



IAPH global ports survey on the implementation of electronic data exchange to conform with the IMO *Convention on Facilitation of International Maritime Traffic (FAL)*

Report outlining the progress of ports in implementing the IMO FAL mandatory requirement for national governments to enable the electronic exchange of information between ships and ports, in order to facilitate port clearance processes. The report also includes an analysis of the associated challenges faced by ports in implementing the requirement.

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About IAPH

Founded in 1955, the [International Association of Ports and Harbors \(IAPH\)](#) is a non-profit-making global alliance of 170 ports and 140 port-related organizations covering 90 countries. Its member ports handle more than 60 percent of global maritime trade and around 80 percent of world container traffic. IAPH has consultative NGO status with several United Nations agencies, including the IMO. Through its knowledge base and access to regulatory bodies, IAPH aims to facilitate energy transition, accelerate digitalization and assist in improving overall resilience of its member ports in a constantly changing world. In 2018, IAPH established the [World Ports Sustainability Program \(WPSP\)](#). Guided by the 17 UN Sustainable Development Goals, it aims to unite sustainability efforts of ports worldwide by sharing best practices through its [project portfolio](#) and collaborative [partnerships](#).

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Executive Summary

1. On 8 April 2019, the new IMO FAL Convention mandatory requirement for national governments to introduce electronic information exchange between ships and ports (hereafter referred to simply as FAL requirement in the text for ease of reference), entered into force. The data that falls under the requirement for electronic data exchange is listed in the FAL Convention (see table 1 in the introduction on the following page). The aim is to facilitate the clearance of vessels, cargo, passengers and crew.
2. In October 2020, 18 months after its entering into force, IAPH launched a global survey to assess the current conformity level with the FAL requirement and to highlight any respective challenges that ports are facing.
3. This follows the industry-wide [call to action communiqué](#) initiated by IAPH back in June 2020 to accelerate digitalization of maritime trade and logistics, which identified the assessment of the state of implementation of the FAL requirement as the first of its nine established priority actions (see table 2 on the following page).
4. Supervised by the IAPH Data Collaboration committee, the survey took place during the month of October 2020, it was confidential and open to all ports, and received 111 valid responses from port authorities and port operators worldwide. The response by port type, size, modus operandi vis-à-vis cargo and passenger traffic as well as in geographical spread was sufficiently diverse to represent a worldwide sample of ports.
5. The main findings are as follows:
 - i. The majority of respondents struggle to conform with the mandatory requirement on electronic data exchange under the FAL Convention. Approximately a third of the global sample of ports have not commenced the process of implementing respective electronic data exchange systems. Of those that have, another third are either designing or implementing their system with only the final third being operationally active.
 - ii. The survey confirms the complexity of clearance processes in ports due to the number of different authorities involved, each with their roles and responsibilities, data needs, established cultures and practices.
 - iii. The major barriers to conform with the FAL requirement for electronic data exchange are twofold: Firstly, multi-stakeholder interests in port communities and established practices and cultures need to be addressed in order to enable the sharing and reuse of data, which is key for achieving efficient electronic reporting and clearance of vessels, cargo, crew and passengers. Secondly, the legal framework is a barrier, as it can frequently depend on competing and/or overlapping public administrations and governmental agencies at municipal, state, or national level.
 - iv. Port authorities are largely involved in all categories of clearance and associated reporting requirements, confirming their central role as the overarching managing authority of the movement of vessels, people, cargo, as well as associated data.
6. Following up on the survey results, the IAPH Data Collaboration Committee will:
 - i. Officially bring the outcomes to the attention of the IMO Facilitation committee.
 - ii. Conceive a more permanent IAPH dashboard to track progress on digitalization in ports worldwide, also considering indicators beyond the mandatory digitalization of clearance processes.
 - iii. Evaluate the outcomes in view of identifying needs and targeting the IAPH engagement in capacity building to assist digitalization of ports.
7. In parallel, the IAPH Data Collaboration Committee will continue on its work program which is extended to cover all nine priority areas as identified by the call to action communiqué to accelerate digitalization of maritime trade and logistics (see table 2 on the following page). Respectively and building further on these priorities, IAPH recently joined forces with the World Bank to develop the joint publication [Accelerating Digitalization: Critical Actions to Strengthen the Resilience of the Maritime Supply Chain](#).



