM7C whereby the use of electronic certificates will be encouraged and supported by developing common data standards, an electronic validation tool and repository and incentivised by linking their use with the ship risk profile, is justified for political as well as practical reasons.

On the political level, if the Commission were to propose the total phase-out of paper certificates (PM7B) by mandating their replacement with electronic certificates there would be significant resistance both from within the EU flag States but also from third country flags and the IMO. As mentioned in section 2.2 of the Impact Assessment report the current take up rate of electronic certificates in the EU is about 20% and EU legislation lacks a framework for the use of electronic certificates and the electronic provision of ships statutory certificates. This means that even an EU ship equipped with electronic certificates calling to a port in another EU State (where the trust level between administrations should objectively be high) still has to carry paper versions in case the electronic versions are not accepted.

As PSC applies to both EU and third country foreign flagged vessels calling to EU ports and as approximately 70% of vessels operating internationally in EU waters are flagged in third countries, if the EU were to unilaterally move to refusing to accept paper certificates in PSC, EU flag and port States would fear retaliation from those third countries which are either unwilling or unable to move to electronic certificates. This is a matter which needs to be progressed but it will need to be handled taking account of the concerns of EU flag States, the Paris MoU, the IMO, the recognised organisations (which act for most flag States) and the third countries.

The incentivisation of electronic certificates by linking their usage to the SRP nonetheless clearly indicates the EU preference in this matter but allows for those third countries that do not wish to work on this issue not to do so. As this issue needs to be

handled sensitively rather than unilaterally it is submitted that PM7C achieves the required objective, addressing along the running issue in a balanced and achievable way.

On the issue of fishing vessels PSC the preferred option represents a balanced option. The EU has a long and productive association (since 1995) with the Paris MoU in the joint development of PSC standards and the preferred measure would allow for the development of fishing vessels PSC in a gradual and organic manner which takes account of the required flexibility.

The preferred measure PM6B, which would provide for a voluntary PSC system for fishing vessels of above 24 metres, which will exist in parallel to the Directive by means of guidelines, training and an inspection database for targeting ships and reporting on inspections is expected to work and through the MoU to deliver on this aim. The system will be voluntary for the Member States that want to implement it not for the fishing vessels themselves. The alternative (PM6C) of full incorporation of the fishing vessels into the Directive would freeze the EU situation at the moment of adoption and would not allow for the gradual development of standards.

As to why the PM6B is proposed as a voluntary separate system rather than a compulsory free standing system this has to do with flexibility and the way that standards are developed within the PSC community by consensus. One of the most important conventions which would be applicable to fishing vessels is the 2012 Cape Town Agreement (CTA). The CTA adopted by the IMO, consists of minimum safety measures for fishing vessels that mirror the International Convention for the Safety of Life at Sea (SOLAS) as large parts of SOLAS to not apply to fishing vessels. Once in force, the CTA will set minimum requirements on the design, construction, equipment, and inspection of fishing vessels of 24 meters or longer that operate on the high seas. However and significantly, the CTA has not yet reached its ratification threshold and therefore has not yet entered into force. By providing for a voluntary system for those EU Member States that wish to carry out these inspections a system of PSC can be developed organically by Member States, the MoU, the Commission and EMSA. This will retain the necessary flexibility for the new system in its early phase when it is subject to the most change and means that the CTA can be incorporated into fishing vessels PSC when the CTA enters into force, which is hoped will be in the next five years. Creating a compulsory stand-alone system means that the parameters will be fixed from its date of adoption and will make it difficult to adapt and develop.

With regard to the White Grey Black (WGB) list and its potential impact on PSC for fishing vessels the WGB list is an important element used in determining the ship risk profile and therefore the selection of ships for inspection. During PSC inspection as deficiencies are identified these are recorded and the reports are collected and evaluated allowing for the evaluation of the performance of flag States and recognised organisations, which act on their behalf. The Paris MoU publishes a flag State performance list each year calculated by relating the number of detentions to the number of inspections over the previous three years, with white listed flags performing the best in PSC inspections and with black listed flags performing worst.

Those EU Member States (approximately 10) with large fishing fleets potentially eligible for PSC are concerned that the mere fact of having their fishing vessels inspected will negatively impact on their overall fleet if fishing vessels were to be fully incorporated (PM6C) into the Directive. It is for this reason, inter alia that Member States have expressed a clear wish that this remains a voluntary system parallel to but separate from the Directive.

On the basis of what precedes and the analysis above it can be concluded that PO B is the preferred policy option.

8.2. 8.2. REFIT

This initiative is part of the Commission Work Programme 2021 under Annex II (REFIT initiatives), under the heading Promoting our European Way of Life[78]. It has an important REFIT dimension in terms of alignment and simplification of safety legislation, of improving the safety profile in particular of the larger fishing vessel segment and of assisting Member State PSC authorities to better discharge their inspection functions.

Despite the fact that the voluntary expansion of PSC to larger fishing vessels and the targeting of more environmentally polluting vessels for inspection will increase the overall policy ambition, the revision of the Directive also includes some important simplification aspects. While more inspections will have to be carried out, this has to be seen against the simplification and improvement that will accrue from the use of electronic certificates in PSC. The preferred policy option results in enforcement costs savings for the PSC authorities estimated at EUR 9.503 million, expressed as present value over 2025-2050 relative to the baseline and administrative costs savings of EUR 5.530 million for ship operators.

In addition, the preferred policy option includes elements of simplification:

- It will clarify the situations and circumstances in which PSC inspections can be missed either for normal operational reasons or in force majeure situations.
- The provision by EMSA of assistance to national PSC authorities with training on how to carry out PSC of fishing vessels, and the provision of a dedicated inspection database to target and select vessels for inspection and to record and share the results of the inspections.
- EMSA will assist Member States regarding the use of electronic certificates in PSC. This will involve the provision of a common data model, a validation tool and a central repository for electronic certificates.
- EMSA training to national PSC staff on technological and regulatory developments as well as on issues arising from renewable and low carbon fuels and other developmens arising from the European Green Deal as well as issues arising from the enforcement of new international Conventions.

8.3. 8.3. Application of the ‘one in, one out’ approach

As explained in section 6.1.2, the preferred policy option is expected to result in administrative costs savings for the shipping sector, estimated at EUR 5.530 million relative to the baseline, expressed as present value over 2025-2050, from the abolition of the 72-hour advance reporting obligation for the operator, agent or master of a ship eligible for an expanded inspection. This is equivalent to around EUR 0.221 million on average per year. No additional costs (administrative or adjustment costs) relative to the baseline have been identified for businesses or citizens.

9. 9. HOW WILL ACTUAL IMPACTS BE MONITORED AND EVALUATED?

The Commission services will monitor the implementation and effectiveness of this initiative through a number of actions and a set of core indicators that will measure

[78] COM(2020) 690 final

progress towards achieving the operational objectives. Five years after the end of the implementation date of the legislation, the Commission services should carry out an evaluation to verify to what extent the objectives of the initiative have been reached.

Actions foreseen for verifying implementation include:

- As the Directive requires that the results of port State control inspections have to be uploaded to the THETIS database within 72 hours of the inspection, EMSA and the Commission have a near-real-time means of monitoring implementation of the Directive's provisions in and by the Member States.
- The Commission/EMSA can thereby monitor the THETIS database to verify that inspections are being carried out as required and that the reports are uploaded to the database, in this regard the Commission will monitor the number of inspections and in particular expanded inspections, the number of inspections carried out by more than one inspector, the number of inspections in which electronic certificates are involved and the number of inspection reports validated by someone other than the inspector carrying out the inspection. These indicators will also be monitored for inspections carried out on-board fishing vessels of above 24 meters in length by those Member States which carry out these inspections.
- The fact that Commission/EMSA can monitor the progress of Member States effectively on a weekly basis and that the Member States know that they are being monitored means that if a measure becomes mandatory the Commission can take swift action to address any shortcomings. This can take the form of additional technical support or training from EMSA or ultimately the Commission can open an EU pilot or take infringement action against the Member State concerned for non-implementation of the Directive[79].
- Visits to Member States to verify operations on the ground, these are carried out by EMSA on behalf of the Commission as part of EMSA's support role to the Commission[80]. To be translated into visits reports and identified shortcomings. These visits are useful to identify underlying problems or structural issues. The introduction of the QMS may also help in this regard.
- Member States will have to have a QMS to certify their organisation, policies, processes, resources and documentation are appropriate to achieve its objectives. This will have to be certified and subsequently subject to audit every five years. Member States will have to share with Commission/EMSA the results of the audits carried out by the accredited body such that the PSC administration retains its QMS certification.
- Horizontal analysis required[81] to be carried out by EMSA (giving an indication of how the legislation is functioning and identifying gaps and what can be done to address them) and reported to the Commission and Member States (discussed in workshops).This is particularly useful in identifying situations where the EU legislation is seen as problematic by more than one Member State.

[79] It should be noted in this regard that since the entry to effect of Directive 2009/16/EC the Commission has not been obliged to take any infringement action against any Member State for non-compliance with the provisions of the Directive. Assistance from EMSA and/or additional training has been sufficient.
[80] EMSA carries out such visits under Article 3 of Regulation (EC) No 1406/2002 establishing a European Maritime Safety Agency as part of its core tasks, as such no additional costs are expected to arise.
[81] Article 3(5) Regulation (EC) No 1406/2002 establishing a European Maritime Safety Agency

ANNEX 1: PROCEDURAL INFORMATION

10. 1. LEAD DG, DECIDE PLANNING/CWP REFERENCES

The lead DG is the Directorate-General for Mobility and Transport DG MOVE, Unit D2: Maritime Safety

DECIDE reference number: PLAN/2019/5430

Item 35 in Annex II to Commission Work Programme 2021: Promoting our European Way of Life[82].

11. 2. ORGANISATION AND TIMING

The impact assessment follows the ex-post evaluation of the Port State Control Directive performed as part of the overall maritime transport policy Fitness Check in 2018.

The impact assessment started in 2020, with inception impact assessment published on 9 October 2020[83].

The impact assessment on a possible review of the Port State Control Directive was coordinated by an Inter-Service Steering Group (ISSG). The Commission Services participating in the ISG were: Secretariat-General, Legal Service, DG Maritime Affairs and Fisheries, DG Climate Action, DG Migration and Home Affairs, DG for Employment, Social Affairs and Inclusion, DG Environment, DG Health and Food Safety and the European Maritime Safety Agency (EMSA).

The Inter-Service Steering Group met 5 times: on 22 January 2021, 3 March 2021, 15 October 2021, 24 March 2022 and 16 June 2022. It was consulted throughout the different steps of the impact assessment process: notably on all stakeholder consultation materials and deliverables from the external contractor and on the draft Staff Working Document.

12. 3. CONSULTATION OF THE RSB

The draft report was discussed by the Regulatory Scrutiny Board on 19 July 2022, which issued a positive opinion. The Board also made several main recommendations for improvement which were addressed in the final impact assessment report as follows:

RSB recommendations	Modification of the IA report
(1) The report should better explain the international conventions that are relevant for the PSC Directive, in particular the Paris Memorandum of Understanding (MoU), and the added-value of the PSC Directive. It should explain from the outset the voluntary character of these arrangements and the role	In Section 1 the historical development of PSC and its incorporation into EU law is better explained. The best efforts nature of the Paris MoU is also explained as are the difficulties posed by flag states which either cannot or do not wish to adequately enforce the international standards. The importance of the directive in providing for a level playing field and harmonised system between EU member

[82] COM(2020) 690 final

[83] https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2017-3807523_en
https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12641-Port-State-control-Further-improving-safety-security-and-sustainability-of-maritime-transport_en

of the PSC Directive in their implementation in the EU.	states is also reinforced.
(2) The report should better present the evidence of the problems it addresses and of the need for the EU to act. The evidence should demonstrate the inefficient and non harmonised approach to PSC inspections. The report should clarify the notion of 'efficient inspection rate' and show to what extent over-inspections present a problem, not only in terms of market distortions but also in terms of efficiency. For larger fishing vessels, the report should establish a clear link between the poorer safety record and lack of inspections (or reporting thereof). It should clarify whether the market failure relates to the lower level of inspections, the low quality of inspections (when carried out by only one inspector) or on both and explain why.	The issues of non-harmonised and inefficient inspections is better explained in section 2. The issue of over-inspection within problem driver 3 and why this creates a burden for all Member States is reinforced. The relatively poor safety record of fishing vessels in general and the fact that fishing vessels represent 18% of the total number of fatalities involving all vessels (commercial transport and fishing) falling within the scope of the maritime accident investigation Directive is further developed. The fact that a systematic inspection regime has improved the safety record of commercial transport vessel since its introduction and the likelihood that this could be applied to the fishing sector is also explained.
(3) In presenting the policy options and their impacts, the report should focus on those issues that involve policy choices (i.e. electronic certificates, large fishing vessels and new international conventions). Policy measures, which are common to all policy options, should still be assessed but their impacts should be presented also in disaggregated form in order not to obscure the impact of the main policy choices. Where the report uses packages of policy measures, it should explain the underlying rationale of each of the packages.	Section 5.2 distinguishes between the policy measures which are common to all policy options and those which are distinct. The impacts of these options is better presented in a disaggregated fashion. The underlying rationale for each of the options is also better explained.
(4) The main report should give an indication of the main assumptions underpinning the impact analysis, in particular for the uptake and expected effectiveness of voluntary nonlegislative measures (e.g. inspections of fishing vessels). In terms of the administrative costs, it should explain the origin of the 72-hour advance notice and why it can be abolished now.	In Section 6.1.1 the assumptions regarding the take up rate of for port State control for fishing vessel is better explained. In Section 2.2 the obsolescence of the 72 hour pre-arrival notification for vessels subject to and expanded inspection is better explained.
(5) The report needs to justify better the choice of the preferred policy option (B) given that the analysis indicates that this option does not produce the highest net benefit and the Benefit Cost Ratio. It should clarify the role of the international acceptance of electronic certificates and the role of the white/grey/black list in the choice of the preferred policy option. It should also explain this list, its content and its consequences, and clarify how it is set up and adapted over time.	Section 8.1 on the preferred policy option B has been reinforced to better explain the political choices and why a voluntary system of PSC for larger fishing vessels is more deliverable in the short to medium term. The incentivised phase-in of electronic certificates rather than a mandatory phase out of paper certificates and the impact this would have on third country vessels (making up 70% of vessels engaged in international voyages in the EU) is also better explained.

The draft report was submitted to the RSB on 22 June 2022 and was discussed by the Board on 19 July 2022.

13. 4. EVIDENCE, SOURCES AND QUALITY

The impact assessment is based on a several sources, using both quantitative and qualitative data, collected from Member States and industry. This includes:

- The ex-post evaluation of the Port State Control Directive
- Maritime Fitness Check 2018
- Stakeholder consultation activities (see Annex 2)
- EMSA mid-cycle horizoinal analysis of visits to Member States
- External support study carried out by an independent consultant (COWI A/S, supported by Studio Legale Grimaldi and Ecorys)
- Commission experience in monitoritung and implementing the Directive
- Various databases managed by EMSA.

ANNEX 2: STAKEHOLDER CONSULTATION

1. INTRODUCTION

This annex provides a summary of the outcomes of the consultation activities which have been carried out for the review of Directive 2009/16/EC on port State control, including in the context of the external support study. It notes the range of stakeholders consulted, describes the main consultation activities and provides a succinct analysis of their views and the main issues they raised.

The objective of the consultation activities were to collect information and opinions of stakeholders on the key problems and associated drivers, definition of relevant policy objectives linked to those problem areas and the identification, definition and screening of policy measures that could eventually be incorporated into policy options for this Impact Assessment as well as gather information and opinions on their likely impacts.

The main consultation activities included:

- Four exploratory interviews with EU level representatives of key stakeholders, particularly to support and refine the overall problem definition and possible policy options.
- A targeted stakeholder survey organised by the consultant in charge of the external support study to the Impact Assessment, running from 7 September 2021 to 6 October 2021, among key stakeholders to fill specific information requests, particularly to support the assessment of impacts of possible policy measures.
- Twenty two targeted interviews organised by the consultant in charge of the external support study to the Impact Assessment, running from 13 July 2021 to 16 September 2021, among key stakeholders to fill specific information requests, particularly to support the assessment of impacts of possible policy measures.
- Additional consultation activities organised by DG MOVE and the consultant in charge of the external support study to the Impact Assessment in order to consult the Member States and key stakeholders by providing their views on the different policy measures but also to validate the emerging and final results of the support study to the Impact Assessment in terms of the quantification of the impacts. These activites took place in the context of meetings of the EU Sectoral Social Dialogue Committee on maritime transport (16 April 2021, 23 September 2021 and 16 December 2021), the EU Sectoral Social Dialogue Committee on Sea Fisheries (29 January 2021, 8 March 2021 and 16 November 2021), the EU Sector Socal Dialogue Committee on ports (19 November 2021), an informal meeting of the EU/EEA Maritime Transport Directors (30 November 2021), virtual and in person meetings of the port State Control Committee of the Paris MoU (May 2021 and May 2022) meetings of the of the EU Committee on Safe Seas and the Prevention of Pollution from Ships (17 May 2021, 11 November 2021 and 31 May 2022).

The information collected from stakeholders was key in allowing the Commission to refine the design of the POs as well as to assess their economic, social and environmental impacts, compare them and determine which PO is likely to maximize the benefits/costs ratio for the society and fully contribute to achieving a more effective and efficient port State control mechanism that would allow a better targeting of substandard shipping.

Findings from those processes complemented the desk research carried out in the context of the external support study.

2. METHODOLOGY

The remainder of the annex presents the main findings from the analysis of stakeholder contributions to the consultation process. They are structured around the main elements of the intervention logic, namely problems and their drivers, key policy objectives as well as key needs and possible aspects of policy design. In general, the initiative as presented in the Inception Impact Assessment received positive reactions. A consultation strategy, covering the stakeholder consultation activities carried out as part of the study, has been developed and further fine-tuned throughout the different phases of the study.

A mixed methods approach has been adopted to conduct the targeted stakeholder consultation activities, which have taken place gradually throughout the implementation of the study. This allowed to capture and fill in data gaps along the study process and ensure synergies and evidence-build up for the different study tasks. Methods have been adapted to take account of the development of the COVID-19 pandemic. For this reason, interviews and meetings have been held by videoconference.

It is to be noted that an exemption was granted from carrying out an Open Public Consultation (OPC) in relation to this Impact Assessment, as previous experience with the ex-post evaluation and the Maritime Fitness Check proved that such a technical topic would yield little interest from the general public. The general public was nevertheless offered the opportunity to provide any views on this initiative, via an announcement on DG MOVE web page[84] and a dedicated functional mailbox.

One contribution was received from a shipowner association, this association stated that it supported the initiative on PSC as it aims to add further environmental and climate protection elements as well as the use and acceptance of electronic statutory certificates.

2.1. Feedback on the Inception Impact Assessment

The Commission received 10 responses to the Inception Impact Assessment for this initiative during 09 October 2020 to 20 November 2020.

There were 2 responses provided by NGOs and 5 provided by business associations, actors from shipping and port industry including a trade association of seafarers. 2 Member State public authorities provided feedback as well while there was also an anonymous contributor.

2.2. Exploratory interviews and targeted consultations

Between 08 February 2021 and 12 February 2021, 4 exploratory interviews have been conducted to gain a better understanding of the current situation of the PSC regime, collect ideas on possible solutions to the problems and explore the availability of data and related challenges. Those interviews took place with EMSA, the Paris MoU Secretariat, the Danish Maritime Authority and the LIFE Platform.

Further targeted interviews were conducted and an online targeted survey was distributed. Both the interviews and the survey were aimed at a range of relevant stakeholders representing public authorities and other public bodies (national authorities

[84] Maritime safety – three directives under review (europa.eu)

in EU, EEA and third countries, EU and international bodies) industry representatives (including relevant associations of shipowners, port operators and seafarers).

The interviews and surveys focused on obtaining detailed input on the expected impacts (economic, social and environmental) of the measures under consideration in comparison to the baseline, the possible issues that may arise and identifying the level of support for specific measures. Where relevant, stakeholders were asked for input on the cost implications of each measure. Surveys and interviews commenced 13 July 2021 and concluded 16 September 2021.