Courtesy of MIT Panama

Introduction

On 8 April 2019, the mandatory requirement for national governments to introduce electronic information exchange between ships and ports in order to facilitate clearance processes, (hereinafter referred to simply as FAL requirement in the text for ease of reference), entered into force. The FAL Convention foresees a transitional period of no less than 12 months for the mandatory use of the electronic information exchange systems from the date of their introduction.

The data sets for which the mandatory IMO FAL Convention requirement for electronic exchange applies, are defined by the seven FAL Forms and three additional declarations as listed in the FAL Convention (see table 1 below). Altogether, these data sets define the total of information that may be required by the shore authorities in ports in relation to the ships' arrival, stay, and departure, and their crews, passengers and cargo. The requirement for the electronic data transmission of this data aims to facilitate the clearance processes in ports.

Which data needs to be transmitted electronically as from April 2019

The FAL Convention includes in its Standard 2.1 a list of documents which public authorities can demand of a ship and recommends the maximum information which should be required. Public authorities shall not require additional information. For all the data sets below, and for only those, national governments are required to implement systems for enabling their electronic transmission as of 8 April 2019. The aim is to facilitate the clearance of vessels, cargo, passengers and crew.

- IMO General Declaration (FAL Form 1)
- Cargo Declaration (FAL Form 2)
- Ship's Stores Declaration (FAL Form 3)
- Crew's Effects Declaration (FAL Form 4)
- Crew List (FAL Form 5)
- Passenger List (FAL Form 6)
- Dangerous Goods Manifest (FAL Form 7)

Three additional declarations entered into force on 1 January 2018:

- Security-related information as required under SOLAS regulation XI-2/9.2.2
- Advance electronic cargo information for customs risk assessment purposes
- Advanced Notification Form for Waste Delivery to Port Reception Facilities

Two other documents may be required under the Universal Postal Convention and the International Health Regulations.

Table 1

In addition, the Convention encourages the foundation of the so-called "single window" concept, in which all public authorities in connection with the arrival, stay and departure of ships, persons and cargo, share and reuse data as required via a single point of contact and avoid duplication. The use of the Single Window concept is currently a recommended practice in the FAL Convention but could become mandatory in the coming years. In that regard, IMO issued in [2019 guidelines for setting up a Maritime Single Window](#).

In June 2020, following the work of the IAPH-WPSP COVID19 Task Force in response to the global pandemic, IAPH, joined by all the major international port and shipping industry associations, issued a [call to action communiqué](#) to accelerate digitalization of maritime trade and logistics. The call for action, circulated by IMO Circular Letter No.4204/Add.20., sets nine priority areas for accelerating digitalization.

Accelerating digitalization of maritime trade and logistics: a call to action

1. To assess the state of implementation and find ways to enforce the already mandatory requirement defined in the IMO FAL Convention to support transmission, receipt, and response of information required for the arrival, stay, and departure of ships, persons, and cargo, including notifications and declarations for customs, immigration, port and security authorities, via electronic data exchange, making the transition to full-fledged single windows.
2. To ensure harmonization of data standards beyond the IMO FAL Convention to facilitate sharing of data for just-in-time operation of ships and optimum resource deployment.
3. To strive for the introduction of Port Community Systems and secure data exchange platforms in the main ports of all IMO Member States.
4. To review existing IMO guidance on Maritime Cyber Risk Management on its ability to address cyber risks in ports, developing additional guidance where needed.
5. To raise awareness and promote best practices on the application of emerging technologies in ports (e.g. artificial intelligence, advanced analytics, internet of things, digital twins, robotics process automation, autonomous systems, blockchain, virtual reality and augmented reality).
6. To facilitate the implementation of such emerging technologies.
7. To facilitate the implementation of digital port platforms for secure data sharing.
8. To establish a coalition of willing stakeholders to address standardization, starting with the long overdue introduction of the electronic bill of lading.
9. To set up a capacity building framework to support smaller, less developed, and understaffed port communities.