Table 11: Summary of stakeholder interviews and surveys completed by activity

Consultation activity	EC	PSC	FS	FAC	ROs	IB	IA	Others	Total
Exploratory interviews	1	1	-	-	-	1	1	-	4
Targeted Interviews	1	10	-	-	3	1	4	4	23
E-survey	5	23	8	27	9	4	6	2	84
Sub-total	7	34	8	27	12	6	11	6	111
Multiple consultations	2	6	-	-	3	2	1	1	15
Total	5	28	8	27	9	4	10	5	96

Source: COWI; Note: EC – European Commission services, PSC - Port State Authorities in EU/EEA Member States and third countries, FS – Flag State Authorities, FAC – Members of the Fishery Advisory Councils, ROs – Registered Organizations, IB – International bodies, IA – Industry associations, Others – other actors in maritime transport.

The full list of stakeholders consulted is included in the external support study.

3. Analysis of the results of the stakeholder consultation

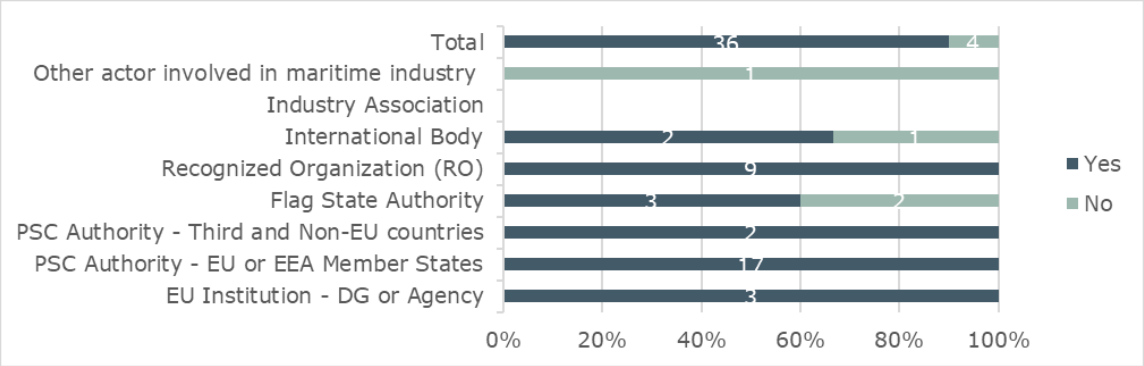
The remainder of the annex presents the main findings from the analysis of stakeholder contributions to the consultation process. They are structured around the main elements of the intervention logic, including the problem areas and their drivers, the policy objectives as well as the key aspects of the design of possible policy measures. The technical support study for this Impact Assessment contains the detailed presentation of findings from the targeted consultation activities.

3.1. Problem areas and policy objectives

The shortcomings of the PSC Directive have been partly raised during the ex-post evaluation of the Directive. Therefore, the problems that the stakeholders face have been extensively discussed during the exploratory, targeted interviews and in the targeted survey.

Respondents to the targeted survey showed to a large extent of being aware of proposed or agreed amendments to the Paris MoU that would involve changes to the EU requirements for PSC inspections if included in the PSC Directive.

Figure 7: Are you aware of key amendments since 2009 or recent proposals for amendments to the Paris MoU that will involve changes to the EU requirements for PSC inspections if included in the PSC Directive?



Moreover the issue of PSC for fishing vessels has been explored in the survey questionnaire. Respondents showed confidence in assessing that the lack of PSC inspections on fishing vessels has moderate to significant negative consequences on the safety of fishing vessels, their environmental impact and on working and living conditions on-board such vessels.

In relation to the weaknesses in PSC targeting of substandard ships vis-à-vis high standard ships, a majority of respondents (33 out 34 respondents) estimated that the share of high-standard ships that are still being unnecessary targeted for PSC inspection are in the range below 10% to 25%. According to interviewed stakeholders, the number of unnecessary targeted vessels would be generally below 25% of the overall yearly inspections in EU ports. In specific, EU Member States such as Germany, Italy and Bulgaria have reported an even lower threshold of less than 10% of unnecessary targeted ships for inspection in a year in their respective ports. On the other hand, the Netherlands reported an average of more than 50% of the ships as being unnecessary targeted. In its response to the survey questionnaire, the Paris MoU Secretariat explained that most substandard ships no longer or hardly operate in the Paris MoU region anymore.

Interviews revealed that there is a general agreement among stakeholders consulted (Germany, Italy, Netherlands, Poland, Estonia, France, Portugal, the European Community Shipowners' Association, the International Chamber of Shipping, the Union of Greek Shipowners, Albania, Norway, the European Sea Ports Organisation, Bureau Veritas, Croatian Register of Shipping, the International Association of Classification Societies) that targeting can be improved if electronic certificates are available for (automatic) validation prior to inspections.

Stakeholders were also surveyed about the effectiveness of the 'ship risk profile' (SRP). Generally, more respondents tended to agree (slightly to moderately) that a) the SRP includes insufficient risk parameters, b) it excludes highly relevant risk parameters. In addition, more respondents agreed (slightly to completely) that c) the SRP should be related to the weighing of generic and historic risk factors, d) it should include ship-specific accident information provided by the Accident Investigation Board and that e) it should include a rewarding element, that lowers targeting, based on good environmental and safety performance of ships.

Concerning the banning mechanism, in the survey, there was a general agreement that change in the banning mechanism is needed. A large majority of respondents (38 out of 49 respondents) agreed that the banning mechanism does not allow to ban all substantially substandard ships.

In relation to the inspection commitment based on the 'fair share' almost all the respondents (PSC authorities) of the survey (20 out of 23 respondents) agreed that the inspection commitment based on the 'fair share' principle contributes to balance the distribution of inspections among EU port States.

In the survey questionnaire, the effectiveness of the current use of PSC inspection guidelines and procedures among PSCOs was explored. Respondents almost equally supported both the following reasons why guidelines and procedures are not always followed effectively by PSCOs: a) Guidelines do not keep the pace with the increasing scope and complexity of PSC inspections, b) Guidelines are not sufficiently flexible to cater for unexpected events (e.g., Covid-19). Several respondents (15 out of 46 respondents) also selected 'others' as a reason; however, they refrained from providing an explanation for their choice.

The effectiveness of the training and retention of PSC officers were also explored. Respondents were generally satisfied with the PSCO training offered by EMSA and the Paris MoU. PSC authorities (both EU/EEA and third countries) showed particular appreciation for the EMSA trainings (13 out of 31 respondents) however to a lesser extent for Paris MoU trainings (8 out of 31 respondents). However, interviewed stakeholders recognized that training is limited considering a widened scope of PSC inspections.

Finally, interviews revealed that the current inspection of paper-based certificates is cumbersome and not optimal and that the lack of a framework for electronic certificates further contributes to lower the overall efficiency of inspections.

3.2. Potential policy measures

The formulation of the policy measures at the time of interviews and survey was not entirely identical with the wording of this report, since fine-tuning continued all along the Impact Assessment process. However, stakeholders have proposed a long list of possible solutions and have been asked to share their ideas on further measures to address the aforementioned problems. The aim was to test their agreement with such measures, their feasibility, costs and potential benefits.

Alignment of the scope of the Directive to the amendments to the Paris MoU

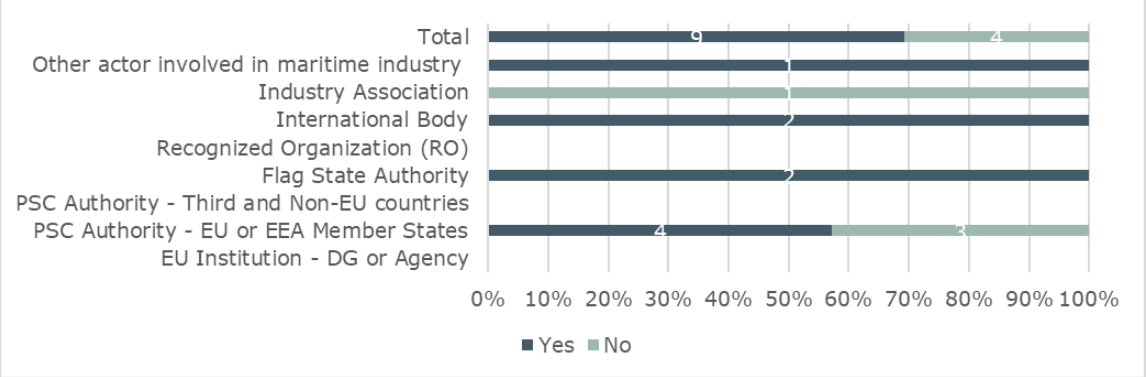
All respondents stated their agreement with the proposed and/or agreed amendments to the Paris MoU. Member States have also specified that the inclusion of these amendments can improve the PSC regime by providing e.g. increased harmonization of PSC procedures, better targeting of vessels for inspection, increased ship safety and protection of the marine environment, increased ship compliance to international requirements, better distribution of PSC inspections between EU Member States.

When asked about how to make the revision process of the PSC Directive faster and more flexible to ensure that amendments to the Paris MoU are timely included in the future, the following interviewed countries expressed a preference for a direct reference of the Directive to the Paris MoU: Bulgaria, Estonia, Germany, Netherlands, Poland and Norway. Germany, Poland and Norway, in addition to Italy supported also the possibility to update annexes of the Directive through the use of Delegated Acts. A more regular revision of the Directive was generally supported among interviewed stakeholders and, in particular, by Italy, Estonia, France, Portugal and the industry (the European Community Shipowners' Association, the International Chamber of Shipping, the European Maritime

Pilots Association EMPA, Bureau Veritas, Croatian Registry of Shipping and the International Association of Classification Societies).

A majority of respondents confirmed that the effectiveness of the PSC Directive can be increased by including further international conventions in its scope.

Figure 8: Will the reference to certain international conventions increase the effectiveness of the PSC Directive, if they are included in its scope?



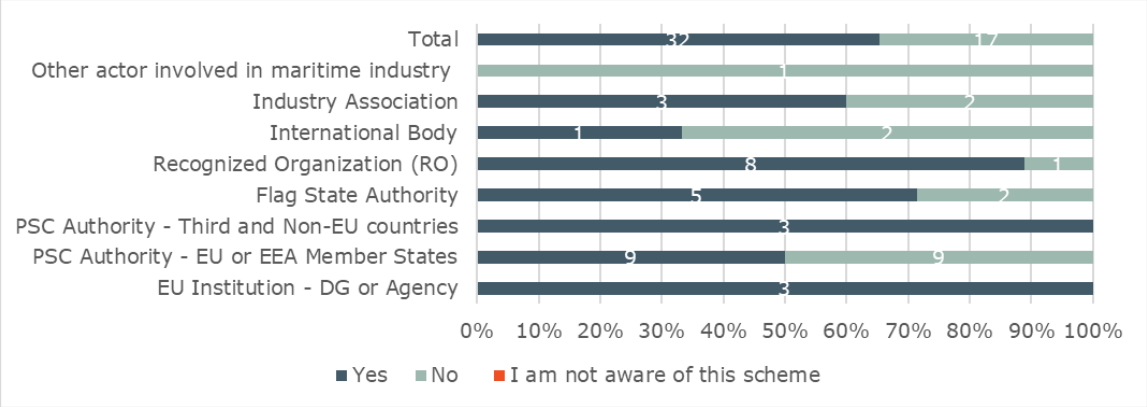
Extension of PSC inspections to fishing vessels

Respondents showed general agreement that the extension of PSC inspections to fishing vessels would moderately to significantly increase fishing vessels' safety standards, improve their environmental impacts and working and living conditions on-board. When asked to express their preference for a perspective inclusion of fishing vessels under the current PSC regime as regulated by the PSC Directive or rather via the establishment of a separate PSC regime, a majority of respondents supported the latter. Again, flag State and PSC authorities were highly supportive of the establishment of a separate PSC regime for fishing vessels; on the other hand, members of fishery advisory councils expressed a clear preference for the inclusion of fishing vessels under the current PSC regime.

Introduction of an incentive scheme for high-standard vessels

A large majority of respondents (42 out of 49 respondents) agreed that ships performing well in terms of safety and environmental protection standards should be actively rewarded through an incentive scheme while the majority agreed with the establishment of an incentive scheme for which high-standard ships would be exempted from or subject to less frequent PSC inspections.

Figure 9: Would you agree with such an incentive scheme?



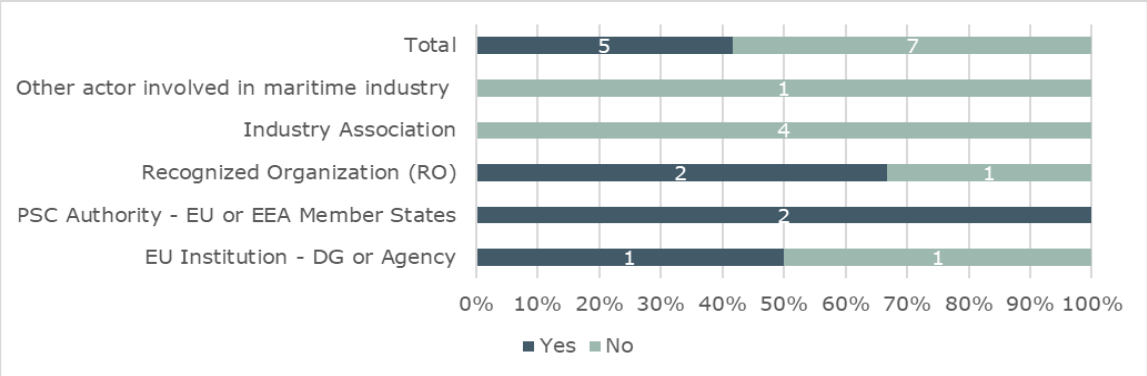
Changes to the banning mechanism

In the survey, a majority of respondents (30 out of 49) stated that the decoupling of the banning mechanism from flag State performance would increase the performance of ship targeting. This was strongly supported by PSC and flag State authorities and international bodies, whereas industry associations and ROs did not agree.

Electronic certificates

The issuance and/or acceptance of the use of electronic certificates during PSC inspections is wide among the stakeholders surveyed.

Figure 10: Would you consider using electronic certificates in the future?



Stakeholder have ranked the main reasons for adopting electronic certificates in order of importance as follows:

1. Less initial inspections vis-à-vis more remote inspections;
2. Cost savings / Better inspections at the same cost;
3. Fewer inspections (i.e., as a consequence of a future change in targeting).

Respondents generally tended to agree with the solutions proposed regarding electronic certificates – to different extents. In specific, more respondents (32 out of 46 respondents) agreed that the PSC Directive should allow for voluntary validation of electronic certificates pre-boarding the ship and that electronic information should be pre-loaded into THETIS by the flag State/RO and used to improve the targeting of ships for inspections.

Figure 11: To what extent do you agree with the following statement? 'The PSC Directive should allow for voluntary validation of electronic certificates pre-boarding the ship'

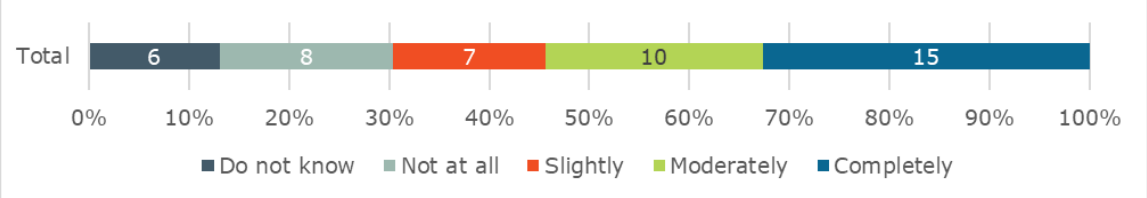
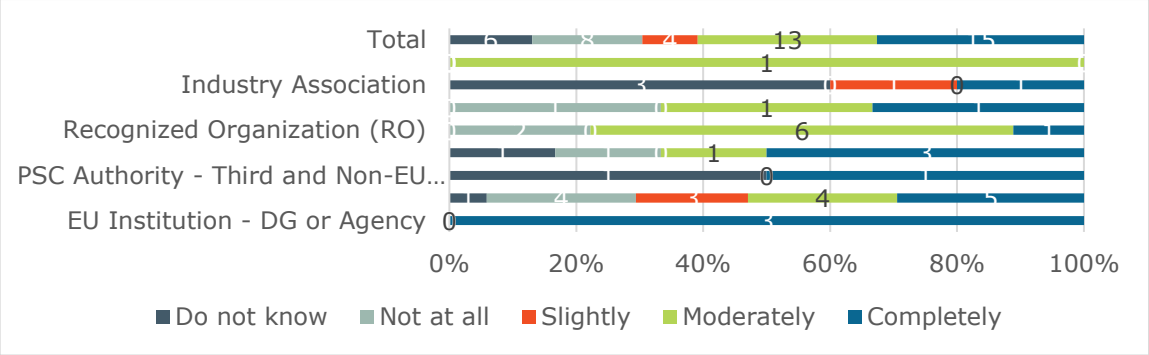


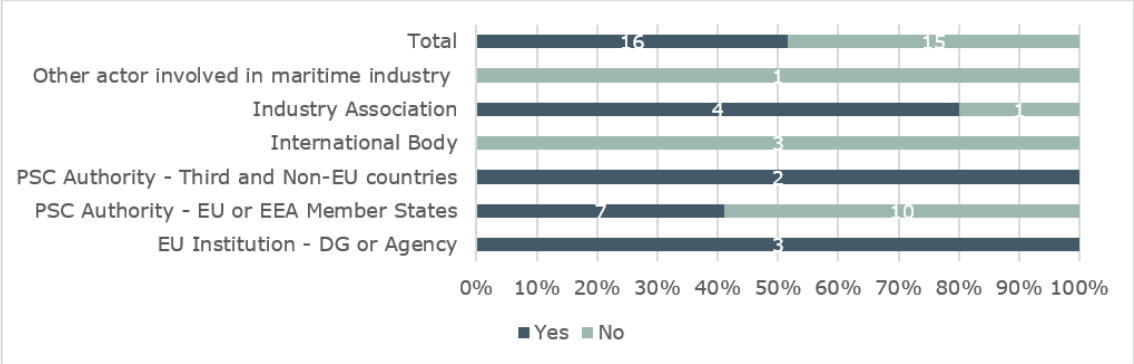
Figure 12: To what extent do you agree with the following statement? 'Electronic information should be pre-loaded into THETIS by the flag State / RO and used to improve the targeting of ships for inspection'



Quality Management System (QMS) for PSC

Respondents were divided on this topic, with industry association being generally supportive of the establishment of a QMS for PSC, whereas international bodies being completely against it. On the other hand, PSC authorities in EU/EEA Member States were divided on the issue.

Figure 13: Do you believe that introducing a requirement to have a Quality Management System (QMS) in place for port State authorities would make the use of PSC inspection guidelines more effective?



Invitation to join the Mediterranean MoU

The Commission is planning on promoting eligible Member States to join the Mediterranean MoU, an information that was shared with stakeholder during the final consultation and validation workshop. In that framework, Italy agreed that the Directive should include an invitation to join the Mediterranean MoU only to Mediterranean Member States. At the same time, France specified that this possibility should be discussed among Mediterranean Member States before being inserted in the Directive.

3.3. Possible impacts

The stakeholders were asked to provide input on the current administrative and inspection cost for PSC and the figures provided on cost /benefits estimations were duly taken into account in Annex 4 in the calculations for the various policy measures and policy options.

3.4. Differences among stakeholder groups

Virtually all consulted stakeholders supported the main problems and objectives addressed in this report. Stakeholders generally agree that some ship safety and

environmental issues are not covered by PSC inspections (international conventions and EU legislation). For this reason, they support the alignment of the scope of the Directive in particular to international instruments that have entered into force since 2009 or are in the process of ratification – the BWM and HK conventions – and to the amendments to the Paris MoU. Stakeholders recognize the positive impacts that the inclusion of international instruments and the alignment to the Paris MoU would bring to the PSC regime. Stakeholders also largely support a more regular revision of the PSC Directive, mainly through direct reference to the Paris MoU or delegated acts.

Stakeholders negatively assess the lack of PSC inspections for larger fishing vessels. This would contribute to the low safety, environmental, working and living standards of fishing vessels. Hence, many of the Member States consulted agree on the extension of PSC to fishing vessels by the creation of a separate regime. On the other hand, members of fishery advisory councils showed uncertainty and only a minority of them (2 out of 6) stated that the extension of PSC inspections to fishing vessels would improve the aforementioned categories.

Regarding the incentive scheme for high-standard vessels, the survey shows that stakeholders support the introduction of such a scheme. However, interviews demonstrate that several Member States believe that the current targeting mechanism would not need any further incentive, as it would already incentivize high-standard performance of vessels - e.g., compared to that of the Tokyo MoU.