Table 2

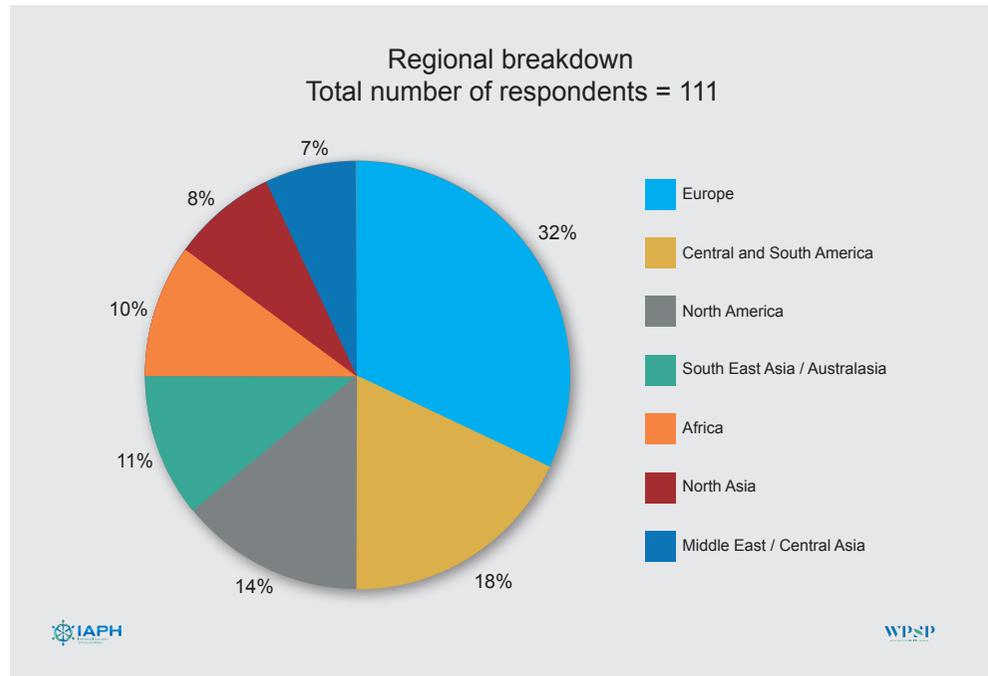
In October 2020, 18 months after the mandatory FAL requirement entered into force, and directly following up on the first identified priority action of its call for action communiqué, IAPH launched a global survey to assess the current conformity level with the FAL requirement and to highlight any respective challenges that ports are facing. This is a first step towards the overall IAPH commitment to support the wide-ranging adoption of secure electronic data exchange in the port industry and to accelerate digitalization.

Scope and survey set-up

The IAPH survey was specifically designed to address the state of compliance with the FAL requirement on electronic data exchange and to identify the main associated barriers. By effectively conducting this gap analysis, IAPH would gain key insights into where most efforts are needed to provide expertise, capacity building and overall support to streamline efficient data exchange between the port community and the ships calling at their ports.

The survey was supervised by the IAPH Data Collaboration Committee that brings together experts from some of the world's most advanced ports in terms of digitalization with the aim of supporting the wide-ranging adoption of secure electronic data exchange in ports.

The survey took place during the month of October 2020 and was confidential and open to all ports. It received 111 valid responses from port authorities and port operators worldwide. The response by port type, size, modus operandi vis-à-vis cargo and passenger traffic as well as in geographical spread was sufficiently diverse to represent a worldwide sample of ports.



The response from the survey reflects a fair representation of ports around the globe. The responses are predominantly from Europe and the Americas at just under two thirds of the total. Nonetheless, there have been sufficient responses from Asia, Africa and the Middle East/Central Asia to spot any recurring regional trends.



1. Status of implementing electronic data exchange at ports as required by the IMO FAL Convention

The first survey question addresses the current level of compliance with IMO FAL Convention Standard 1.3bis that requires public authorities to “take all necessary measures for the establishment of systems for the electronic exchange of information by 8 April 2019”.