On the issue of pre-loaded data from electronic certificates, stakeholders confirm that they largely already use e-certificates. Stakeholders largely agree that the PSC Directive should allow for voluntary validation of e-certificates pre-boarding the vessel and electronic information to be pre-loaded to THETIS and used for targeting purposed. Numerous stakeholders also support the setup of a framework for rewarding and incentivizing the use of electronic certificates. Technical standards for the exchange of data should be defined at the global level.

Finally, the proposal of establishing a QMS for PSC operations does not gather general agreement among stakeholders. Only the industry seems to support such a solution, whereas some Member States, in addition to the Paris MoU Secretariat are not in favour.

ANNEX 3: WHO IS AFFECTED AND HOW?

14. 1. PRACTICAL IMPLICATIONS OF THE INITIATIVE

Summary of the preferred policy option implementation

The revision of the port State control Directive aims at maintaining and improving the level of maritime safety of vessels operating in EU waters. The impacts of the preferred policy option are expected to fall on different stakeholder groups: national port State control authorities, flag State authorities, EMSA, the maritime transport industry (i.e. ship owners/operators), the fishing vessels industry, crews of the vessels and passengers of maritime vessels.

Ensuring a high level of safety is important for the users of transport transporting goods as well as for passengers. It is also important for vessel crews as these persons make up the largest number of persons killed and/or injured in maritime accidents. It is important for consumer protection as well as for the integrity of the internal market that a harmonised level of safety is ensured through coordinated maritime safety inspections carried out in a coherent and harmonised manner across the European Union. There can be no gaps in the maritime safety net.

It is also important for the environment that ships are inspected throughout the Union to ensure environmental standards are maintained and improved. Similarly a harmonised level of protection as regards seafarers working and living conditions on board is assured by the inspection regime.

The preferred policy option identified in the context of this Impact Assessment, policy option B, provides for a voluntary port State control regime for those EU Member States which wish to carry out port State control inspections of larger (above 24 metres) fishing vessels calling to EU ports.

Similarly, option B foresees the encouragement of the use of electronic certificates in PSC by linking the use of these certificates with the ship risk profile used to target ships for inspection. It is expected that by incentivising the use of the certificates and working with the Paris MoU as well as with flag States and the Recognised Organisations to whom the flag states have delegated many tasks that this can lead to a very high level of uptake allowing for better targeting of ships, better prepared and more ship focused enforcement.

Policy Option B envisages that the least performing vessels in environmental terms will be subject to more PSC inspections. This will be based on their environmental performance in previous PSC inspections for all ships eligible for PSC, but for those vessels over 5000 GT (which are the most polluting) the ship risk profile used to target ships for inspection will take the ship's carbon intensity indicator issued by the ship's flag state under the aegis of the IMO into account.

The preferred policy option also provides for improvements in the way that port State control is carried out taking advantage of identified best practice and lessons learned. These include issues such as missed inspections, problems with the inspection

commitment, the number of inspectors carrying out inspections, the validation of inspection reports as well as the requirement to have a quality management system for the Member State PSC activities.

Finally the preferred policy option aligns the Directive with developmens at the IMO and in the Paris MoU.

Implications on consumers, market actors and public authorities

The following key target groups of this initiative have been identified:

- Port State control authorities in EU Member States
- Flag State authorities in EU Member States
- European Maritime Safety Agency (EMSA)
- Owners/operators of maritime transport vessels
- Owners/operators of fishing vessels of above 24 metres length overall
- Crews of the above-mentioned categories of vessel
- Passengers of maritime vessels

EU PSC authorities will be affected in three ways: firstly the extension of scope to larger fishing vessels will mean that those Member States which wish to participate in this voluntary scheme will have to carry out inspections of these vessels. PSC authorities will benefit from the operational support that they will receive from EMSA which should allow them to better discharge their obligations in an efficient and timely fashion particularly when confronted with multiple investigations which have to be carried out at the same time.

The encouragement of the use of electronic certificates should have a positive impact on national PSC administrations by allowing for more focussed, better prepared and ship focused inspections.

A third aspect is that PSC authorities will change the way they carry out inspections to take account of changes adopted by the Paris MoU as well as a number of policy measures proposed by the amendment to take account of lessons learned in implementation of the Directive.

The fourth aspect is that Member States will have to put in place a quality management system (QMS) for their PSC activities. The PSC administrations internal systems will have to be certified and then administration will have to be audited every five years to retain its certification. This implies one-off costs for putting in place the system and ongoing costs for the audit.

EMSA will be impacted as regards PSC of fishing vessels as it is will provide Member States' authorities with training as well as a dedicated THETIS module for fishing vessels helping them to identify the fishing vessels for inspection and recording and sharing the results of the inspections.

The Agency will also have to work with flag States, recognised organisations (which act on behalf of flag states), the Paris MoU and other interested bodies to develop a common data standard, a validation tool and a repository to allow for the use and exchange of electronic certificates in PSC inspections.

EMSA will also provide different forms of technical support and training to national PSC bodies.

In **fisheries**, the owners/operators of fishing vessels of above 24 metres in length overall will be impacted as their vessels will be potentially elgibile for PSC when they call to a port in a state other than their state of registry. The extension of PSC through a voluntary measure should lead to an improvement in the safety profile of this vessel segment and at the very least to a better understanding of the safety problems faced by vessels within this category. The fact of being incpected will result in additional (enforcement) costs for the sector.

Maritime transport operators will be impacted in that the changes to the Directive brought about by alignment as well as the changes to the ship risk profile to in support of the Union's environmental goals will lead to a limited number of additional inspections. The additional costs for the sector of these inspections (i.e. enforcement costs) are however limited.

On the other hand, benefits are expected in terms of improved safety. These benefits overcompensate the costs for the industry (i.e. shipowners/operators).

Given that **crews** are systematically the most impacted category of people as regards injuries and death in maritime transport any improvement to safety will impact on them positively. Positive impacts in terms of safety improvements are also expected for **the passengers of maritime vessels**.

15. 2. SUMMARY OF COSTS AND BENEFITS

I. Overview of Benefits (total for all provisions) – Preferred Option *(Policy option B)*		
Description	***Amount***	***Comments***
Direct benefits		
Improvement in the functioning of the internal market		Positive impact on the functioning of the internal market, both by improving overall maritime safety for the benefit of freight customers and passengers throughout the Union as well as by ensuring that the same safety level applies throughout the Union. The path towards digitalisation and the voluntary creation of a PSC regime for larger fishing vessels results in a high degree of harmonisation between Member States.
Enforcement costs savings relative to the baseline (i.e. present value over 2025-2050)	EUR 8.406 million	Enforcement costs savings for port State authorities are mainly driven by measures related to the use of electronic certificates. In terms of present value over 2025-2050, the enforcement costs savings are estimated at EUR 8.406 million.
Indirect benefits		
Reduction of external costs related to accidents relative to the baseline (i.e. present value over 2025-2050)	EUR 35.048 million	Indirect benefit to ships' crews, including those of fishing vessels, and to society at large, due to the lives saved and injuries avoided. As deficiencies identified during PSC inspections typically have to be rectified before the vessel leaves the port or shortly thereafter, PSC inspections are

		expected to lead to a reduction in the number of ship deficiencies over time and thereby to improve safety. The impacts are estimated at 6 lives saved and 61 injuries avoided (i.e. 3 lives saved and 27 injuries avoided for marine casualties in which commercial vessels are involved and 3 lives saved and 34 injuries avoided for marine casualties in which fishing vessels are involved).
Reduction in the bunker fuel lost at sea, relative to the baseline over 2025-2050 (in tonnes)	75 tonnes of bunker fuel lost avoided	Indirect benefit to society at large. Preventing accidents from occurring in the future is projected to avoid 75 tonnes of bunker fuel lost at sea relative to the baseline. This is expected to have a positive impact on the quality of marine water and biodiversity.
Administrative cost savings related to the 'one in, one out' approach*		
Reduction in the administrative costs for ship operators relative to the baseline (i.e. present value over 2025-2050)	EUR 5.53 million (or EUR 0.221 million on average per year)	Administrative costs savings stem from the abolition of the 72-hour advance reporting obligation for the operator, agent or master of a ship eligible for an expanded inspection. Taking into account the projected evolution of the number of port calls over time, removing the restriction could result in administrative cost savings of EUR 0.286 million in 2030 and EUR 0.339 million in 2050 relative to the baseline. Expressed as present value over 2025-2050 the total costs savings relative to the baseline are estimated at EUR 5.53 million.

II. Overview of costs – Preferred option *(Policy option B)*						
	Citizens/Consumers		**Businesses**		**Administrations**	
	One-off	**Recurrent**	**One-off**	**Recurrent**	**One-off**	**Recurrent**
Direct adjustment costs relative to the baseline (i.e. present value over 2025-2050)	-	-	-	-	For Port State Control authorities: EUR 0.100 million For Flag State authorities: EUR 1 million For EMSA: EUR 0.650 million	For Port State Control authorities: EUR 2.470 million For Flag State authorities: EUR 3.831 million For EMSA: EUR 5.829 million
Direct administrative costs relative to the baseline (i.e. present value over 2025-2050)	-	-	-	-	-	For Port State Control authorities: EUR 8.595 million

Direct enforcement costs relative to the baseline (i.e. present value over 2025-2050)		-	-	-	For ship operators: EUR 0.715 million	-	For Port State Control authorities: EUR 6.697 million
Costs related to the 'one in, one out' approach							
Total	Direct adjustment costs	-	-	-	-		
	Indirect adjustment costs	-	-	-	-		
	Administrative costs (for offsetting) relative to the baseline (i.e. present value over 2025-2050)	-	-	-	For ship operators: EUR 5.53 million (or EUR 0.221 million on average per year)		

16. 3. RELEVANT SUSTAINABLE DEVELOPMENT GOALS

III. Overview of relevant Sustainable Development Goals – Preferred Option (Policy option B)		
Relevant SDG	**Expected progress towards the Goal**	**Comments**
SDG 3 "Ensure healthy lives and promote well-being for all at all ages"	Changes to the Directive are expected to contribute to health and well-being benefits. As deficiencies identified during PSC inspections typically have to be rectified before the vessel leaves the port or shortly thereafter, better prepared, better carried out and more targeted PSC inspections are expected to lead to a reduction in the number of ship deficiencies over time and thereby may prevent future injuries or fatalities.	The preferred policy option is projected to result in 6 lives saved and 61 injuries avoided (i.e. 3 lives saved and 27 injuries avoided for marine casualties in which commercial vessels are involved and 3 lives saved and 34 injuries avoided for marine casualties in which fishing vessels are involved) over 2025-2050 relative to the baseline.
SDG 14 "Conserve and sustainably use the oceans, seas and marine resources for sustainable development"	Changes to the Directive are expected to contribute to preventing future damage to the marine environment through accidents.	Preventing accidents from occurring in the future is projected to avoid 75 tonnes of bunker fuel lost at sea relative to the baseline over 2025-2050. This is expected to have a positive impact on the quality of marine water and biodiversity.

ANNEX 4: ANALYTICAL METHODS

1. Description of the analytical methods used

The main model used for developing the baseline scenario for this initiative is the PRIMES-Maritime transport model by E3Modelling, a specific sub-module of the PRIMES and PRIMES-TREMOVE models. The model has a successful record of use in the Commission's energy, transport and climate policy assessments. In particular, it has been used for the impact assessments underpinning the "Fit for 55" package[85], the impact assessments accompanying the 2030 Climate Target Plan[86] and the Staff Working Document accompanying the Sustainable and Smart Mobility Strategy[87], the Commission's proposal for a Long Term Strategy[88] as well as for the 2020 and 2030 EU's climate and energy policy framework.

For the assessment of the impacts of the policy options an Excel-based tool has been developed by COWI in the context of the impact assessment support study[89]. The tool draws on the Standard Cost Model for the assessment of the administrative costs and also includes an assessment of the impacts on the maritime safety. The Excel-based tool builds extensively on data provided by EMSA, including data from EMCIP, and the analysis of stakeholders' feedback. The proposed measures which involve the amendment of the Directive are assumed to be implemented from 2025 onwards, so that the assessment has been undertaken for the 2025-2050 period and refers to EU27. Costs and benefits are expressed as present value over the 2022-2050 period, using a 3% discount rate.

PRIMES-Maritime model

The PRIMES-Maritime transport model is a specific sub-module of the PRIMES and PRIMES-TREMOVE models and aims to enhance the representation of the maritime sector within the energy-economy-environment modelling nexus. The model, which can run in stand-alone and/ or linked mode with PRIMES and PRIMES-TREMOVE, produces long-term transport activity, energy and emission projections, until 2070, separately for each EU Member State. The coverage of the model includes the European intra-EU maritime sector as well as the extra-EU maritime shipping. The model covers both freight and passenger international maritime. PRIMES-Maritime focuses only on the EU Member States, therefore trade activity between non-EU countries is outside the scope of the model. The model considers the transactions (bilateral trade by product type) of the EU-Member States with non-EU countries and aggregates these countries in regions. Several types and sizes of vessels are considered.

PRIMES-Maritime features a modular approach based on the demand and the supply modules. The demand module projects maritime activity for each EU Member State by

[85] Delivering the European Green Deal | European Commission (europa.eu)
[86] SWD(2020)176 final.
[87] EUR-Lex - 52020SC0331 - EN - EUR-Lex (europa.eu)
[88] Source: 2050 long-term strategy (europa.eu)
[89] COWI et al. (2022), Impact assessment support study concerning possible revision of Directive 2009/16/EC on port State Control.

type of cargo and by corresponding partner. Econometric functions correlate demand for maritime transport services with economic indicators considered as demand drivers, including GDP, trade of energy commodities (oil, coal, LNG), trade of non-energy commodities, international fuel prices, etc. The supply module simulates a representative operator controlling the EU fleet, who offers the requested maritime transport services. The operator of the fleet decides the allocation of the vessels activity to the various markets (representing the different EU MS) where different regulatory regimes may apply (e.g. environmental zones). The fleet of vessels is disaggregated into several categories. PRIMES-Maritime utilises a stock-flow relationship to simulate the evolution of the fleet of vessels throughout the projection period and the purchasing of new vessels.

PRIMES-Maritime solves a virtual market equilibrium problem, where demand and supply interact dynamically in each consecutive time period, influenced by a variety of exogenous policy variables, notably fuel standards, pricing signals (e.g. Emission Trading Scheme), environmental and efficiency/operational regulations and others. The PRIMES-Maritime model projects energy consumption by fuel type and purpose as well as CO_2, methane and N_2O and other pollutant emissions. The model includes projections of costs, such as capital, fuel, operation costs, projections of investment expenditures in new vessels and negative externalities from air pollution.

The model serves to quantify policy scenarios supporting the transition towards carbon neutrality. It considers the handling of a variety of fuels such as fossil fuels, biofuels (bioheavy[90], biodiesel, bio-LNG), synthetic fuels (synthetic diesel, fuel oil and gas, e-ammonia and e-methanol) produced from renewable electricity, hydrogen produced from renewable electricity (for direct use and for use in fuel cell vessels) and electricity for electric vessels. Well-To-Wake emissions are calculated thanks to the linkage with the PRIMES energy systems model which derives ways of producing such fuels. The model also allows to explore synergies with Onshore Power Supply systems. Environmental regulation, fuel blending mandates, greenhouse gas emissions reduction targets, pricing signals and policies increasing the availability of fuel supply and supporting the alternative fuel infrastructure are identified as drivers, along fuel costs, for the penetration of new fuels. As the model is dynamic and handles vessel vintages, capital turnover is explicit in the model, influencing the pace of fuel and vessel substitution.

Data inputs

The main data sources for inputs to the PRIMES-Maritime model, such as for activity and energy consumption, comes from EUROSTAT database and from the Statistical Pocketbook "EU transport in figures"[91]. Other data comes from different sources such as research projects (e.g. TRACCS project) and reports. PRIMES-Maritime being part of the overall PRIMES and PRIMES-TREMOVE transport model is calibrated to the EUROSTAT energy balances and transport activity; hence the associated CO_2 emissions are assumed to derive from the combustion of these fuel quantities. The model has been adapted to reflect allocation of CO_2 emissions into intra-EU, extra-EU and berth, in line with data from the MRV database[92]. For air pollutants, the model draws on the EEA database. In the context of this exercise, the PRIMES-Maritime model is calibrated to 2005, 2010 and 2015 historical data.

[90] Bioheavy refers to bio heavy fuel oil.
[91] Publications (europa.eu)
[92] THETIS-MRV (europa.eu)

2. Baseline scenario

In order to reflect the fundamental socio-economic, technological and policy developments, the Commission prepares periodically an EU Reference Scenario on energy, transport and GHG emissions. The socio-economic and technological developments used for developing the baseline scenario for this impact assessment build on the latest "EU Reference 2020 scenario" (REF2020)[93]. The same assumptions have been used in the policy scenarios underpinning the impact assessments accompanying the "Fit for 55" package[94].

Main assumptions of the Baseline scenario

The main assumptions related to economic development, international energy prices and technologies are described below.

Economic assumptions

The modelling work is based on socio-economic assumptions describing the expected evolution of the European society. Long-term projections on population dynamics and economic activity form part of the input to the model and are used to estimate transport activity, particularly relevant for this impact assessment.

Population projections from Eurostat[95] are used to estimate the evolution of the European population, which is expected to change little in total number in the coming decades. The GDP growth projections are from the Ageing Report 2021[96] by the Directorate General for Economic and Financial Affairs, which are based on the same population growth assumptions.

Table 12: Projected population and GDP growth per Member State

	Population			GDP growth	
	2020	2025	2030	2020-'25	2026-'30
EU27	447.7	449.3	449.1	0.9%	1.1%
Austria	8.90	9.03	9.15	0.9%	1.2%
Belgium	11.51	11.66	11.76	0.8%	0.8%
Bulgaria	6.95	6.69	6.45	0.7%	1.3%
Croatia	4.06	3.94	3.83	0.2%	0.6%
Cyprus	0.89	0.93	0.96	0.7%	1.7%
Czechia	10.69	10.79	10.76	1.6%	2.0%
Denmark	5.81	5.88	5.96	2.0%	1.7%
Estonia	1.33	1.32	1.31	2.2%	2.6%
Finland	5.53	5.54	5.52	0.6%	1.2%
France	67.20	68.04	68.75	0.7%	1.0%
Germany	83.14	83.48	83.45	0.8%	0.7%
Greece	10.70	10.51	10.30	0.7%	0.6%
Hungary	9.77	9.70	9.62	1.8%	2.6%
Ireland	4.97	5.27	5.50	2.0%	1.7%

[93] EU Reference Scenario 2020 (europa.eu)
[94] Policy scenarios for delivering the European Green Deal (europa.eu)
[95] EUROPOP2019 population projections: Eurostat - Data Explorer (europa.eu)
[96] The 2021 Ageing Report : Underlying assumptions and projection methodologies The 2021 Ageing Report: Underlying Assumptions and Projection Methodologies | European Commission (europa.eu)

	Population			GDP growth	
	2020	2025	2030	2020-'25	2026-'30
Italy	60.29	60.09	59.94	0.3%	0.3%
Latvia	1.91	1.82	1.71	1.4%	1.9%
Lithuania	2.79	2.71	2.58	1.7%	1.5%
Luxembourg	0.63	0.66	0.69	1.7%	2.0%
Malta	0.51	0.56	0.59	2.7%	4.1%
Netherlands	17.40	17.75	17.97	0.7%	0.7%
Poland	37.94	37.57	37.02	2.1%	2.4%
Portugal	10.29	10.22	10.09	0.8%	0.8%
Romania	19.28	18.51	17.81	2.7%	3.0%
Slovakia	5.46	5.47	5.44	1.1%	1.7%
Slovenia	2.10	2.11	2.11	2.1%	2.4%
Spain	47.32	48.31	48.75	0.9%	1.6%
Sweden	10.32	10.75	11.10	1.4%	2.2%

Beyond the update of the population and growth assumptions, an update of the projections on the sectoral composition of GDP was also carried out using the GEM-E3 computable general equilibrium model. These projections take into account the potential medium- to long-term impacts of the COVID-19 crisis on the structure of the economy, even though there are inherent uncertainties related to its eventual impacts. Overall, conservative assumptions were made regarding the medium-term impacts of the pandemic on the re-localisation of global value chains, teleworking and teleconferencing and global tourism.

International energy prices assumptions

Alongside socio-economic projections, transport modelling requires projections of international fuel prices. The projections of the POLES-JRC model – elaborated by the Joint Research Centre and derived from the Global Energy and Climate Outlook (GECO[97]) – are used to obtain long-term estimates of the international fuel prices. The table below shows the oil prices assumptions of the baseline and policy options of this impact assessment.

Table 13: Oil prices assumptions

in $'15 per boe	2015	2020	2030	2040	2050
Oil	52.3	39.8	80.1	97.4	117.9
in €'15 per boe	2015	2020	2030	2040	2050
Oil	47.2	35.8	72.2	87.8	106.3

Source: Derived from JRC, POLES-JRC model, Global Energy and Climate Outlook (GECO)

Technology assumptions

Modelling scenarios is highly dependent on the assumptions on the development of technologies - both in terms of performance and costs. For the purpose of the impact assessments related to the "Climate Target Plan" and the "Fit for 55" policy package, these assumptions have been updated based on a rigorous literature review carried out by

[97] https://ec.europa.eu/jrc/en/geco

external consultants in collaboration with the JRC[98]. Continuing the approach adopted in the long-term strategy in 2018, the Commission consulted on the technology assumption with stakeholders in 2019. In particular, the technology database of the PRIMES and PRIMES-TREMOVE models (together with GAINS, GLOBIOM, and CAPRI) benefited from a dedicated consultation workshop held on 11th November 2019. EU Member States representatives also had the opportunity to comment on the costs elements during a workshop held on 25th November 2019. The updated technology assumptions are published together with the EU Reference Scenario 2020[99]. The same assumptions have been used in the context of this impact assessment.

Policies in the Baseline scenario

Building on the EU Reference scenario 2020, the baseline scenario for this impact assessment has been designed to include the initiatives of the 'Fit for 55' package[100].

The Baseline scenario assumes no further EU level intervention beyond the current PSC Directive. It assumes the continuation of the work of the Paris MoU without the incorporation of any amendments adopted since 2009 and the PSC Directive under its 2009 scope. Fishing vessels would continue to be outside the scope of the Directive and Member States could inspect foreign fishing vessels calling to their ports if they wished to do so under national law. Slow progress would take place with respect to the uptake of electronic certificates in the baseline scenario, without further EU level intervention.

The role of EMSA in the implementation of the Directive is central. EMSA provides training, operates the THETIS and SafeSeaNet systems without which the Directive could not function. The Commission has launched an impact assessment on the possible review of EMSA founding Regulation.[101] However, the outcome of this impact assessment cannot be prejudged and thus the baseline scenario does not account for changes in the EMSA founding Regulation.

Baseline scenario results

The COVID-19 pandemic had a major impact on global shipping, affecting all its segments from passenger ships to container ships and oil tankers. In the baseline scenario, international maritime freight transport activity (intra and extra-EU) is projected to be 21% lower in 2020 relative to 2015. From 2021 onwards however it is projected to start recovering and grow strongly by 2025 and beyond (i.e. 19% growth for 2015-2030 and 48% for 2015-2050), due to the rising demand for primary resources and container shipping. Relative to 2019, this is equivalent to 8% increase in transport activity by 2030 and 33% growth by 2050.

The number of port calls for 2025-2050 is projected to grow at a lower rate than transport activity, following similar evolution over the historical period[102]. This reflects the fact that transport activity is also driven by other factors such as the increase in the size of vessels over time, and of the distance travelled. In the baseline scenario the number of

[98] JRC118275
[99] EU Reference Scenario 2020 (europa.eu)
[100] Delivering the European Green Deal | European Commission (europa.eu)
[101] Regulation (EC) No 1406/2002/EC, the inception impact assessment at https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13049-European-Maritime-Safety-Agency-review-of-mandate_en
[102] The same ratio between the growth in the number of port calls and the transport activity as for the historical period (2014-2019) has been assumed for the projection period.

port calls is projected to go up by 14% by 2030 relative to 2015 and by 36% by 2050 (equivalent to 6% growth by 2030 relative to 2019 and 26% increase by 2050), following the recovery from the COVID-19 pandemic.

Driven by the increase in the transport activity and the number of vessels, the number of marine casualties is projected to increase over time in the baseline scenario. The number of casualties, including those involving fishing vessels above 15 meters, is projected to increase by 14% by 2030 relative to 2019 and by 45% by 2050 without further EU level action. At the same time, the degree of severity of marine casualties is projected to decrease, leading to a decrease in the number of vessels lost (by 5% for 2019-2030 and for 2019-2050) and a relative stabilisation of the number of fatalities by 2050 (11% decrease for 2019-2030 and 3% increase for 2019-2050).

The impact of the Russian invasion of Ukraine on maritime traffic, on maritime trade flows or safety has not as yet been possible to quantify, as there is large uncertainty with respect to its impacts, in particular for the medium to long term.

While the impact of the Russian invasion of Ukraine is felt in terms of trade (e.g. grain, bulk fertilizers and hydrocarbons) and in certain geographical areas (parts of the Black Sea), the impact on port State control in the Union is however very limited. The impact would be manifested in two ways, firstly as regards Russian flagged vessels calling to EU ports and secondly with regard to the PSC inspections carried out by the Russian Federation on foreign flagged vessels calling to Russian ports within the context of the Paris MoU.

With regard to the first aspect, the Russian merchant fleet operating in EU waters is not particularly large and while prior to the invasion and EU sanctions EU Member States were visited on average by 15 Russian-flagged vessels per day this has now declined to 2 vessel calls per day or less as the sanctions regime has been ramped up. These vessels will continue to be inspected in EU ports as and when they become eligible for inspection.

As regards the PSC inspections carried out in Russian ports, in May 2022 the other members of the Paris MoU decided to suspend the Russian Federation's membership of the MoU because of its invasion of Ukraine. In previous years, the Russian Federation contributed an average of about 6.5% of the total number inspections carried in the Paris MoU.

Table 14: Projected number of marine casualties, vessels lost, fatalities and injuries in the baseline scenario in EU27

	2019 (levels)	Cumulative growth rates		
		'19-'30	'19-'40	'19-'50
Total including fishing vessels				
Marine casualties	6,303	9%	16%	27%
Vessels lost	150	-6%	-11%	-14%
Fatalities	226	-7%	-9%	-10%
Injuries	1,667	0%	-1%	1%

Source: COWI (2022), Impact assessment support study

The projected numbers of marine casualties, vessels lost, fatalities and injuries in the baseline scenario, by vessel type, are provided in Table 15. They are derived based on the projected growth in the number of vessels and the occurrence ratios. For all vessels types,

except for fishing vessels, the occurrence ratios[103] are assumed to remain constant over time at their 2019 levels, drawing on information for the historical period from EMCIP. This is also the case for the ratios between vessels lost, fatalities, injuries and the vessel fleet. As already explained, the baseline scenario is aligned to that of the impact assessment accompanying the revision of the Accident Investigation Directive and of the Flag State Directive.

For fishing vessels above 15 meters the occurrence ratio is projected to slightly increase over time (from 5.6% in 2019 to 6.2% in 2030 and 7.5% in 2050), drawing on historical developments but assuming a slower pace than in the past. At the same time, the ratios between vessels lost, fatalities, injuries and the vessel fleet are assumed to remain constant over time, at their 2019 levels. This is acknowledging the past trends observed, showing that while the number of marine casualties involving fishing vessels is increasing over time the degree of severity of the casualties has been slightly decreasing. The number of fishing vessels above 15 meters is projected to reduce over time (by 6% between 2019 and 2030 and by 16% during 2019-2050), in line with historical developments[104] and also taking into account the moderate increase in the number of catches projected in the future (0.4% per year)[105]. This is the reason why the number of vessels lost, fatalities and injuries involving fishing vessels is projected to decrease over time.

With regard to fishing vessels above 24 meters, the number of fatalities in which such vessels are involved represent around 18% of the total number of fatalities and around 52% of the fatalities involving fishing vessels. Their share in the number of fatalities involving fishing vessels above 15 meters is projected to remain constant over time in the baseline scenario. The share of injuries in which fishing vessels above 24 meters are involved is currently 10% of the total injuries and 45% of the injuries in which fishing vessels above 15 meters are involved and this share is projected to remain constant over time in the baseline scenario.

Table 15: Projected numbers of marine casualties, vessels lost, fatalities and injuries in the baseline scenario by vessel type (EU27)

	Levels			
	2019	2030	2040	2050
Cargo vessels				
Marine casualties	1,233	1,452	1,623	1,969
Vessels lost	1	1	1	2
Fatalities	24	28	32	38
Injuries	204	240	268	326
Fishing vessels above 15 meters				
Marine casualties	381	386	388	386
Vessels lost	13	12	11	10
Fatalities	16	14	13	12
Injuries	113	102	93	85
Passenger vessels				
Marine casualties	616	733	821	994
Vessels lost	1	1	1	2
Fatalities	3	4	4	5
Injuries	145	173	193	234
Service vessels				

[103] Ratio between the number of marine casualties and the number of vessels.
[104] European Commission (2020). Fishing fleet. Derived from: https://ec.europa.eu/oceans-and-fisheries/facts-and-figures/facts-and-figures-common-fisheries-policy/fishing-fleet_en
[105] OECD/FAO (2020), OECD-FAO Agricultural Outlook 2020-2029

	Levels			
	2019	2030	2040	2050
Marine casualties	193	201	204	206
Vessels lost	2	2	2	2
Fatalities	16	6	6	6
Injuries	39	41	41	42
Other vessels				
Marine casualties	79	79	79	79
Vessels lost	3	3	3	3
Fatalities	7	7	7	7
Injuries	39	39	39	39
Total including fishing vessels above 15 meters				
Marine casualties	2,502	2,851	3,115	3,634
Vessels lost	20	19	18	19
Fatalities	66	59	62	68
Injuries	540	595	634	726

Source: COWI (2022), Impact assessment support study

The projected developments in the number of fatalities in the baseline, presented above, are still far from the goal of the Sustainable and Smart Mobility Strategy of close to zero death toll for all modes of transport in the EU.

The tonnes of bunker fuel lost at sea due to very serious marine casualties involving all vessels, including fishing vessels above 15 meters, are estimated to go up from around 650 tonnes in 2019 to 740 tonnes in 2030 and 890 tonnes in 2050[106].

Driven by the projected number of port calls, the total number of initial, more detailed and expanded inspections performed by PSCOs is projected to increase from 13,446 in 2019 to 14,985 in 2030 and 17,974 in 2050. The projected number of PSC inspections by Member State in the baseline scenario is provided in Table 16.

Table 16: Projected number of PSC inspections by MS in the baseline scenario (EU)

Projected number of PSC inspections by MS in the baseline scenario	2019	2030	2040	2050
EU	13,446	14,985	16,321	17,974
BE	1,010	1,151	1,236	1,375
BG	343	368	429	506
CY	106	115	132	160
DE	1,116	1,002	1,124	1,275
DK	491	550	645	776
EE	251	265	282	292
IE	299	341	370	396
EL	988	1,071	1,139	1,244
ES	1,518	1,407	1,500	1,650
FR	1,047	877	914	974
HR	299	328	349	362
IT	1,447	2,084	2,190	2,321
LV	309	349	392	428
LT	253	277	290	294
MT	181	233	258	279
NL	1,288	1,320	1,418	1,608
PL	493	828	975	1,106
PT	528	626	646	688

[106] An average level of 30 tonnes of bunker fuels lost per vessel (excluding fishing vessels) has been used for the estimations in the context of the impact assessment support study. For fishing vessels above 15 meters an average level of 22 tonnes of bunker fuels lost per vessel has been assumed, based on data from EMSA.

Projected number of PSC inspections by MS in the baseline scenario	2019	2030	2040	2050
RO	489	769	914	1,026
SI	140	235	246	255
FI	280	314	336	360
SE	570	473	535	600

Source: COWI (2022), Impact assessment support study

As a result, the total costs for the EU port State authorities for performing inspections and administrative tasks are projected to increase from EUR 2.9 million in 2019 to EUR 3.2 million in 2030 and EUR 3.8 million in 2050 (Table 17)[107]. The lower increase in costs relative to that of inspections is explained by the slight reduction in the man-hour per inspection over time, driven by the uptake of electronic certificates. The share of inspections of ships having e-certificates is currently 20%, according to data from EMSA, and is projected to go up to 30% by 2050 in the baseline scenario.

Table 17: Projected costs for port State administrations in the baseline scenario (EU), in 2020 prices

	2019	2030	2040	2050
PSC inspection costs				
Number of inspections by type of inspection	13,446	14,985	16,321	17,974
Initial inspection	5,292	5,898	6,424	7,074
More detailed inspection	5,371	5,986	6,520	7,180
Expanded inspection	2,783	3,102	3,378	3,720
Man-hours per inspection (hours)	5.7	5.6	5.6	5.5
Initial inspection	4.0	4.0	4.0	3.9
More detailed inspection	5.8	5.8	5.7	5.7
Expanded inspection	8.5	8.5	8.4	8.3
Share of inspections of ships having e-certificates	20%	22%	26%	30%
Total costs per inspection type (million EUR)	2.9	3.2	3.4	3.8
Initial inspection	0.8	0.9	1.0	1.0
More detailed inspection	1.2	1.3	1.4	1.5
Expanded inspection	0.9	1.0	1.1	1.2
PSC administrative costs				
Total administrative costs (million EUR)	0.1	0.1	0.1	0.1
Total costs for PSC administrations	**2.9**	**3.2**	**3.5**	**3.8**

Source: COWI (2022), Impact assessment support study

3. Impacts on costs by policy measure

This section explains the inputs used and provides the assessment on costs of the policy measures included in the policy options.

When the impact of a policy measure is different depending on the policy option, this is explicitly mentioned in the text. This is a result of the synergies between the measures included in the options, which is already captured in this section. When not specified, the measure is either included in only one option and the synergies between measures are directly taken into account in the assessment or the measure is included in all policy options but has the same impact.

PM1A: Expand the scope of the Directive and align with IMO and Paris MoU by adding Ballast Water Management Convention (BWM) as a relevant international instrument to the Directive

[107] The tariffs per hour draw on Eurostat Structure of earnings survey, Labour Force Survey data for Non-Wage Labour Costs.

This measure concerns the alignment with international conventions and instruments. The introduction of alien and invasive species to environments in which they have no natural predators by means of ships ballast water is considered a major threat to the world's oceans, with deleterious effects on biodiversity, fisheries, tourism and human health. The Ballast Water Management Convention (BWM) has entered into force and has been ratified by all but 4 EU marine States[108]. The BWM Convention has already been adopted as a relevant instrument for the Paris MoU. PM1A will involve an additional document check estimated by EMSA as involving 5 additional minutes of work and will in practice only have implications for the four Member States (Ireland, Italy, Romania and Slovenia) that have not yet ratified the Convention. The projected number of PSC inspections for these four MS is estimated at 3,429 in 2030 increasing to 3,719 in 2040 and 3,998 in 2050. The total additional enforcement costs relative to the baseline for the PSC authorities are estimated at EUR 10,805, increasing to EUR 11,718 in 2040 and EUR 12,598 in 2050. Expressed as present value over 2025-2050 the additional enforcement costs relative to the baseline are estimated at EUR 0.208 million.

Table 18: Additional enforcement costs for PSC authorities relative to the baseline (in EUR) for adding the BWM Convention to the scope of the PSC Directive

	2030	2040	2050
Projected number of inspections in the 4 EU port States that did not ratify the BWM Convention	3,429	3,719	3,998
IE	341	370	396
IT	2,084	2,190	2,321
RO	769	914	1,026
SI	235	246	255
Total additional costs relative to the baseline (EUR), in 2020 prices	10,805	11,718	12,598

Source: COWI (2022), Impact assessment support study

PM1B: Expand the scope of the Directive and align with IMO by adding Nairobi International Convention on the Removal of Wrecks (Nairobi) as a relevant instrument to the Directive

This measure concerns the alignment with international conventions and instruments. The 2007 Nairobi International Convention on the Removal of Wrecks (Wrecks Removal Convention) entered into force on 14 April 2015 and provides the legal basis for removing shipwrecks that may have the potential to affect adversely the safety of lives, goods and property at sea, as well as the marine environment. It has been ratified by all but 8 EU marine States[109]. The Wrecks Removal Convention has also been adopted as a relevant instrument for the Paris MoU. PM1B will involve a document check estimated by EMSA as involving 5 additional minutes of work and will in practice only have implications for the 8 Member States (Greece, Ireland, Italy, Latvia, Lithuania, Poland, Slovenia and Spain) that have not yet ratified the Convention. The projected number of PSC inspections for these 8 MS is estimated at 6,592 in 2030 increasing to 7,101 in 2040 and 7,694 in 2050. The total additional enforcement costs relative to the baseline for the PSC authorities are estimated at EUR 20,772 in 2030, increasing to EUR 22,376 in 2040 and EUR 24,242 in 2050. Expressed as present value over 2025-2050 the additional costs relative to the baseline are estimated at EUR 0.4 million.

[108] Ireland, Italy, Romania and Slovenia have not yet ratified.

[109] Greece, Ireland, Italy, Latvia, Lithuania, Poland, Slovenia and Spain have not yet ratified.

Table 19: Additional enforcement costs for PSC authorities relative to the baseline (in EUR) for adding the Nairobi Convention to the scope of the PSC Directive

	2030	2040	2050
Projected number of inspections in the 8 EU port States that did not ratify the Nairobi Convention	6,592	7,101	7,694
IE	341	370	396
EL	1,071	1,139	1,244
ES	1,407	1,500	1,650
IT	2,084	2,190	2,321
LV	349	392	428
LT	277	290	294
SI	235	246	255
PL	828	975	1,106
Total additional costs relative to the baseline (EUR), in 2020 prices	20,772	22,376	24,242

Source: COWI (2022), Impact assessment support study

PM1C: Expand the scope of the Directive by providing for other Conventions (HNS and Hong Kong) which are open for ratification and have been ratified by at least one EU Member State. These are to be added to the Directive "once they enter into force"

PM1C is about ensuring that the scope of the PSC Directive remains up to date in the future. It is about ensuring the flexibility to include conventions within PSC Directive scope when they enter into force.

The International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS) has only been ratified by one EU State (Denmark) and it has not been adopted as a relevant instrument for the Paris MoU. PSC enforcement of the HNS Convention would involve a document check estimated by EMSA as involving 5 additional minutes of work being added to all PSC inspections carried out. The projected number of PSC inspections for the remaining 21 maritime MS is estimated at 14,435 in 2030 increasing to 15,677 in 2040 and 17,198 in 2050. The additional enforcement costs relative to the baseline for the PSC authorities are estimated at EUR 45,484 in 2030, increasing to EUR 49,397 in 2040 and EUR 54,191 in 2050.

Regarding the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (Hong Kong Convention), 14 EU port States (Bulgaria, Croatia, Cyprus, Finland, Greece, Ireland, Italy, Latvia, Lithuania, Poland, Portugal, Romania, Slovenia, Sweden) are not yet signatories to the Convention. PSC enforcement of the Hong Kong Convention would involve a document check estimated by EMSA as involving 5 additional minutes of work being added to all PSC inspections carried out. The projected number of PSC inspections for these 14 MS is estimated at 8,179 in 2030 increasing to 8,943 in 2040 and 9,746 in 2050. The additional enforcement costs relative to the baseline for the PSC authorities are estimated at EUR 25,772 in 2030, increasing to EUR 28,180 in 2040 and EUR 30,709 in 2050.

The total additional enforcement costs relative to the baseline for the PSC authorities for adding the HNS and Hong Kong Conventions to the scope of PSC Directive are estimated at EUR 71,257 in 2030, increasing to EUR 77,577 in 2040 and EUR 84,899 in 2050. Expressed as present value over 2025-2050 the total additional costs relative to the baseline are estimated at EUR 1.382 million.

Table 20: Additional enforcement costs for PSC authorities relative to the baseline (in EUR) for adding the HNS and Hong Kong Conventions to the scope of the PSC Directive

	2030	2040	2050
Projected number of inspections in the 21 EU port States that did not ratify the HNS Convention	14,435	15,677	17,198
Additional costs relative to the baseline (EUR), in 2020 prices, for adding the HNS Convention	45,484	49,397	54,191
Projected number of inspections in the 14 EU port States that did not ratify the Hong Kong Convention	8,179	8,943	9,746
Additional costs relative to the baseline (EUR), in 2020 prices, for adding the Hong Kong Convention	25,772	28,180	30,709
Total additional costs relative to the baseline (EUR), in 2020 prices	**71,257**	**77,577**	**84,899**

Source: COWI (2022), Impact assessment support study

PM2: Align the Directive to the Paris MoU new Ship Risk Profile (SRP) including the new calculation method for the White Grey Black (WGB) list formula used for targeting ships

PM2 implies that the PSC Directive will include the revised formula and ranking of flag States alongside revising the Ship Risk Profile (SRP).