How would you describe the status of implementing electronic data exchange at your port(s) following the IMO FAL requirement?

Answer choices	Responses %	Responses actual
No action yet / inception stage	31.53%	35
Design stage	17.12%	19
Implementation stage	17.12%	19
Operational stage	34.23%	38
TOTAL		111



The results clearly show that the respondents struggle to comply with the mandatory requirement on electronic data exchange under the FAL Convention.

- 1.1. Just over 34% of the ports responding to the survey have an electronic data exchange system in place that meets the IMO FAL new mandatory requirement.
- 1.2. Just under 35% of the ports answering the survey are at design or implementation stage of setting up such systems, split roughly half and half.
- 1.3. Finally, just above 30% of the respondents indicate that no concrete action has been taken yet for establishing the required electronic data exchange systems.

Operational electronic data exchange systems

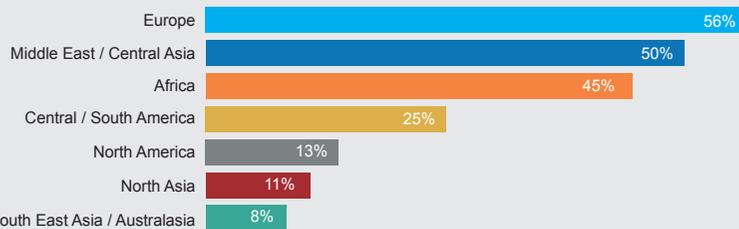


Table 1.1 Percentage of respondents by region where operational systems exist



- 1.4. When looking into the regional analysis of the results, very significant variations can be observed on the degree of implementation and maturity level of electronic data exchange systems in the different parts of the world. Table 1.1. illustrates the degree of presence of operational systems in the different regions.
- 1.5. Europe leads the implementation, and this is to be expected due to the application of relevant legislation at the level of the European Union ([2010/65/EU](#)) since 2015. The Americas and many parts of Asia and Oceania appear to be notably lagging behind. Middle East / Central Asia and Africa appear to do quite well comparatively but caution is required in interpreting these outcomes due to the smaller number of respondents in these regions.
- 1.6. Despite the advanced presence of this same European Union legislation, it appears that several European countries continue to face challenges in implementing electronic data systems to comply with the FAL requirement.



2. Next time horizon for implementing electronic data exchange systems to assist clearance processes in ports

This survey question investigates the level of urgency given to achieving compliance with the FAL requirement on electronic data exchange by asking the respondents to specify the next foreseen time horizon for implementing or further improving respective systems.

What is the next time horizon for implementing or further improving electronic data exchange systems to match the FAL requirement?

Answer choices	Responses %	Responses actual
Less than 6 months	20.62%	20
Between 6 - 12 months	25.77%	25
Beyond 12 months	53.61%	52
TOTAL		97



- 2.1. Given the response of 97 of the 111 respondents and bearing in mind the three-way split between ports at inception, design/implementation and operational phases (see section 1) for FAL-related electronic data interchange systems, the fact that just under 54% only see further developments beyond 12 months and just under 80% are opting for implementation beyond 6 months is of concern.
- 2.2. The sense of urgency to accelerate digitalization, also as part of responding to the COVID19 pandemic, does not seem to be aligned with the actual foreseen timeframes for putting in place or improving electronic data exchange systems as required by FAL.
- 2.3. To increase resilience against future crises, it is becoming clear that governments and public authorities require support in order to accelerate efforts to digitalize key processes in both nautical and supply chains.
- 2.4. Looking at the regional split, the regions with the most cited time horizons beyond 12 months are in North America at almost 70% of ports, South East Asia/Australia at 67% and North Asia at 57%. Europe also has a relatively high figure for beyond 12 months, which stands at 55% of ports.