A revision of the Ship Risk Profile (SRP) is assessed to lead to a more efficient targeting of ships for PSC inspections. Based on estimations drawing on THETIS database, performed by EMSA, the number of initial inspections is projected to decrease by 1.3% and that of more detailed inspections by 1.4% relative to the baseline, while the number of expanded inspections would increase by 2.6% relative to the baseline. Overall, the total number of inspections would decrease by 0.6% relative to the baseline (84 fewer inspections in 2030 compared to the baseline, 91 in 2040 and 100 in 2050). Table 21 provides the changes in the number of inspections relative to the baseline for 2030, 2040 and 2050.

Table 21: Changes in the number of inspections relative to the baseline in PM2

	2030	2040	2050
Changes in the number of inspections relative to the baseline	-84	-91	-100
- initial inspections	-77	-84	-92
- more detailed inspections	-86	-93	-103
- expanded inspections	79	86	95

Source: COWI (2022), Impact assessment support study

However, as the number of more time-consuming expanded inspections is projected to increase relative to the baseline, the overall enforcement cost savings for the PSC authorities are relatively limited. PM2 is included in all three policy options but the impact on enforcement costs savings is different under each option, due to the degree of uptake of e-certificates in each option linked to PM7. The uptake of e-certificates leads to a decrease in the unit inspections costs, as explained in PM7 below. Expressed as present value over 2025-2050 the total costs savings relative to the baseline are estimated at EUR 0.083 million in PO A, 0.061 million in PO B and 0.056 million in PO C.

Table 22: Enforcement costs savings for port State authorities relative to the baseline (in EUR)

	Difference to the baseline								
	PO A			PO B			PO C		
	2030	2040	2050	2030	2040	2050	2030	2040	2050
Enforcement costs savings (EUR), in 2020 prices	4,419	4,434	4,883	3,550	2,920	3,216	3,724	2,542	2,799

Source: COWI (2022), Impact assessment support study

Another benefit from a change in the SRP is that of an improved targeting of sub-standard ships for PSC inspection, leading to requirements/recommendations that will contribute to increasing the safety standards of these ships.

PM3: Align the Directive to the (i) Paris MoU list of certificates and documents to be checked during an inspection, (ii) to the changes in the Paris MoU refusal of access (banning) procedures and, (iii) incorporate all current Paris MoU Procedures and Guidelines

The Paris MoU has revised the number and type of certificates to take account of changes at the IMO level. This is not expected to have an impact on the number of inspections carried out and only a marginal impact on the time taken to check these certificates relative to the baseline. However, it would improve clarity and consistency with the IMO PSC framework.

The measure also implies the alignment with changes in the Paris MoU refusal of access (banning) procedures relating to: (i) the flag of the vessel to be banned; (ii) jumped detention; (iii) a ban in cases when a ship does not go to the agreed repair yard. According to EMSA, the administrative costs for a PSC authority when issuing a ban is that of informing the master, the flag State and other PSC authorities in the MoU. This is estimated at around 15 minutes per ban. However, this is not estimated to lead to a significant change in the number of bans compared to the baseline scenario. In this context, data from EMSA shows that during 2017-2019 only 32 bans took place. Most of these (27 bans) were due to multiple detentions, while four were caused by a failure to call at an agreed repair yard, and only one was due to a jumped detention. Thus, the measure would not result in changes in the administrative costs for PSC authorities relative to the baseline. Benefits in terms of safety or environmental improvements are therefore also considered not to be significant. Hence, the benefits only derive from more timely banning procedures.

Finally, the measure also aims at ensuring that the PSC Directive is up to date and contains the most recent versions of all the Paris MoU procedures and guidelines for the control of ships. This is not expected to have an impact in terms of increased workload for the PSC authorities relative to the baseline but is undertaken primarily for legal consistency and to ensure consistency among EU Member States as well as Paris MoU members on PSC procedures, guidelines and instructions. Similarly, no additional costs relative to the baseline are expected for shipowners or EMSA.

PM4: Align the Directive to the Paris MoU changes to the inspection commitment

PM4 involves an alignment of the inspection commitment of Member States to changes agreed to at the Paris MoU. Every Member State must carry out a total number of inspections of foreign merchant ships corresponding to its annual inspection commitment. These vessels in order to be counted must be either Priority I or Priority II. Vessels without Priority (in effect due to short time since the last inspection) do not count for the inspection commitment.

However due to a changing number of Priority I and Priority II ships, some Member States may end up being either over- or under-burdened. As a response the Paris MoU has agreed to increase the flexibility of the inspection commitment, to allow for up to 10% missed inspection of Priority I ships irrespective of the ship risk profile - the current

rule is that only 5% of high-risk ships may be missed. Changes to the possibilities to justify a missed inspection for a night-time ship call and a very short ship call are also included.

The costs and benefits of the increased flexibility to allow more missed Priority I inspections are not feasible to quantify, according to EMSA. However, it is expected that benefits will occur for a few under-burdened PSC authorities mainly in the Baltic Sea region (Latvia and Lithuania). Such benefits consist, for example, in improved working conditions for PSCOs that would not carry out inspections where justified by: 'the safety of the inspector', 'night-time calls' or 'too short a call of the ship'.

PM5: Align the Directive to the Paris MoU changes which abolishes the 72 hour reporting obligation for vessels eligible for an expanded inspection

PM5 provides for the abolition of the 72-hour advance reporting obligation for the operator, agent or master of a ship eligible for an expanded inspection. This obligation covered 3,871 ships with mandatory expanded inspection in 2019 or 85,764 ship calls involving ships which were eligible for an expanded inspection. This represents 11.9% of the total number of port calls, which is assumed to remain constant over time. The number of ship calls involving ships which are eligible for an expanded inspection is projected to increase at 90,720 in 2030, 98,041 in 2040, and 107,676 in 2050.

An estimation of the time taken for a ship agent/operator/master to report the time of arrival (ETA) within 72-hour through the National Single Windows of each Member State is around 5 minutes. Therefore, removing the restriction could result in administrative cost savings for shipping companies of EUR 285,855 in 2030, EUR 308,924 in 2040 and EUR 339,283 in 2050 relative to the baseline. Expressed as present value over 2025-2050 the total costs savings relative to the baseline are estimated at EUR 5.53 million.

Table 23: Administrative costs savings for shipping companies relative to the baseline (in EUR) from abolishing the 72 hour reporting obligation for vessels eligible for an expanded inspection

	2030	2040	2050
Port calls with mandatory expanded inspection	90,720	98,041	107,676
Total costs savings relative to the baseline (EUR), in 2020 prices	285,855	308,924	339,283

Source: COWI (2022), Impact assessment support study

PM6A: Encourage Member States to carry out PSC on eligible fishing vessels (over 24 metres) by means of development of guidelines, workshops

This policy measure is designed to increase awareness of Member States of the potential benefits from compliance with a common discipline for inspection of fishing vessels above 24 meters calling at EU ports. PM6A has an impact on enforcement costs for PSC authorities that would have to conduct additional inspections. It also has an impact on EMSA, that has to perform training for PSCOs, and on enforcement costs for fishing shipowners.

Enforcement costs for PSC authorities: To calculate the additional PSC inspections for fishing vessels, the share of fishing vessels calls eligible for inspection is assumed to be the same with the share of foreign vessels calls for commercial ships inspected. This data (see Table 24) has been provided by EMSA from the MARINFO database and the shares are assumed to remain constant over time, in line with historical developments.

Table 24: Share of foreign vessels calls for commercial ships inspected by MS

	2019
BE	18%
BG	23%
CY	23%
DE	21%
DK	18%
EE	17%
IE	17%
EL	29%
ES	20%
FR	17%
HR	31%
IT	28%
LV	16%
LT	14%
MT	22%
NL	17%
PL	18%
PT	20%
RO	26%
SI	22%
FI	16%
SE	17%

Source: MARINFO data from EMSA; Note: excluding ROPAX ships.

By applying these shares to the projected number of fishing vessels calls at EU ports in the baseline scenario, the number of eligible calls for inspections is derived. In PM6A however, as the MS are encouraged but not obliged to perform inspections, it has been assumed that 35% of the eligible calls for inspection would result in PSC inspections in 2030, going up to 45% in 2040 and 50% by 2050. The number of additional PSC inspections for fishing vessels relative to the baseline are provided in Table 25.

Table 25: Number of additional PSC inspections for fishing vessels relative to the baseline

	2030	2040	2050
EU	80	95	96
BE	4	5	5
BG	0	0	0
CY	0	0	0
DE	2	2	2
DK	17	20	20
EE	1	1	1
IE	10	12	12
EL	2	2	3
ES	20	24	24
FR	5	6	6
HR	0	0	0
IT	2	2	2
LV	1	1	1
LT	0	0	0
MT	5	6	6
NL	5	7	7
PL	2	2	2
PT	2	3	3
RO	0	0	0
SI	0	0	0
FI	0	0	0

	2030	2040	2050
SE	2	2	2

Source: COWI (2022), Impact assessment support study

The number of man-hours per PSC inspection for fishing vessels is currently estimated by EMSA at 4.5, and is projected to decrease to 4.1 in 2030 and to 4 in 2050 due to efficiency gains related to digitalisation, linked to measure PM7A (included in PO A together with PM6A). Enforcement costs for PSC authorities relative to the baseline are thus estimated at EUR 12,402 in 2030, EUR 14,368 in 2040 and EUR 14,520 in 2050. Expressed as present value over 2025-2050 the total costs relative to the baseline are estimated at EUR 0.238 million.

Table 26: Enforcement costs for PSC authorities relative to the baseline (in EUR)

	2030	2040	2050
Additional number of inspections relative to the baseline	80	95	96
Man-hours per inspection (hours)	4.1	4.0	4.0
Share of inspections of ships having e-certificates	40%	50%	50%
Additional inspection costs for PSC administrations (EUR), in 2020 prices	**12,402**	**14,368**	**14,520**

Source: COWI (2022), Impact assessment support study

Costs for EMSA: Operational inspection guidelines for fishing vessels will be developed by EMSA at EU level to illustrate the common procedures and criteria to organise inspections, to ensure that the ships comply with relevant EU legislation/international conventions in the domains of safety, pollution prevention and working and living condition. No costs are associated to the guidelines.

Additional training courses for PSCOs are foreseen to be organised by EMSA at around EUR 36,000 each per year (EUR 6,000 estimated for the trainer and EUR 30,000 on average for reimbursement of participants). In addition, the development of a virtual reality platform (VRESI), to be used for additional online training, would involve a one-off cost of EUR 50,000 in 2025. Expressed as present value over 2025-2050 the total costs relative to the baseline are estimated at EUR 0.713 million.

Enforcement costs for shipowners: For the assessment of enforcement costs for shipowners, a 'cooperation effort' is assumed that is equal to the time spent on inspection. This represents the upper bound for the 'cooperation effort'. The enforcement costs for shipowners are thus derived using the number of additional inspections, the 'cooperation effort' per inspection and the gross value of landings per hour worked. According to the latest data from the STECF *Annual Economic Report on the EU Fishing Fleet, 2021*, (gross) landing from large fishing vessels (i.e. of a length of 24 metres and above) for EU coastal States amounted to a total EUR 3,241 million in 2019. The value of total number of hours worked by the crew of those vessels was estimated at EUR 45.7 million. Thus, the gross value of landings per hour worked is estimated at EUR 70.9.

Enforcement costs for shipowners relative to the baseline are thus estimated at EUR 25,524 in 2030, EUR 30,310 in 2040 and EUR 30,629 in 2050. Expressed as present value over 2025-2050 the total costs relative to the baseline are estimated at EUR 0.496 million.

Table 27: Enforcement costs for shipowners relative to the baseline (in EUR)

	2030	2040	2050
Enforcement costs for shipowners (EUR), in 2020 prices	**25,524**	**30,310**	**30,629**

Source: COWI (2022), Impact assessment support study

PM6B: Provide for a voluntary PSC system for fishing vessels of above 24 metres which will exist in parallel to the Directive by means of guidelines, training and an inspection database for targeting ships and reporting on inspections

PM6B provides for an increased level of ambition compared with PM6A by establishing a voluntary PSC system for fishing vessels above 24 meters calling at EU ports, based on a simplified version of the current PSC system. This voluntary measure would involve EMSA (in conjunction with the Paris MoU) developing a system for the PSC inspection of fishing vessels (of above 24 metres) calling EU ports aligned to ensure that the ships comply with relevant EU legislation/international conventions in the domains of safety, pollution prevention and working and living condition. In addition to operation inspection guidelines a ship risk profile will be developed for these larger fishing vessels as well as a ship targeting system and inspection database.

Enforcement costs for PSC authorities: The enforcement costs for PSC authorities are derived in a similar way to those of PM6A. In PM6B however, it has been assumed that 45% of the eligible calls for inspection would result in PSC inspections in 2030, going up to 65% in 2040 and 80% by 2050. The number of additional PSC inspections for fishing vessels relative to the baseline are provided in Table 28.

Table 28: Number of additional PSC inspections for fishing vessels relative to the baseline

	2030	2040	2050
EU	103	138	157
BE	6	7	8
BG	0	0	0
CY	0	1	1
DE	2	3	3
DK	21	29	32
EE	1	1	1
IE	13	17	20
EL	3	4	4
ES	26	34	39
FR	7	9	10
HR	0	1	1
IT	2	3	4
LV	1	1	2
LT	0	0	0
MT	7	9	10
NL	7	9	11
PL	2	3	3
PT	3	4	4
RO	0	0	0
SI	0	0	0
FI	0	0	0
SE	2	3	4

Source: COWI (2022), Impact assessment support study

The number of man-hours per PSC inspection for fishing vessels is currently estimated by EMSA at 4.5, and is projected to decrease to 3.9 in 2030 and to 3.6 in 2050 due to efficiency gains related to digitalisation, linked to measure PM7C (included in PO B together with PM6B). Enforcement costs for PSC authorities relative to the baseline are thus estimated at EUR 14,994 in 2030, EUR 18,785 in 2040 and EUR 21,371 in 2050. Expressed as present value over 2025-2050 the total costs relative to the baseline are estimated at EUR 0.314 million.

Table 29: Enforcement costs for PSC authorities relative to the baseline (in EUR)

	2030	2040	2050
Additional number of inspections relative to the baseline	103	138	157
Man-hours per inspection (hours)	3.9	3.6	3.6
Share of inspections of ships having e-certificates	65%	90%	90%
Additional inspection costs for PSC administrations (EUR), in 2020 prices	**14,994**	**18,785**	**21,371**

Source: COWI (2022), Impact assessment support study

Costs for EMSA: The measure implies a one-off cost of EUR 100,000 for EMSA to develop a specific THETIS module for fishing vessels to allow Member States to target and select vessels for inspection as well as to record and share the results of the inspections. This measure also includes a dedicated common core curriculum (CCC) for PSC fishing which will cover all the relevant instructions and guidance related to the voluntary PSC system, including training on the specific elements related to the relevant THETIS module. The one-off costs for the development of this CCC is estimated at EUR 100,000 in 2025.

Additional training courses for PSCOs are foreseen to be organised by EMSA at around EUR 36,000 each per year (EUR 6,000 estimated for the trainer and EUR 30,000 on average for reimbursement of participants). In addition, the development of a virtual reality platform (VRESI), to be used for additional online training, would involve a one-off cost of EUR 50,000 in 2025. Expressed as present value over 2025-2050 the total costs for EMSA relative to the baseline are estimated at EUR 0.813 million.

Enforcement costs for shipowners: As in PM6A, for the assessment of enforcement costs for shipowners, the 'cooperation effort' is assumed to be equal to the time spent on inspection. This represents the upper bound for the 'cooperation effort'.

Enforcement costs for shipowners relative to the baseline are estimated at EUR 32,862 in 2030, EUR 44,029 in 2040 and EUR 50,091 in 2050. Expressed as present value over 2025-2050 the total costs relative to the baseline are estimated at EUR 0.715 million.

Table 30: Enforcement costs for shipowners relative to the baseline (in EUR)

	2030	2040	2050
Enforcement costs for shipowners (EUR), in 2020 prices	32,862	44,029	50,091

Source: COWI (2022), Impact assessment support study

PM6C: Amend the Directive to fully incorporate larger fishing vessels (over 24 metres in length) within its scope

PM6C increases the level of ambition a step further by incorporating fishing vessels above 24 metres completely within the PSC Directive. Similarly to PM6A and PM6B, the measure has an impact on enforcement costs for PSC authorities that would have to conduct additional inspections. It also has an impact on EMSA and on enforcement costs for fishing shipowners.

Enforcement costs for PSC authorities: The enforcement costs for PSC authorities are derived in a similar way to those of PM6A and PM6B. In PM6C however, it has been assumed that 75% of the eligible calls for inspection would result in PSC inspections in 2030, going up to 100% in 2040 and beyond.

The number of man-hours per PSC inspection for fishing vessels is currently estimated by EMSA at 4.5, and is projected to decrease to 3.9 in 2030 and to 3.5 in 2050 due to efficiency gains related to digitalisation, linked to measure PM7B (included in PO C together with

PM6C). Enforcement costs for PSC authorities relative to the baseline are thus estimated at EUR 25,511 in 2030, EUR 28,056 in 2040 and EUR 26,203 in 2050. Expressed as present value over 2025-2050 the total costs relative to the baseline are estimated at EUR 0.476 million.

Table 31: Enforcement costs for PSC authorities relative to the baseline (in EUR)

	2030	2040	2050
Additional number of inspections relative to the baseline	173	212	198
Man-hours per inspection (hours), including digitalisation	3.9	3.5	3.5
Share of inspections of ships having e-certificates	60%	100%	100%
Additional inspection costs for PSC administrations (EUR), in 2020 prices	**25,511**	**28,056**	**26,203**

Source: COWI (2022), Impact assessment support study

Costs for EMSA: The costs for EMSA in PM6C are the same as in PM6B.

Enforcement costs for shipowners: As in PM6A and PM6B, for the assessment of enforcement costs for shipowners, the 'cooperation effort' is assumed to be equal to the time spent on inspection. This represents the upper bound for the 'cooperation effort'.

Enforcement costs for shipowners relative to the baseline are estimated at EUR 55,196 in 2030, EUR 67,639 in 2040 and EUR 63,172 in 2050. Expressed as present value over 2025-2050 the total costs relative to the baseline are estimated at EUR 1.105 million.

Table 32: Enforcement costs for shipowners relative to the baseline (in EUR)

	2030	2040	2050
Enforcement costs for shipowners (EUR), in 2020 prices	**55,196**	**67,639**	**63,172**

Source: COWI (2022), Impact assessment support study

PM7A: Encourage the uptake and use of electronic certificates in PSC by means of guidelines, workshops, etc.

PM7A is a soft policy measure encouraging PSC authorities to accept electronic certificates and encourage flag States and the Recognised Organisations (ROs) that work on their behalf to work towards a common data definition to facilitate an easier validation of PSC data both during planning for inspections and the carrying out of inspections. The measure would lead to enforcement costs savings for PSC authorities and additional costs for EMSA for organising training courses.

Enforcement costs savings for PSC authorities: As explained in section 2 of Annex 4, the share of inspections of ships having e-certificates is currently 20%, according to data from EMSA, and is projected to go up to 30% by 2050 in the baseline scenario. Drawing on stakeholders' feedback, the time savings per inspection due to digitalisation is estimated at up to 1.1 hours for initial inspections, 1.3 hours for more detailed inspections and 1.4 hours for expanded inspections. In PM7A the share of inspections of ships having e-certificates is projected to go up to 40% in 2030 and 50% in 2040, and remain constant post-2040. As a result, on average, the man-hours per inspection would decrease from 5.6 in the baseline to 5.4 in PM7A in 2030 and from 5.5 in the baseline to 5.3 in PM7A in 2050. The man-hours per initial, more detailed and expanded inspection are provided in Table 33.

Enforcement costs savings for PSC authorities relative to the baseline are thus estimated at EUR 127,635 in 2030, EUR 185,355 in 2040 and EUR 170,102 in 2050. Expressed as present value over 2025-2050 the total costs savings relative to the baseline are estimated at EUR 2.804 million.

Table 33: Enforcement costs savings for PSC authorities relative to the baseline (in EUR)

	2030	2040	2050
Man-hours per inspection (hours)	5.4	5.3	5.3
Initial inspection	3.8	3.7	3.7
More detailed inspection	5.5	5.4	5.4
Expanded inspection	8.2	8.1	8.1
Share of inspections of ships having e-certificates	40%	50%	50%
Total costs savings for PSC authorities relative to the baseline (EUR), in 2020 prices	**127,635**	**185,355**	**170,102**
Initial inspection	45,715	66,389	60,926
More detailed inspection	53,187	77,241	70,884
Expanded inspection	28,732	41,726	38,292

Source: COWI (2022), Impact assessment support study

Costs for EMSA: Additional training courses for PSCOs are foreseen to be organised by EMSA at around EUR 36,000 each per year (EUR 6,000 estimated for the trainer and EUR 30,000 on average for reimbursement of participants). Expressed as present value over 2025-2050 the total costs relative to the baseline are estimated at EUR 0.663 million.

PM7B: Amend the Directive to make e-certificates the default for PSC in the EU providing for a common data model, a validation/verification tool and repository at EU level

PM7B would make the use of electronic certificates the default for PSC and so envisages an eventual uptake of 100%, following a transition period. All ships calling and susceptible to PSC inspections would have to have statutory certificates in electronic form issued by the flag State or the RO acting on its behalf. Failure to carry electronic certificates would result in deficiencies being recorded against the vessel. The measure would lead to enforcement costs savings for PSC authorities and additional costs for EMSA and flag State authorities.

Enforcement costs savings for PSC authorities: In PM7B the share of inspections of ships having e-certificates is projected to go up to 70% in 2030 and 100% in 2040. As a result, on average, the man-hours per inspection would decrease from 5.6 in the baseline to 5 in PM7B in 2030 and from 5.5 in the baseline to 4.6 in PM7B in 2050. The man-hours per initial, more detailed and expanded inspection are provided in Table 34.

Enforcement costs savings for PSC authorities relative to the baseline are thus estimated at EUR 340,359 in 2030, EUR 571,512 in 2040 and EUR 595,358 in 2050. Expressed as present value over 2025-2050 the total costs savings relative to the baseline are estimated at EUR 8.385 million.

Table 34: Enforcement costs savings for PSC authorities relative to the baseline (in EUR)

	2030	2040	2050
Man-hours per inspection (hours), including digitalisation	5.0	4.6	4.6
Initial inspection	3.5	3.1	3.1
More detailed inspection	5.1	4.7	4.7
Expanded inspection	7.8	7.4	7.4
Share of inspections of ships having e-certificates	**70%**	**100%**	**100%**
Total costs savings for PSC authorities relative to the baseline (EUR)	**340,359**	**571,512**	**595,358**
Initial inspection	121,907	204,700	213,241
More detailed inspection	141,833	238,159	248,096
Expanded inspection	76,619	128,654	134,022

Source: COWI (2022), Impact assessment support study

Costs for EMSA: This policy measure involves the development and maintenance at EU level of a common system for use of electronic certificates across Flag States and RO for

the use of PSC as well as tools for validation and inspection. Hence, it involves the building of a consolidated certificate database for the EU at EMSA, which can be built as a module within THETIS. This implies one-off costs (CAPEX) of EUR 0.5 million in 2025 for the validation tool and repository, followed by maintenance costs estimated at EUR 100,000 for 2026-2035 (equivalent to 0.9 additional full time equivalents relative to the baseline). Expressed as present value over 2025-2050 the total costs for EMSA relative to the baseline are estimated at EUR 2.904 million.

Additional training courses for PSCOs are also foreseen to be organised by EMSA at around EUR 36,000 each per year (EUR 6,000 estimated for the trainer and EUR 30,000 on average for reimbursement of participants).

Costs for Flag State authorities: The measure also implies one-off costs (CAPEX) of EUR 1 million in 2025 for Flag State authorities for the validation tool and repository, followed by maintenance costs estimated at EUR 220,000 for 2026-2035. Expressed as present value over 2025-2050 the total costs for Flag State authorities relative to the baseline are estimated at EUR 4.831 million.

PM7C: Amend the Directive to provide for electronic certificates, common data model, a validation tool and repository at EU level - linking the use of electronic certificates with the ship risk profile

PM7C is similar to PM7B regarding system requirements but seeks the same objective in a less prescriptive manner. PM7C envisages the encouragement of the use of electronic certificates in port State control by rewarding the ship equipped with such certificates by adding a parameter to the ship risk profile (SRP) and thereby allowing them to being less targeted by PSC inspections.

Enforcement costs savings for PSC authorities: In PM7C the share of inspections of ships having e-certificates is projected to go up to 65% in 2030 and 90% in 2040 and beyond. As a result, on average, the man-hours per inspection would decrease from 5.6 in the baseline to 5.1 in PM7C in 2030 and from 5.5 in the baseline to 4.8 in PM7C in 2050. The man-hours per initial, more detailed and expanded inspection are provided in Table 35.

Enforcement costs savings for PSC authorities relative to the baseline are thus estimated at EUR 304,905 in 2030, EUR 494,281 in 2040 and EUR 510,307 in 2050. Expressed as present value over 2025-2050 the total costs savings relative to the baseline are estimated at EUR 7.260 million.

Table 35: Enforcement costs savings for PSC authorities relative to the baseline (in EUR)

	2030	2040	2050
Man-hours per inspection (hours)	5.1	4.8	4.8
Initial inspection	3.5	3.2	3.2
More detailed inspection	5.2	4.9	4.9
Expanded inspection	7.9	7.5	7.5
Share of inspections of ships having e-certificates	65%	90%	90%
Total costs savings for PSC authorities relative to the baseline (EUR), in 2020 prices	**304,905**	**494,281**	**510,307**
Initial inspection	109,208	177,038	182,778
More detailed inspection	127,059	205,975	212,653
Expanded inspection	68,638	111,268	114,876

Source: COWI (2022), Impact assessment support study

Costs for EMSA: The costs for EMSA are the same as in PM7B.

Costs for Flag State authorities: The costs for Flag State authorities are the same as in PM7B.

PM8: Amend the Directive to clarify and fix the time-frame within which the ship arrival and departure notifications have to be carried out

PM8 focuses on the link between SafeSeaNet and THETIS databases, and how quickly and accurately the transmission of the actual time of arrival (ATA) and the actual time of departure (ATD) in SSN should occur. Article 24(2) of the PSC Directive requires Member States to ensure that this data is "transferred within a reasonable time to the inspection database". PM8 will clarify what is the reasonable time such that the reporting of ATA and ATD is carried out within three hours. This measure does not imply additional costs relative to the baseline for PSC authorities, shipowners or EMSA because the reporting already takes place according to the PSC Directive. The benefit from timely reporting would be the correct calculation of the ship risk profile and the correct selection of ships for inspection. The impact on the ships selected for inspection cannot however be quantified.

PM9: Amend the Directive to allow more flexibility for missed inspections

The Directive currently allows for inspections to be missed. However, the current possibilities offered by the Directive are not felt to be sufficiently flexible having regard to the uneven distribution of PSC eligible vessel across the EU. PM9 will allow PSC authorities to justify missed inspections for Priority II vessels (may be inspected). This measure is not expected to give rise to costs for PSC authorities, shipowners or EMSA. On the benefit side, it is expected that Member States will be able to enjoy operational improvements when carrying out inspections, thanks to increasing flexibility for Priority II inspections and potentially saved Priority II inspections, provided the number of these inspections is below the required 85% threshold. The impact could however not be quantified.

PM10: Amend the Directive to prevent unwanted spill-over effects of Member States which exceed their inspection commitment

PM10 aims at tackling the issue of Member States which exceed their inspection commitment. Over the time of the implementation of the Directive it has been observed that several Member States, particularly in the Mediterranean and Black Sea basins, inspect too many Priority I ships as compared to their inspection commitment. In so doing this disrupts the fair share calculations and creates difficulties for other Member States to comply with their fair share commitment. According to EMSA, this practice results in an annual growth in the fair share allocations by around 2% per year due to the way in which the fair share is calculated. PM10 would not penalise those Member States that "over-inspect" but would limit the effect of this practice to the Member States that are carrying out these inspections.

Enforcement costs savings for PSC authorities: PM10 is projected to lead to a decrease in the total number of inspections by 2% relative to the baseline from 2025 onwards. This would mean 300 less inspections relative to the baseline in 2030, 326 in 2040 and 359 in 2050. Enforcement costs savings for PSC authorities relative to the baseline are thus estimated in PO B at EUR 57,646 in 2030, EUR 58,925 in 2040 and EUR 64,891 in 2050. Expressed as present value over 2025-2050 the total costs savings relative to the baseline are estimated at EUR 1.086 million. In PO C they are estimated at EUR 56,937 in 2030, EUR 57,380 in 2040 and EUR 63,190 in 2050. Expressed as present value over

2025-2050 the total costs savings relative to the baseline are estimated at EUR 1.063 million. The calculation of costs savings already takes into account the decrease in the costs per inspection due to digitalisation in PO B, linked to measure PM7C and in PO C, linked to measure PM7B.

Table 36: Enforcement costs savings for PSC authorities relative to the baseline in PO B (in EUR)

	2030	2040	2050
Decrease in the number of inspections relative to the baseline	300	326	359
Cost savings for PSC authorities (EUR), in 2020 prices	57,646	58,925	64,891

Source: COWI (2022), Impact assessment support study

Table 37: Enforcement costs savings for PSC authorities relative to the baseline in PO C (in EUR)

	2030	2040	2050
Decrease in the number of inspections relative to the baseline	300	326	359
Cost savings for PSC authorities (EUR), in 2020 prices	56,937	57,380	63,190

Source: COWI (2022), Impact assessment support study

PM11: Amend the Directive by adding environmental parameters to the ship risk profile used to target ships

The inclusion of environmental factors to determine the ship's risk profile could complement the generic and historical factors already requires in Article 10 of the Directive. To this end, two criteria for assessing the environmental performance of the ship are considered.

Environmental Related Deficiencies

A parameter based on the number of deficiencies arising in previous inspections which is related to relevant environmental related international conventions namely MARPOL, the Ballast Water Management Convention, the International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS Convention), the International Convention on Civil Liability for Oil Pollution Damage, 1969 (CLC PROT 1992), the International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001 (BUNKER) and the Nairobi International Convention on the Removal of Wrecks.

Carbon Intensity Indicator

The CO2 emissions performance parameter of the ship could also be included in the ship risk profile calculation. For that purpose, the use of the carbon intensity indicator required by the IMO's MARPOL Annex VI could be a simple option to introduce in the ship risk profile. In June 2021, the IMO adopted CO2 regulations applicable to existing ships. The Energy Efficiency Existing Ship Index (EEXI) addresses the technical efficiency of ships, the Carbon Intensity Indicator (CII) rating scheme addresses the operational efficiency, and the enhanced Ship Energy Efficiency Management Plan (SEEMP) addresses the management system. From 2023, the CII requirements will apply to all cargo, RoPax and cruise ships over 5,000 GT engaged in international trade.

The CII index measures the efficiency with which a ship transports cargo or passengers. It is expressed in grams of CO2 emitted per cargo capacity and per nautical mile. The IMO has provided that each eligible ship will be given an annual grade ranging from A to E, with increasingly stringent thresholds by 2030. The grade allocated will be on a scale - an A, B, C, D or E operational carbon intensity grade - indicating a major superior, minor superior, moderate, minor inferior, or inferior level of performance. The level of performance will be recorded in the Ship Energy Efficiency Management Plan (SEEMP). Vessels with D and E grades will have this reflected in their ship risk profiles and this

introduction of an additional parameter to the risk profile will have an impact on the number of High Risk Ship (HRS) to be inspected. As the ship risk profile will be added to, the number of inspections to be carried out will be impacted by the inclusion of environmental factors.

Enforcement costs for PSC authorities: Drawing on calculations by EMSA, the inclusion of the Environmental Related Deficiencies and the Carbon Intensity Indicator[110] in the ship risk profile (SRP) would lead to an increase by 3.15% in the total number of inspections relative to the baseline, or 15.2% increase in the number of expanded inspections. According to the PSC Directive, High Risk Ship (HRS) are inspected every six months. However, some ships do not operate all year round in EU waters and therefore cannot be inspected as soon as their inspection time window opens. In addition, the interval between two inspections is not calculated on a calendar annual basis but on the basis of time since the last inspection. Taking these considerations into account EMSA estimates that these HRS will be inspected 1.8 times a year. The increase in the number of expanded inspections relative to the baseline, provided above, also takes into account these considerations.

The number of expanded inspections is projected to increase by 471 in 2030 relative to the baseline, by 513 in 2040 and 565 in 2050. The enforcement costs for PSC authorities relative to the baseline are provided in Table 38. The calculation of costs takes into account the decrease in the costs per inspection due to digitalisation in PO B and PO C. Expressed as present value over 2025-2050 the total costs relative to the baseline are estimated at EUR 2.664 million in PO B and EUR 2.626 million in PO C.

Table 38: Enforcement costs for PSC authorities relative to the baseline (in EUR)

	Difference to the baseline								
	PO A			PO B			PO C		
	2030	2040	2050	2030	2040	2050	2030	2040	2050
Enforcement costs for PSC authorities relative to the baseline (EUR), in 2020 prices	-	-	-	140,074	145,965	160,760	138,862	143,325	157,853

Source: COWI (2022), Impact assessment support study

PM12: Commission/EMSA to develop enhanced training tools/capacity development for inspectors

PM12 is a specific policy measure addressing the training of PSCOs. While the training offered by EMSA and the Paris MoU Secretariat is generally assessed to be effective, such training may be limited and need to be further developed having regard to new technologies, new requirements arising from the international conventions and EU acquis and renewable and low carbon fuels. As a consequence, several improvements would be needed to update trainings and increase the scope of the training, in addition to the training foreseen in relation to fishing vessels inspections and e-certificates. The costs for EMSA are expected to amount to EUR 150,000 per annum made up of EUR 36,000 for in person training, a further EUR 34,000 to cover enhancement (related to PSC inspector training) of EMSA's on line training tools (the maritime Knowledge Centre and RuleCheck) and EUR 80,000 for the recruitment of experts from a pool of expertise that EMSA has developed to address very specialised matters (such as new technologies) for

[110] The CII will be adopted in 2023. However, the IMO has indicated that the distribution of the rating for "A" to "E" over the eligible world fleet will follow a "standard" with the least polluting 15% of eligible ships being category A, category B making up 20%, category C compromising 30% while categories D and E will be 20% and 15% respectively.

which the Agency does not have the expertise in house. This is equivalent to one additional full time equivalent (FTE) for EMSA in all three policy options relative to the baseline.

PM13: Amend the Directive to require Member States to develop and apply a Quality Management System for their PSC activities

PM13 requires Member States to develop, implement and maintain a quality management system (QMS) for their port State control administrations. This QMS shall be certified in accordance with the applicable international quality standards (ISO 9000 series). The QMS is required for all PSC administrations, to identify and address system problems they may encounter and to thereby improve the quality of their work and in particular resource allocation.

Currently, only France and Poland have implemented Quality Management Systems (QMS) for their PSC activities. Hence, PM13 will only have cost implications for the 20 port States where this is not yet the case. According to desk research and stakeholders' consultation in the context of the impact assessment support study, the one-off costs for putting in place such a QMS (ISO 9000) is estimated at EUR 5,000 per PSC administration in 2025. Auditing costs (i.e. ongoing costs) are assessed at EUR 5,000 every year. Thus, the total adjustment costs for PSC authorities relative to the baseline are assessed at EUR 100,000 from 2026 to 2050. In addition, the total one-off costs in 2025 are estimated at EUR 100,000. Expressed as present value over 2025-2050 the total adjustment costs for PSC administrations relative to the baseline are estimated at EUR 1.841 million.

PM14: Amend the Directive to allow for inspections to be missed in force majeure situations

PM14 addresses the issue of lack of flexibility of the PSC regime in cases of crisis or unexpected events, such as the COVID-19 pandemic. The resilience of the PSC regime to force majeure events was in fact challenged by the pandemic. To make the regime more resilient, the measure focuses on granting more flexibility to Member States, in terms of allowing them to miss inspections in cases of force majeure. This measure is not expected to have a significant impact on costs or costs savings.

PM15A: Recommend that all inspections are carried out by more than one inspector

PM15A includes a recommendation that all PSC inspections are conducted by more than one inspector, in order to increase the quality of inspections. Analysis by EMSA has shown that 42% of PSC inspections (initial, more detailed and expanded inspections) on commercial vessels in 2019 were conducted by more than one inspector and the share is assumed to remain constant over time. The measure is estimated by EMSA to increase the overall time spent on inspection by a third. In PM15A it is assumed that only 50% of the PSC inspections that are not conducted by more than one inspector will comply with the recommendation. In addition, the PSC on fishing vessels due to the enlargement of the scope of the PSC Directive will also have to follow the recommendation. The assessment of the measure takes into account the synergies with other measures in terms of number of inspections carried out and with measure PM7A with regard to the impact of digitalisation on the time for carrying out an inspection.

The projected number of inspections that would carry out the recommendation, for commercial and fishing vessels, is provided in Table 39, together with the enforcement

costs for PSC authorities relative to the baseline. Expressed as present value over 2025-2050 the total costs for PSC authorities relative to the baseline are estimated at EUR 5.661 million. No additional costs are expected either for vessel operators or for EMSA.

Table 39: Enforcement costs for PSC authorities relative to the baseline (in EUR)

	2030	2040	2050
PSC inspections on commercial vessels			
Projected number of inspections with one inspector that follow the recommendation	4302	4686	5160
Additional enforcement costs (EUR) for commercial vessels, in 2020 prices	292,811	311,531	343,074
PSC inspections on fishing vessels			
Projected number of inspections that follow the recommendation	40	48	48
Additional enforcement costs (EUR) for fishing vessels, in 2020 prices	2,067	2,395	2,420
Total additional enforcement costs for PSC authorities (EUR), in 2020 prices	294,878	313,926	345,494

Source: COWI (2022), Impact assessment support study

PM15B: Amend the Directive to require that all expanded inspections are carried out by more than one inspector

PM15B ensures that all expanded PSC inspections are conducted by more than one inspector in order to guarantee more substantive inspections. Expanded inspections of vessels involve detailed checks of construction elements and safety systems by inspectors and they represent around 21% of all PSC inspections carried out. Hence, PM15B amends the PSC Directive and turn it into a requirement that all expanded inspections must be carried out by at least two inspectors. Analysis by EMSA has shown that 55% of expanded inspections on PSC eligible vessels in 2019 were conducted by more than one inspector and the share is assumed to remain constant over time. The measure is estimated by EMSA to increase the overall time spent on an expanded inspection by a third.

In addition, the PSC on fishing vessels due to the enlargement of the scope of the PSC Directive will also have to follow the requirement. The assessment of the measure takes into account the synergies with other measures in terms of number of expanded inspections carried out and with the measures on digitalisation that have an impact on the time for carrying out an expanded inspection.

The projected number of inspections subject to the requirement, for commercial and fishing vessels, is provided in Tables 40 and 41, together with the enforcement costs for PSC authorities relative to the baseline under PO B and PO C. Expressed as present value over 2025-2050 the total costs for PSC authorities relative to the baseline are estimated at EUR 3.110 million under PO B and EUR 3.083 million under PO C. No additional costs are expected either for vessel operators or for EMSA.

Table 40: Enforcement costs for PSC authorities relative to the baseline (in EUR) under PO B

	2030	2040	2050
PSC inspections on commercial vessels			
Projected number of expanded inspections with one inspector	1,632	1,778	1,958
Additional enforcement costs (EUR) for commercial vessels, in 2020 prices	161,803	168,607	185,681
PSC inspections on fishing vessels			
Projected number of expanded inspections with one inspector	21	29	32
Additional enforcement costs (EUR) for fishing vessels, in 2020 prices	1,599	2,043	2,324
Total additional enforcement costs for PSC authorities (EUR), in 2020 prices	**163,402**	**170,650**	**188,005**

Source: COWI (2022), Impact assessment support study

Table 41: Enforcement costs for PSC authorities relative to the baseline (in EUR) under PO C

	2030	2040	2050
PSC inspections on commercial vessels			
Projected number of expanded inspections with one inspector	1,632	1,778	1,958
Additional enforcement costs (EUR) for commercial vessels, in 2020 prices	160,403	165,557	182,323
PSC inspections on fishing vessels			
Projected number of expanded inspections with one inspector	36	44	41
Additional enforcement costs (EUR) for fishing vessels, in 2020 prices	2,661	3,076	2,873
Total additional enforcement costs for PSC authorities (EUR), in 2020 prices	**163,064**	**168,634**	**185,196**

Source: COWI (2022), Impact assessment support study

PM16A: Recommend that all PSC inspection reports are validated by an inspector other than the inspector who carried out the inspection

PM16A encourages that PSC inspection reports are validated by a different PSCO than the one who carried out the inspection and submitted the inspection report. On the basis of the information in the THETIS database, EMSA estimates that around 71% of the inspection reports are not validated by a person other than the inspector carrying out the inspection. As PM16A refers to a recommendation, it is assumed that 50% of the inspection reports that are currently not validated by a person other than the inspector carrying out the inspection, will be validated by a team member. One additional man-hour relative to the baseline is assumed for this validation.