Further developments beyond a year's time horizon

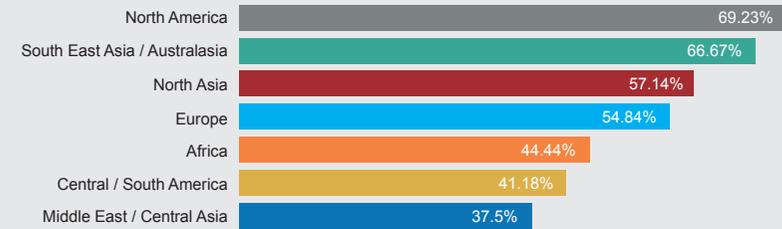
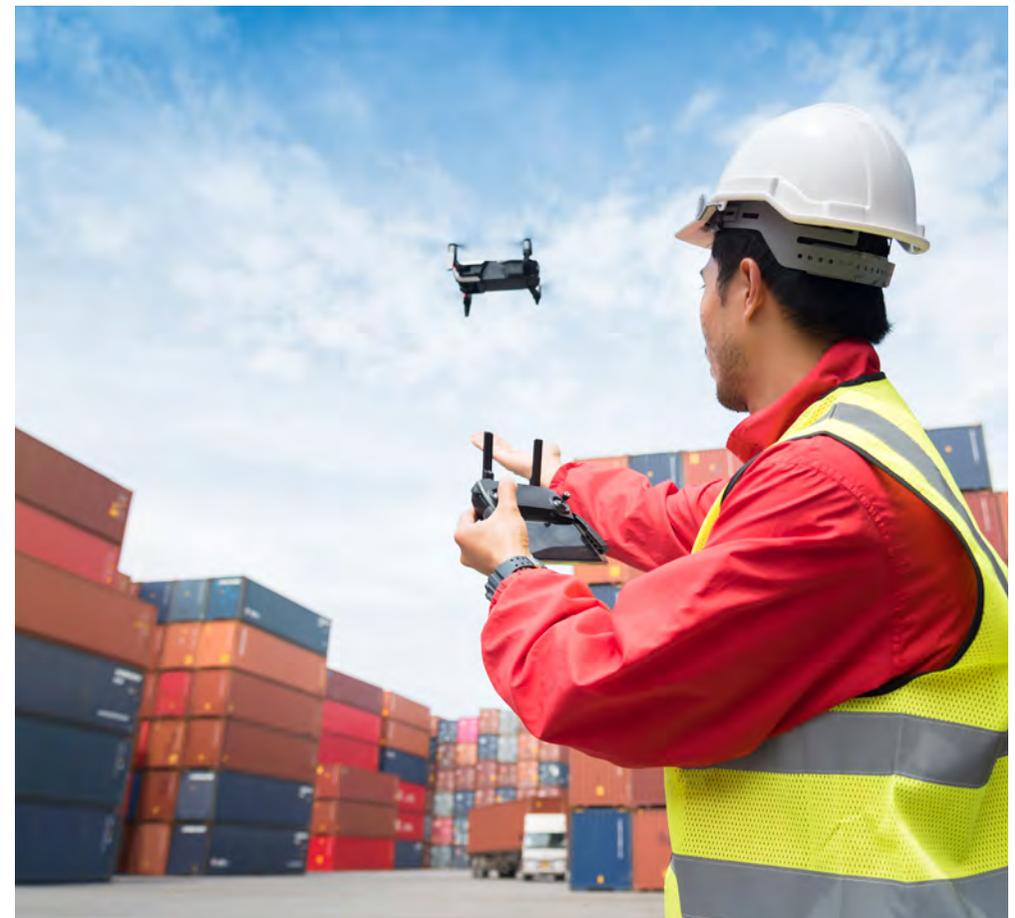


Table 2.1 Regional breakdown of ports planning to implement their systems beyond 1 year



3. Progress made in digitalizing clearance processes in ports

This question aimed to acquire additional detail regarding the specific data that can currently be electronically submitted and processed in the respondent ports in order to facilitate the clearance of vessels, cargo, crew and passengers. Hence, the respondents were asked to specify whether the data sets specified by the seven FAL Forms and the additional documents listed in the FAL Convention, can be transmitted electronically as required.

3.1. For those ports beyond the inception phase responding to this question, the most widely electronically-available FAL Forms include the general declaration (FAL Form 1), cargo (FAL Form 2) and dangerous cargo (FAL Form 7) at over the eighty percent mark. The existing operational systems do also allow for the electronic submission of information on crew (FAL Form 5) and passenger (FAL Form 6) lists.