In addition, the PSC inspection reports for inspections on fishing vessels due to the enlargement of the scope of the PSC Directive will also have to follow the recommendation. The assessment of the measure takes into account the synergies with other measures in PO A in terms of number of inspections carried out and thus the number of inspection reports.

The additional number of PSC inspection reports to be validated by another PSCO, for commercial and fishing vessels, is provided in Table 42, together with the administrative costs for PSC authorities relative to the baseline. Expressed as present value over 2025-2050 the total costs for PSC authorities relative to the baseline are estimated at EUR 4.235 million. No additional costs are expected either for vessel operators or for EMSA.

Table 42: Administrative costs for PSC authorities relative to the baseline (in EUR)

	2030	2040	2050
PSC inspections reports for commercial vessels			
Additional PSC inspection reports to be validated by another PSCO	5,730	6,239	6,846
Additional administrative costs relative to the baseline (EUR), in 2020 prices	216,648	235,903	258,855
PSC inspections reports for fishing vessels			
Additional PSC inspection reports to be validated by another PSCO	42	50	50
Additional administrative costs relative to the baseline (EUR), in 2020 prices	1,583	1,879	1,899
Total additional administrative costs for the PSC authorities relative to the baseline (EUR), in 2020 prices	**218,231**	**237,783**	**260,754**

Source: COWI (2022), Impact assessment support study

PM16B: Amend the Directive to require that all PSC inspection reports are validated by a validator other than the inspector who carried out the inspection before the inspection report is transferred to the database

PM16B is similar to PM16A but requires that PSC inspection reports are validated by a different PSCO than the one who carried out the inspection and submitted the inspection report. The PSC inspection reports for inspections on fishing vessels due to the enlargement of the scope of the PSC Directive will also have to follow the requirement. The assessment of the measure takes into account the synergies with other measures in PO B and PO C in terms of number of inspections carried out and thus the number of inspection reports.

The additional number of PSC inspection reports to be validated by another PSCO, for commercial and fishing vessels, is provided in Tables 43 and 44, together with the administrative costs for PSC authorities relative to the baseline under PO B and PO C. Expressed as present value over 2025-2050 the total costs for PSC authorities relative to the baseline are estimated at EUR 8.595 million under PO B and EUR 8.643 million under PO C. No additional costs are expected either for vessel operators or for EMSA.

Table 43: Administrative costs for PSC authorities relative to the baseline (in EUR) under PO B

	2030	2040	2050
PSC inspections reports on commercial vessels			
Additional PSC inspection reports to be validated by another PSCO	11,591	12,621	13,849
Additional administrative costs relative to the baseline (EUR), in 2020 prices	438,277	477,231	523,664
PSC inspections reports on fishing vessels			
Additional PSC inspection reports to be validated by another PSCO	108	144	164
Additional administrative costs relative to the baseline (EUR), in 2020 prices	4,076	5,459	6,210
Total additional administrative costs for the PSC authorities relative to the baseline (EUR), in 2020 prices	**442,353**	**482,690**	**529,873**

Source: COWI (2022), Impact assessment support study

Table 44: Administrative costs for PSC authorities relative to the baseline (in EUR) under PO C

	2030	2040	2050
PSC inspections reports on commercial vessels			
Additional PSC inspection reports to be validated by another PSCO	11,591	12,621	13,849
Additional administrative costs relative to the baseline (EUR), in 2020 prices	438,277	477,231	523,664
PSC inspections reports on fishing vessels			
Additional PSC inspection reports to be validated by another PSCO	181	222	207
Additional administrative costs relative to the baseline (EUR), in 2020 prices	6,845	8,387	7,832
Total additional administrative costs for the PSC authorities relative to the baseline (EUR), in 2020 prices	**445,123**	**485,617**	**531,495**

Source: COWI (2022), Impact assessment support study

PM17: Encourage all EU States who are eligible to join the Mediterranean MoU on Port State control

PM17 is a non-regulatory measure to improve the quality of PSC inspections in marine areas close to the EU by encouraging all EU port States who are eligible (Croatia, France, Greece, Italy, Slovenia and Spain) to join the Mediterranean MoU on port State control (Med MoU). Cyprus and Malta are already Med MoU members. The annual cost of Med MoU membership is currently approximately EUR 13,000 on the basis of 10 member authorities. It could be however expected that if the membership were to increase to 16 member authorities that this figure would be reduced to approximately EUR 8,200 per

annum. This would result in an annual total additional cost of EUR 39,600 for the port State authorities, considering also the reduction in the cost of membership for Malta and Cyprus. Expressed as present value over 2025-2050 the total adjustment costs for PSC authorities relative to the baseline are estimated at EUR 0.729 million.

As previously mentioned all policy options contain eight common policy measures. In relation to the main measures that drive the impacts, sections 6.1.1-6.1.3 of the report already provide the share of the overall impacts that are driven by specific policy measures with significant impact. The following ***tables summarise the impacts by policy option and by policy measure for each stakeholder group***.

Table 45: Costs and costs savings for EU port State authorities by policy option and by policy measure – present value for 2025-2050 compared to the baseline (in million EUR), in 2020 prices

	PO A	PO B	PO C
Total additional costs (million EUR)	**13.313**	**17.862**	**19.388**
Administrative costs	***4.235***	***8.595***	***8.643***
PM16A	4.235		
PM16B		8.595	8.643
Adjustment costs	***2.570***	***2.570***	***2.570***
PM13	1.841	1.841	1.841
PM17	0.729	0.729	0.729
Enforcement costs	***6.508***	***6.697***	***8.174***
PM1A	0.208	0.208	0.208
PM1B	0.400	0.400	0.400
PM1C			1.382
PM6A	0.238		
PM6B		0.314	
PM6C			0.475
PM11		2.664	2.626
PM15A	5.661		
PM15B		3.110	3.083
Enforcement costs savings (million EUR)	**2.887**	**8.406**	**9.503**
PM3	0.083	0.061	0.055
PM7A	2.804		
PM7B			8.385
PM7C		7.260	
PM10		1.086	1.063

Table 46: Costs for flag State authorities by policy option and policy measure – present value for 2025-2050 compared to the baseline (in million EUR), in 2020 prices

	PO A	PO B	PO C
Adjustment costs (million EUR)		**4.831**	**4.831**
PM7B			4.831
PM7C		4.831	

Table 47: Costs and costs savings for ship operators by policy option and policy measure – present value for 2025-2050 compared to the baseline (in million EUR), in 2020 prices

	PO A	PO B	PO C
Enforcement costs (million EUR)	**0.496**	**0.715**	**1.105**
PM6A	0.496		
PM6B		0.715	
PM6C			1.105
Administrative costs savings (million EUR)	**5.530**	**5.530**	**5.530**
PM5	5.530	5.530	5.530

Table 48: Costs for EMSA by policy option and policy measure – present value for 2025-2050 compared to the baseline (in million EUR), in 2020 prices

	PO A	PO B	PO C
Adjustment costs (million EUR)	**4.138**	**6.479**	**6.479**
PM6A	0.713		
PM6B		0.813	

	PO A	PO B	PO C
PM6C			0.813
PM7A	0.663		
PM7B			2.904
PM7C		2.904	
PM12	2.762	2.762	2.762

4. Benefits in terms of avoided number of fatalities, injuries and tonnes of bunker fuel lost at sea

As deficiencies identified during PSC inspections typically have to be rectified before the vessel leaves the port or shortly thereafter, PSC inspections are expected to lead to a reduction in the number of ship deficiencies over time and thereby to improve safety and environmental performance. To estimate the benefits, a relationship between the number of inspections and safety indicators has been estimated in the context of the impact assessment support study, by establishing an autoregressive log-log model. The effect of an inspection conducted in year t is estimated to have an impact on the safety level in year t+2. The hypothesis is thus that the safety impacts take two years to materialize.

A relationship between the (natural logarithm) of inspections conducted in the period 2012-2017 on the number of marine casualties in the period 2014-2019 has been estimated. It indicates that the negative effect of the number of inspections on the number of marine casualties two years later is statistically different from 0. Furthermore, the error term, indicated by the R2 (at 0.69) is fairly low, which suggests that much of the changes in year t+2 can be explained by changes in year t. The regression analysis is to be interpreted as "a 1% increase in inspections in year t reduces the number of marine casualties in year 2 by 1.031%". However, as the number of ship deficiencies decreases over time, it is expected that the impact on marine casualties and thus on the number of fatalities and injuries avoided would also decrease over time. Therefore, it has been assumed that the elasticity decreases in a non-linear way by 2050, the impacts being significantly smaller post-2040 (at less than 0.2%).

It should be noted however that there is high uncertainty regarding these estimates. This is because the impacts of the PSC Directive on safety are indirect, through inspections that are aimed to address ship deficiencies. For this reason, sensitivity analysis has been performed, assuming 10% and 15% lower value in absolute terms of the elasticity used to derive the impacts.

The reduction in the number of casualties is subsequently translated into a reduction in the number of fatalities, injuries and tonnes of bunker fuel lost at sea by using the ratios between the number of fatalities, injuries and tonnes of bunker fuel lost at sea and the number of marine casulaties projected in the baseline scenario.

ANNEX 5: CONCLUSIONS OF THE 2018 MARITIME FITNESS CHECK AND EMSA HORIZONTAL ANALYSIS

As regards port State control, the 2018 Maritime Fitness Check drew the following conclusions:

- The EU layer of legislation appears fully relevant to ensure enforcement and uniformity. While the EU is sometimes accused of going beyond the IMO standards and undermining the credibility of the international regulation process when in the past the EU has acted this has prompted progress at IMO level and the subsequent adoption of global initiatives.
- The EU is today widely perceived as one of the regions in the world where rules are most strictly and properly monitored and enforced with effective systems and procedures in place. Considerable added value is associated with EMSA. The Agency's systems and databases, its training and capacity-building activities have been a key enabler of the success of the overall maritime transport policy, ensuring real operational application.
- The capacity of Member States to fulfil their international obligations as a flag, port or coastal State in relation to the various Directives appears to be under strain.
- The fitness check concluded that there is no major scope for legislative simplification in the overall set up. The legislation was complementary and no overlap was identified. The legislation mirrors the various responsibilities defined at international level which would have to be followed in any case by the Member States at national level. On the other hand, the fitness check concluded that there is margin to achieve further simplification and burden reduction in relation to the individual directives. The potential as well as the challenges of digitalisation are horizontal issues. Digitalisation through EMSA systems has been a key enabler for the achievement of the objectives.

Links between the 2018 ex-port evaluation and the present impact assessment

Main ex-post evaluation conclusions	Impact Assessment
Conclusions on relevance	
The Commission and EMSA could together with the Member States explore the need for more flexibility to increase effectiveness and efficiency.	Policy measures are defined to keep the Directive up to date with developments at international level (IMO and Paris MoU).
Conclusions on effectiveness	
With regard to effectiveness, the evaluation recommends that EMSA continues its provision of common training, in pursuance of high-quality and harmonised PSC inspections.	Policy measures are defined for EMSA to provide for more and more detailed training to PSC inspectors.
Member States and Paris MoU should continue the process of improving the design of the ship risk profile by looking at issues such as the weighting of generic and individual risk factors, the formula for calculating flag State performance (the white-grey-black list) and the taking into account of an environmental focus.	Policy measures are defined to adjust the ship risk profile to better target high risk ships for inspection as well as to give more focus to environmental aspects. The ship risk profile should also be modified to take account of changes to the formula for drawing up the white-grey–black list.
Larger fishing vessels should be subject to some form of inspection to ensure compliance with maritime safety, pollution prevention as well as living and working conditions on-board.	Policy measures are defined to look into the possibility of providing for PSC inspections of larger fishing vessels.
Conclusions on efficiency	
The interface between SafeSeaNet and THETIS should continuously be developed in response to user feedback. Issues related to the failure of certain Member State authorities to update SafeSeaNet also need to be followed up.	Policy measures are defined to address identified problems with the SafeSeaNet /THETIS interface and to require that all updates on time of arrival and departure are made within three hours.
There is a need for increased operational flexibility: justification for a missed inspection should for example be made more flexible. Member States should respect the inspection commitments and not exceed the number of inspections significantly.	Policy measures are defined to provide operational flexibility for missed inspections (including force majeure situations) and to limit the effect of this over-inspection to the states concerned.
Conclusions on coherence	
Account should also be taken of all of the other demands placed on PSC inspectors by recently adopted EU legislation or by legislation that is planned.	Policy measures are defined to provide for better prepared, more ship focused PSC inspections by providing for digital ship certificates which is linked with the flag state responsibilities.
Conclusions on EU added Value	
EMSA should continue its provision of common training – in pursuance of high-quality and harmonised PSC inspections.	Policy measures are defined for EMSA to provide for more and more detailed training to PSC inspectors.
The Directive makes legally enforceable voluntary commitments made in the context of the Paris MoU.	EU action continues to be needed to deliver on the policy objectives.

Links between conclusions of EMSA horizontal analysis and this impact assessment

Weaknesses identified in horizontal analysis	Impact Assessment
The four most problematic areas relate to expanded inspections, safety and security guidelines and procedures, the professional profile of inspectors and accurate and complete recording/exchange of information in THETIS.	Policy measures are defined to address the issue of training of inspectors and to introduce an obligatory Quality Management System (QMS).
In some Member States, the PSC staff is not distributed optimally between the ports.	Policy measures are defined to introduce an obligatory QMS to identify weaknesses in the ways in which Member States organise and carry out inspections.
There are problems with missed and postponed inspections.	Policy measures are defined to address the issue of missed and postponed inspections.
There is room for improvement in the cooperation between the PSC competent authorities and other relevant national authorities/bodies.	Policy measures are defined to address the issue of training of inspectors and to introduce an obligatory QMS so that communication problems can be identified and addressed.

ANNEX 6: PARIS MOU CHANGES NOT REFLECTED IN THE CURRENT DIRECTIVE

Changes made by the Paris MoU	Corresponding part of the PSC Directive
The Ballast Water Management Convention and the Nairobi International Convention on the Removal of Wrecks have been added to the list of "relevant instruments" to be enforced by means of PSC.	Article 2(1) of the Directive
The statistical formula for calculating the White, Grey and Black-list favoured larger flag states over smaller ones and was changed to be more deterministic.	Recital 15, Article 16 "Access refusal measures concerning certain ships", Annex I and II "Design of ship risk profile"
The Ship Risk Profile was altered to take account of developments and lessons learned[111]	Annex I and II with details on the design of ship risk profile
The reference to the International Maritime Organisation (IMO) Voluntary Member State Audit Scheme was replaced by the IMO Member State Audit Scheme (IMSAS)	Recital (11), Article 2 (3), Annex I and II
Out-of-date reference to all Paris MoU Procedures and Guidelines as these have changed since 2009	Annex IV "List of certificates and documents" (referred to in Article 13(1))
Lack of operational flexibility for Member States in missing a Priority I or Priority II inspection	Article 6, "Modalities of compliance with the inspection commitment"
The 72 hours (3 days) advance notification (reporting) obligation for "the operator, agent or master of a ship which, in accordance with Article 14, is eligible for an expanded inspection" has become redundant as this information can already be retrieved by port State authorities, for instance through THETIS	Annex III "Notification" and referred to in Article 9(1)

[111] The weighing points allocated to specific ship type rated as a high risk ship (i.e. Chemical tanker, Gas Carrier, Oil tanker, Bulk carrier, Passenger ship, NLS-tanker) was changed from 2 to 1. This reflects the improved safety performance of these ship types. An additional weighting point is added if a the number of deficiencies recorded for a High Risk Ship in an inspection (any type) within the previous 36 months is 6 or more. For a flag State to meet the IMO Audit criterion contributing to low risk, it shall have ratified all the Paris MoU relevant instruments listed in Section 2 of the memorandum.

ANNEX 7: EXPANDED INSPECTIONS

All ship types are subject to inspection of the following:

a) Structural condition, condition of hull and deck;
b) Watertight/weathertight condition, including watertight/weathertight doors, ventilators, air pipes and casing and hatchways;
c) Emergency systems, including a simulated blackout/start of emergency generator, emergency lighting, a test of bilge pumping arrangements, a test of closing devices/watertight doors and a test of steering gear including emergency steering gear;
d) Radio communication including a test of reserve source of energy, a test of main installation including facilities for reception of marine safety information and a test of global maritime distress safety system (GMDSS) portable very high frequency (VHF) sets;
e) Fire safety: a fire drill, including a demonstration of the ability to use firemen's outfits and firefighting equipment and appliances, a test of emergency fire pump (with two hoses) a test of remote emergency stopping ventilation and associated dampers, a test of remote emergency stopping fuel pumps, a test of remote quick closing valves, fire doors and fixed fire extinguishing installations and associated alarms;
f) Alarms, including a test of the fire alarm;
g) Living and working conditions including condition of mooring equipment, including machinery foundations;
h) Lifesaving appliances including launching arrangements for survival and rescue craft (if evidence of disuse, craft must be lowered to the water);
i) Pollution prevention including a test of oil filtering equipment.

While other requirements apply for other vessel types, by way of example for passenger vessels Commission Regulation 428/2010 requires in addition to all of the stipulations already listed:

a) Documentation, documented evidence of crowd-management training, familiarisation training and safety training for personnel providing direct safety assistance to passengers in passenger spaces, and in particular to elderly and disabled persons in an emergency. Crisis management and human behaviour training;
b) Watertight/weathertight condition including bow and stern doors as applicable and a test of remote and local controls of watertight bulkhead doors;
c) Emergency systems including crew familiarity with damage control plan;
d) Cargo operations including lashing arrangements as applicable;
e) Fire safety including a test of remote and local controls for the closing of fire dampers;
f) Alarms including a test of the public address system and a test of fire detection and alarm system;

g) Lifesaving appliances including an ‘Abandon ship’ drill (including lowering a rescue and a lifeboat to the water);

ANNEX 8: DISCARDED POLICY MEASURES

Vessel safety checklist

Important ship safety and environmental issues are not being covered by Port State Control. The issue of accidents involving port and dock workers on ships in ports has been raised during the stakeholder consultation.

To this end the port social partners have developed a common vessel safety checklist which in their opinion should be used in a uniform way in cooperation with all terminal operators across different ports and Member States, to detect and act as necessary to correct unsafe workplaces and infrastructures on board of ships. The social partners asked to explore whether this could be incorporated into PSC inspections.

As previously stated PSC inspection are based on the provisions of the international conventions and/or on EU legislation and the vessel safety checklist does not link back to either of these legal bases. Furthermore PSC is a spot-check system whereby foreign flagged vessels are inspected on the basis of their ship risk profile and the length of time since the last inspection; they are not inspected on each port call. In order to be operational the vessel safety checklist would have to apply to all vessels regardless of flag and would have to be used before every loading and unloading operation. On this basis it was concluded that the vessel safety checklist cannot be incorporated into PSC.

ANNEX 9: RETAINED POLICY MEASURES

This annex provides a more detailed description of the retained policy measures and their links to the specific objectives.

Policy measure	Short description	Link to a specific objective
PM1A: Expand the scope of the Directive and align with IMO and Paris MoU by adding Ballast Water Management Convention (BWM) as a relevant international instrument to the Directive	The Paris MoU has added the IMO BWM Convention as a relevant instrument for port State control inspections. This measure will align the Directive with the Paris MOU and require EU Member States to enforce the BWM Convention to combat the spread in ships' ballast water of alien and invasive species which have a deleterious effect on biodiversity, fisheries, tourism and human health. As of 27 October 2021[112], Ireland, Italy, Romania and Slovenia have not yet signed the Convention. Adopting this measure will in practice only have implications for these Member States. Furthermore, in the context of the Paris MoU, EMSA already provides training in this area to those EU member States that have signed/ratified the Convention. There are non-legislative measures in place to support the implementation of PM1A.	SO1: Align EU legislation with new international rules
PM1B: Expand the scope of the Directive and align with IMO by adding Nairobi International Convention on the Removal of Wrecks (WRC) as a relevant international instrument to the Directive	This measure should allow EU Member States to enforce this important IMO Convention which provides the legal basis for States to remove, or have removed, shipwrecks that may have the potential to affect adversely the safety of lives, goods and property at sea, as well as the marine environment. PM1B will imply that PSCOs in the eight Member States that have not yet ratified the Convention will have the additional task of checking the certificate of insurance under this convention as well as its expiry/validity dates. As of 27 October 2021, this is the case for Ireland, Greece, Spain, Italy, Latvia, Lithuania, Poland, and Slovenia.	
PM1C: Expand the scope of the Directive by	This measure allows for the possibility of adding further environmentally	

[112] The date on which the IMO last updated its ratification/accession database

Policy measure	Short description	Link to a specific objective
providing for other Conventions (HNS and Hong Kong) which are open for ratification and have been ratified by at least one EU Member State. These are to be added to the Directive "once they enter into force"	oriented conventions, the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea 1996 (HNS Convention) and the Hong Kong International Convention for the safe and environmentally sound recycling of ships 2009 (Hong Kong Convention) when these conventions (which are not yet in force) enter into force and have been ratified by at least one EU Member State. As neither of these Conventions has yet entered into force no EU Member State is currently enforcing them. HNS has been ratified only by Denmark. Seven EU Member States (Belgium, Denmark, Estonia, France, Germany, Malta and Netherlands) have ratified Hong Kong Convention but all EU Member States effectively apply its provisions in their PSC inspections through the EU Ship Recycling Regulation (Regulation (EU) No 1257/2013).	
PM2: Align the Directive to the Paris MoU new Ship Risk Profile (SRP) used to target ships for inspection including the new calculation method for the White Grey Black (WGB) list formula	The Paris MoU has charged the way that the SRP is calculated in particular as regards: (i) points allocated to specific ship types (ii) in cases where a vessel has more than 6 deficiencies recorded against it during an inspection (iii) if the flag State of the vessel has ratified all the Paris MoU relevant Conventions. The MoU has also changed the calculation method used to calculate the White-Grey-Black (WGB) to target ships for inspection. The list ranks flag States in accordance with the PSC performance of the vessels flying their flag. The method previously used was shown to be unfair to fleets with small numbers of ships. The Paris MoU has recognised this unfairness and adopted a more deterministic formula. These changes cannot be implemented unless and until the Directive is amended. PM2 would align the methodology used to calculate the WGB list formula to the new methodology adopted by the Paris MoU.	
PM3: Align the Directive to the (i) Paris MoU list of certificates and documents to be checked during an inspection (ii) to the changes in the Paris MoU refusal of access (banning) procedures and (iii)	With regard to the list of certificates and documents the Paris MoU has aligned itself with the IMO guidance regarding Annex IV: 'List of Certificates and Documents'. These certificates have to be checked during each type of PSC inspection. This change cannot be implemented unless and until the Directive is	

Policy measure	Short description	Link to a specific objective
incorporate all current Paris MoU Procedures and Guidelines	amended. As regards the refusal of access (banning) procedures, three changes have been adopted by the Paris MoU relating to the way in which ships are refused access (banned). The first change introduces a flag-blind banning procedure so that vessels flying a White-listed flag can be subject to a ban – which was not previously the case. Poor quality ships under White-listed flags are treated in the same way as Black-listed and Grey-listed flags. This change to the banning procedure will close an inconsistent and weak link in the banning procedure whereby the flag of the vessel used to target the vessel was also used to determine whether it could be subject to a refusal of access. The second change allows for a refusal of access (ban) if a ship violates a detention order issued by a port State by proceeding to sea without complying with the conditions determined by the port State (jumps detention). The third change fixes a time period of 12 months for bans due to either jumped detention or to a ship not proceeding to an agreed repair yard outside the port of detention. The ban will be automatically lifted after the time period has elapsed. With respect to Guidelines and Instructions, the Directive should be updated to contain the most recent versions of all Paris MoU procedures and guidelines for the control of ships. These procedures, guidelines and instructions are referred to in Article 15 (1) and in Annex VI of the Directive. Annex VI refers to the "up-to-date" versions of the 17 instructions listed therein and does not take into account if any of these has become obsolete, replaced by another instruction or guideline or if any new instructions have been added since 2009. PM3 will ensure consistency between the Directive and the Paris MoU as well as among EU Member States and Paris MoU members on PSC procedures, guidelines and instructions.	

Policy measure	Short description	Link to a specific objective
PM4: Align the Directive to the Paris MoU changes to the inspection commitment	This involves an alignment of the inspection commitment of Member States to changes agreed to at the Paris MoU. Each Member State must carry out a total number of inspections of foreign merchant ships classified as Priority I (must be inspected) and Priority II (can be inspected) corresponding to at least its annual inspection commitment determined in accordance with the Paris MoU (Annex 11). Due to changes on the number of Priority I and Priority II ships, some Member States are over-burdened or under-burdened. Currently, member States are allowed to miss 5% of Priority I ships. The Paris MoU has decided to change this by increasing the flexibility of the inspection commitment for members with a low number of Priority I calls by allowing up to 10% pf Priority I ship inspections to be missed as well as the possibility to justify a missed inspection for night-time ship calls and very short ship calls.	
PM5: Align the Directive to the Paris MoU changes which abolishing the 72 hour reporting obligation for vessels eligible for an expanded inspection	The memorandum placed an obligation on vessels which are eligible for an expanded PSC inspection: (i) all ships with a high risk profile (regardless of type and age), which have not been inspected in the last five months; (ii) oil, gas and chemical tankers, bulk carriers or passenger ships more than 12 years old, with a standard risk profile, which have not been inspected in the last 10 months; (iii) oil, gas and chemical tankers, bulk carriers or passenger ships more than 12 years old, with a low risk profile, which have not been inspected in the last 24 months. The obligation was to notify their estimated time of arrival to a port 72 hours in advance of their arrival. If the voyage takes less than three days, the agent shall submit the data before departure from the previous port. This obligation was felt to be too burdensome on the agent, operator or master and to add no value as the PSC authorities have this information more easily available in THETIS. The Paris MoU abolished this pre-arrival notification obligation but this change cannot be implemented unless and until the Directive (which contains an identical obligation) is amended.	
PM6A: Encourage Member States to carry out	This measure would involve a recommendation that those Member States who	

Policy measure	Short description	Link to a specific objective
PSC on eligible fishing vessels (over 24 metres) by means of development of guidelines, workshops	wish, could PSC inspect eligible foreign fishing vessels (over 24 metres in length) for safety, environmental and working conditions related issues. This would be supported at EU level by means of EU guidelines and workshops etc.	
PM6B: Provide for a voluntary PSC system for fishing vessels of above 24 metres which will exist in parallel to the Directive by means of guidelines, training and an inspection database for targeting ships and reporting on inspections	This measure would involve the creation of a voluntary PSC system for those EU member States which wish to carry out PSC inspections on eligible foreign fishing vessels (over 24 metres in length) for safety, environmental and working conditions related issues. This would be supported at EU level by means of a specific THETIS module whereby Member States could target vessels for inspection, record the results of inspections and share these results with other EU Member States. The Commission/EMSA working with the Paris MoU would also develop guidelines and workshops etc.	
PM6C: Amend the Directive to fully incorporate larger fishing vessels (over 24 metres in length) within its scope.	This measure would involve fully incorporating fishing vessels of above 24 metres into the Directive meaning that each fishing vessel would have its own ship risk profile and EU Member States would have to carry out PSC inspections on foreign flagged fishing vessels in the same way as they currently inspect merchant shipping. This would be supported by Commission/EMSA by means of EU guidelines, training and workshops etc.	SO2: Protect fishing vessels, their crew and the environment
PM7A: Encourage the uptake and use of electronic certificates in PSC by means of guidelines, workshops, etc.	This measure consists in a recommendation encouraging the PSC administrations in the Member States to accept electronic certificates and encourage Recognised Organisations (RO) and flag States to work towards a common data definition to facilitate an easier validation of PSC data both during the planning of and the carrying out of PSC inspections. This would be supported by Commission/EMSA by means of guidelines, training and workshops.	
PM7B: Amend the Directive to make e-certificates the default for PSC in the EU providing for a common data model, a validation/verification tool and repository at EU	This measure provides that the electronic certificates become the default means of validating ships certificates in the context of PSC and foresees the eventual phasing out of paper certificates for PSC. This measure involves the development, maintenance and operation of IT solutions to consolidate	

Policy measure	Short description	Link to a specific objective
level	certificates across flag states and ROs for the use of PSC administration as well as a validation protocol and tool. A consolidated certificate database for the EU Member States will be developed by EMSA, which can be built as a module for THETIS and based on the current prototype. It would also include building a tool to support the validation and inspection of certificates that can be used by planners and PSCOs.	
PM7C: Amend the Directive to provide for electronic certificates, common data model, a validation tool and repository at EU level - linking the use of electronic certificates with the ship risk profile	This is similar to the previous measure but does not foresee the phase out of paper certificates. It encourages the issuance of electronic certificates by flag States or by ROs acting on their behalf by rewarded e-certificates with points (adding a parameter to the SRP) towards being considered as a low-risk ships and so being less targeted by PSC inspections.	SO3: Ensure higher uptake of digital solutions
PM8: Amend the Directive to clarify and fix the time-frame within which the ship arrival and departure notifications have to be carried out	This measure focuses on problems encountered regarding the interface between SafeSeaNet and THETIS, and the identified issues about the transmission of the actual time of arrival (ATA) and the actual time of departure (ATD). ATA and ATD data is critical data used in THETIS to calculate the SRP and correctly identify the risk status of ships arriving and departing at ports and anchorages. Article 24 (2) of the Directive provides that Member States should ensure that this data "is transferred within a reasonable time to the inspection database through the Community maritime information exchange system SSN". PM11 will clarify and specify what this reasonable time should be. The ATA and ATD should be reported within three hours, which should be reflected in the PSC Directive.	
PM9: Amend the Directive to allow more flexibility for missed inspections	The Directive currently allows for a certain percentage of inspections to be missed. This is rather inflexible for those Member States with a smaller inspection commitment. These thresholds will be adjusted so that member States can have more certainty regarding the number of inspections that they can miss.	
PM10: Amend the Directive to prevent unwanted spill-over effects of Member States which exceed	When Member States of the Paris MoU exceed their inspection commitment this increases the overall number of inspections and as the annual inspection	SO4: Ensure efficient and harmonised approach

Policy measure	Short description	Link to a specific objective
their inspection commitment	commitment is based on an average of the previous three years inspection it increases the inspection commitment for all States in the years that follow. This measure would limit any increase to the State that exceeds its commitment.	in undertaking PSC inspections
PM11: Amend the Directive by adding environmental parameters to the ship risk profile used to target ships	As the Union and its Member States attach more importance to the environmental aspects of shipping than before, this measure changes the SRP in two ways. (i) As regards all vessels eligible to PSC it takes more account will be taken in the SRP of environmental related deficiencies (MARPOL, BWM, AFS, CLC PROT 1992, BUNKER and Nairobi Conventions) recorded against that ship in previous PSC inspections carried out in the Paris MoU region. (ii) For cargo and passenger vessels of over 5000 GT (which are regarded as the most polluting) the SRP will take account of the vessel's IMO Carbon Intensity Indicator.	
PM12: Commission to develop enhanced training tools/capacity development for inspectors	This is a specific policy measure addressing the issue of PSC inspector training of PSCOs. PSC training needs to be further developed having regard to the widened and widening scope of PSC inspections. As a consequence, several improvements would be needed to update trainings and increase the scope of the training. The enhanced training tools should also cover online training opportunities which provide for blended training, with both virtual and on-site trainings to complement face-to-face training and to increase the system's resilience during unexpected events.	
PM13: Amend the Directive to require Member States to develop and apply a Quality Management System for their PSC activities	This measure would introduce requirements for a Quality Management System (QMS) for PSC operations to keep pace with the increasing complexity and requirements of PSC inspections. .. This measure should allow for better quality control and indicate problems such as resource allocation issues. It will apply to all port States that do not have an externally certified QMS for their PSC operations.	
PM14: Amend the Directive to allow for	Currently only certain Priority I inspections can be missed due to situations	

Policy measure	Short description	Link to a specific objective
inspections to be missed in force majeure situations	which are outside the control of the inspection authority. This measure would allow for inspections of all types to be missed in situations of impossibility, which are outside the control of the inspecting authority.	
PM15A: Recommend that all inspections are carried out by more than one inspector	This measure will recommend that in order to ensure a consistent and harmonised high level of inspections all PSC inspections are carried out by more than one inspector.	
PM15B: Amend the Directive to require that all expanded inspections are carried out by more than one inspector	Expanded inspections involve detailed checks of construction elements and safety systems and are difficult if not impossible to carry out for a single inspector. This measure will require that all expanded inspection are carried out by more than one inspector.	
PM16A: Recommend that all PSC inspection reports are validated by a validator other than the inspector who carried out the inspection	This measure will recommend that all PSC inspection reports should be validated by someone other than the inspector(s) who carried out the inspection to provide for an appropriate level of quality control of inspection reports.	
PM16B: Amend the Directive to require that all PSC inspection reports are validated by a validator other than the inspector who carried out the inspection before the inspection report is transferred to the database	This measure will require that all PSC inspection reports should be validated by someone other than the inspector(s) who carried out the PSCO to ensure an appropriate level of quality control of inspection reports.	
PM17: Encourage all EU States who are eligible (ES, EL, FR, HR, IT, SI) to join the Mediterranean MoU on Port State control.	This is a non-regulatory measure to encourage those EU Member States which are eligible (Croatia, France, Greece, Italy, Slovenia and Spain) to join the Mediterranean MoU on port State control (Med MoU) – Cyprus and Malta are already Members. The Med MoU is a regional PSC similar to the Paris MoU for Mediterranean littoral states. EMSA provides the Med MoU with a version of the Thetis database (THETIS-Med). More EU Member States joining the Med MoU should improve the overall quality of inspections carried out and the maritime safety and environmental protection situation in the Mediterranean.	SO1: Align EU legislation with new international rules

ANNEX 10: Effectiveness of the different policy options

Key: Impacts expected					
××	×	O	✓	✓✓	
Strongly negative	Negative	No or negligible impact	Positive	Strongly positive	Unclear
	PO A		PO B		PO C
Specific policy objective 1: Align EU legislation with new international rules					
Expected improvement in clarity and functioning of the internal market	Positive effect in removing any ambiguity for national PSC authorities having regard to additional conventions at IMO level (Ballast Water Management Convention and Nairobi Wreck Removal Convention) that have entered into force and can be enforced by means of PSC. Improved PSC inspections as EU Member States can implement those changes already agreed at the level of the Paris MoU which cannot be implemented unless and until the Directive is amended. Positive effect on the functioning of the internal market through improved clarity.		Positive effect in removing any ambiguity for national PSC authorities having regard to additional conventions at IMO level (Ballast Water Management Convention and Nairobi Wreck Removal Convention) that have entered into force and can be enforced by means of PSC. Improved PSC inspections as EU Member States can implement those changes already agreed at the level of the Paris MoU which cannot be implemented unless and until the Directive is amended. Positive effect on the functioning of the internal market through improved clarity.		Positive effect in removing any ambiguity for national PSC authorities having regard to additional conventions at IMO level (Ballast Water Management Convention and Nairobi Wreck Removal Convention) that have entered into force and can be enforced by means of PSC. Improved PSC inspections as EU Member States can implement those changes already agreed at the level of the Paris MoU which cannot be implemented unless and until the Directive is amended. Positive effect on the functioning of the internal market through improved clarity. The inclusion in the Directive, "pending their entry into force", of two international conventions (the HNS and Hong Kong Conventions) which have not yet entered into force would send a political signal of the importance that the Union attached to

Key: Impacts expected					
××	×	O	✓	✓✓	
Strongly negative	Negative	No or negligible impact	Positive	Strongly positive	Unclear
	PO A		PO B		PO C
					these issues and would allow the Directive to be kept up-to-date if and when these Conventions enter into force.
Specific policy objective 2 – Protect fishing vessels, their crews and the environment					
Changes in the number of fatalities and injuries involving fishing vessels	Positive impact on the number of lives saved and injuries avoided (3 lives saved and 25 injuries avoided) during 2025-2050 relative to the baseline through the encouragement of PSC for larger fishing vessels, supported by EMSA training and Guidelines.		Positive impact on the number of lives saved and injuries avoided (3 lives saved and 34 injuries avoided) during 2025-2050 relative to the baseline by means of a voluntary PSC system for larger fishing vessels developed with the cooperation of the Paris MoU and operating in parallel to the Directive with a targeting system and inspection database.		Positive impact on the number of lives saved and injuries avoided (4 lives saved and 53 injuries avoided) avoided during 2025-2050 relative to the baseline due to the full incorporation of larger fishing vessels into the PSC Directive. The full incorporation of larger fishing vessels into the PSC Directive may lead however to undesired effects on SO4.
Changes in the number of tonnes of bunker fuel lost at sea involving fishing vessels	Positive impact on the environment, 30 tonnes of bunker fuel lost from fishing vessels avoided between 2025 and 2050, relative to the baseline. This is expected to have a positive impact on the quality of marine water and biodiversity.		Positive impact on the environment, 42 tonnes of bunker fuel lost from fishing vessels avoided between 2025 and 2050, relative to the baseline. This is expected to have a positive impact on the quality of marine water and biodiversity.		Positive impact on the environment, 65 tonnes of bunker fuel loss from fising vessels avoided between 2025 and 2050, relative to the baseline. This is expected to have a positive impact on the quality of marine water and biodiversity. The full incorporation of larger fishing vessels into the PSC Directive may lead

Key: Impacts expected					
××	×	O	✓	✓✓	
Strongly negative	Negative	No or negligible impact	Positive	Strongly positive	Unclear
	PO A		PO B		PO C
					however to undesired effects on SO4.
Specific policy objective 3: Ensure a higher uptake of digital solutions					
Enforcement costs savings for port State authorities due to the uptake of digital solutions	Positive impact on enforcement costs for PSC authorities. Cost saving estimated at EUR 2.804 million, expressed as present value over the period 2025-2050 relative to the baseline.		Positive impact on enforcement costs for PSC authorities. Cost saving estimated at EUR 7.260 million, expressed as present value over the period 2025-2050 relative to the baseline.		Positive impact on enforcement costs for PSC authorities. Cost saving estimated at EUR 8.385 million, expressed as present value over the period 2025-2050 relative to the baseline.
Specific policy objective 4: Ensure efficient and harmonised approach in undertaking PSC inspctions					
Administrative costs savings for ship operators	Administrative costs savings for the shipping sector, estimated at EUR 5.530 million relative to the baseline, expressed as present value over 2025-2050, from the abolition of the 72-hour advance reporting obligation for the operator, agent or master of a ship eligible for an expanded inspection.		Administrative costs savings for the shipping sector, estimated at EUR 5.530 million relative to the baseline, expressed as present value over 2025-2050, from the abolition of the 72-hour advance reporting obligation for the operator, agent or master of a ship eligible for an expanded inspection.		Administrative costs savings for the shipping sector, estimated at EUR 5.530 million relative to the baseline, expressed as present value over 2025-2050, from the abolition of the 72-hour advance reporting obligation for the operator, agent or master of a ship eligible for an expanded inspection.
Changes in the number of fatalities and injuries involving commercial vessels	No impact.		Positive impact on maritime safety. Reduction in the number of marine casualties over 2025-2050 (3 lives saved and 27 injuries avoided relative to the baseline).		Positive impact on maritime safety. Reduction in the number of marine casualties over 2025-2050 (3 lives saved and 27 injuries avoided relative to the baseline).

Key: Impacts expected					
××	×	O	✓	✓✓	
Strongly negative	Negative	No or negligible impact	Positive	Strongly positive	Unclear
	PO A		PO B		PO C
Changes in the number of tonnes of bunker fuel lost at sea involving commercial vessels	No impact.		Positive impact on the environment; 33 tonnes of bunker fuel lost avoided involving commercial vessels between 2025-2050.		Positive impact on the environment; 33 tonnes of bunker fuel lost avoided involving commercial vessels between 2025-2050.