3.2. However, despite the fact that 38 ports claim fully operational systems, it appears that a number of those do not enable the electronic transmission of required FAL information, such as ships stores (FAL Form 3) and crew effects (FAL Form 4) where only 33 and 29 ports do so. The same observation stands for some of the additional data sets such as advance electronic cargo information and advanced waste delivery notification.

3.3. Even within this particular respondents' sample (ports beyond the inception phase), the fact that over 30% of ports are unable to electronically process crew lists and 40% cannot electronically exchange maritime health declarations with vessels are major barriers to resolving the crew change issues that have emerged from the COVID19 crisis and which continue to seriously impact vessel crew welfare.

Please select any of the below procedures where it is possible to exchange data electronically at your port (if none, please leave blank)

Answer choices	Responses %	Responses actual
General declaration (FAL Form 1)	84.62%	55
Cargo (FAL Form 2)	87.69%	57
Ship's stores (FAL Form 3)	50.77%	33
Crew effects (FAL Form 4)	44.62%	29
Crew list (FAL Form 5)	69.23%	45
Passenger list (FAL Form 6)	64.62%	42
Dangerous Goods Manifest (FAL Form 7)	81.54%	53
Security-related information (SOLAS reg XI-2/9 2.2)	66.15%	43
Advance electronic cargo information for customs risk assessment purposes	46.15%	30
Advanced notification form for waste delivery to port reception facilities	52.13%	34
Maritime health declaration	60.00%	39
TOTAL Respondents: 65		

4. Engagement of authorities in the different clearance processes and the relevant electronic data exchange systems

A set of two questions were introduced to identify the level of engagement and involvement of different authorities. In the first instance this is related to the clearance of vessels, cargo, crew and passengers, and secondly in the interaction of these authorities with established electronic data exchange systems.

The objective of the first question was to identify the main responsibilities of public administrations when it comes to handling vessels, crew, cargo and passengers. In light of the COVID19 pandemic, the responsibilities regarding the maritime health declaration were also investigated.

Please select the relevant authority involved in each reporting requirement by category

	MARITIME ADMINISTRATION	PORT AUTHORITY	IMMIGRATION	BORDER MANAGEMENT	HEALTH AUTHORITIES	AGRICULTURE AUTHORITIES	CUSTOMS	TOTAL RESPONDENTS
 Vessels	72.31% 47	98.46% 64	46.15% 30	33.85% 22	46.15% 30	27.69% 18	67.69% 44	65
 Crew	52.38% 33	65.08% 41	77.78% 49	42.86% 27	55.56% 35	7.94% 5	47.62% 30	63
 Cargo	40.00% 26	83.08% 54	13.85% 9	21.54% 14	29.23% 19	55.38% 36	90.77% 59	65
 Passengers	42.11% 24	68.42% 39	80.70% 46	47.37% 27	59.65% 34	5.26% 3	52.63% 30	57
 Maritime health declaration	36.21% 21	51.72% 30	29.31% 17	15.52% 9	94.83% 55	5.17% 3	15.52% 9	58

Table 4.1 Clearance processes and relevant authorities

- The results confirm the complex multi-stakeholder framework applied in the clearance of vessels, cargo, crew and passengers. Dedicated authorities are predominantly engaged in specific reporting requirements in line with their roles and responsibilities. However, they are also involved to various degrees in multiple clearance processes.
- Port authorities are largely involved in all categories of clearance and associated reporting requirements, confirming their central role as the overarching managing authority of the movement of vessels, people, cargo, as well as associated data.
- The results indicate that immigration authorities have a dominant role on clearance procedures for crew and passengers and as such, in the context of COVID19, they play a central role in addressing the challenges associated with crew changes. The same stands for health authorities to an identified lesser extent.

- The involvement of multiple authorities in all areas of clearance (cargo, vessels, crew, passengers) reveals the challenge for electronic data systems to accommodate for these data needs while streamlining reporting, in order to enhance efficiency and facilitate trade. Enabling a single data submission by the user, while sharing and reusing data between authorities, in line with the single window concept, is inherent in achieving this.

A second question investigated the degree of involvement and interaction of the various authorities with the existing reporting systems.

Please select, where relevant, the authorities and systems involved in the electronic exchange of information available to the ship/agent at the port

	MARITIME SINGLE WINDOW	CUSTOMS SINGLE WINDOW	FOREIGN TRADE SINGLE WINDOW	PORT COMMUNITY SYSTEM	OTHER SYSTEMS	TOTAL RESPONDENTS
Maritime administration	80.49% 33	19.51% 8	9.76% 4	53.66% 22	14.63% 6	41
Port authority	57.89% 33	14.04% 8	8.77% 5	77.19% 44	31.58% 18	57
Immigration	51.22% 21	7.32% 3	9.76% 4	43.90% 18	31.71% 13	41
Border management	36.11% 13	22.22% 8	19.44% 7	52.78% 19	27.78% 10	36
Health authority	45.00% 18	27.50% 11	10.00% 4	47.50% 19	35.00% 14	40
Agriculture authority	23.53% 8	32.35% 11	11.76% 4	55.88% 19	41.18% 14	34
Customs	37.74% 20	66.04% 35	15.09% 8	52.83% 28	18.87% 10	53



Table 4.2 Engagement of authorities in existing reporting systems



- The results here confirm that, Port Community Systems (PCS) appear to have a better overall degree of interaction with most of the relevant authorities. In that sense PCS's have a central role in the processing of FAL required data.
- Maritime Single Windows (MSW), closely connected to Maritime Administrations, also have a high degree of interaction with the various authorities and are equally important in addressing the FAL reporting requirement.
- Given their importance for FAL-related reporting, it is significant for PCS and MSW to interact and share data. This is indeed the case, where PCS's function as gateways to MSW, serving the single data entry point principle in that particular way.
- Customs Single Windows, having a longer history of development, operate in parallel and mainly for the clearance of cargo. At the same time, customs seem to have a low relative engagement in Maritime Single Windows.
- Given COVID19, the relatively low engagement of health and immigration authorities in the dominant PCS and MSW system needs to be considered further and addressed.

5. Main challenges in implementing electronic data exchange systems for clearance processes in ports

Respondents were asked to identify the main barriers they face in implementing electronic data exchange systems in line with the FAL requirement.

What challenges are you facing / have faced in getting electronic data exchange up and running? Please rank these from 1 (very low challenge) to 5 (very high challenge)

	1 (VERY LOW CHALLENGE)	2 (LOW CHALLENGE)	3 (REASONABLE CHALLENGE)	4 (HIGH CHALLENGE)	5 (EXTREMELY HIGH CHALLENGE)	TOTAL
Technology / IT	10.31% 10	21.65% 21	34.02% 33	20.62% 20	13.40% 13	97
Human resources	10.31% 10	22.68% 22	35.05% 34	22.68% 22	9.28% 9	97
Legal framework	3.09% 3	14.43% 14	30.93% 30	38.14% 37	13.40% 13	97
Multi-stakeholder collaboration	7.22% 7	8.25% 8	20.62% 20	40.21% 39	23.71% 23	97
Budget	8.25% 8	20.62% 20	36.08% 35	26.80% 26	8.25% 8	97



Main challenges



Table 5.1 Average significance of each of the main challenges faced by ports

- The survey responses to this question provide a clear insight into the reasons behind the current low level of compliance with the FAL requirement on electronic data exchange.
- Here we have a significantly high rate of valid survey responses (87%) from ports all of which point to two main barriers to implementation, namely multi-stakeholder collaboration (nearly two thirds of ports rate this as a high or extremely high challenge) and legal framework (over 51% of all ports with the same two high challenge scores).

- These clearly overshadow other categories which are typically perceived as commonly assumed hurdles to achieving progress in any IT endeavor at a port, namely technology/ IT (only a third of ports rate this a high or extremely high challenge), budget (just 35% of ports rate this similarly) or human resources (just under 32% for both high and extremely high).

Regional significance of key challenges

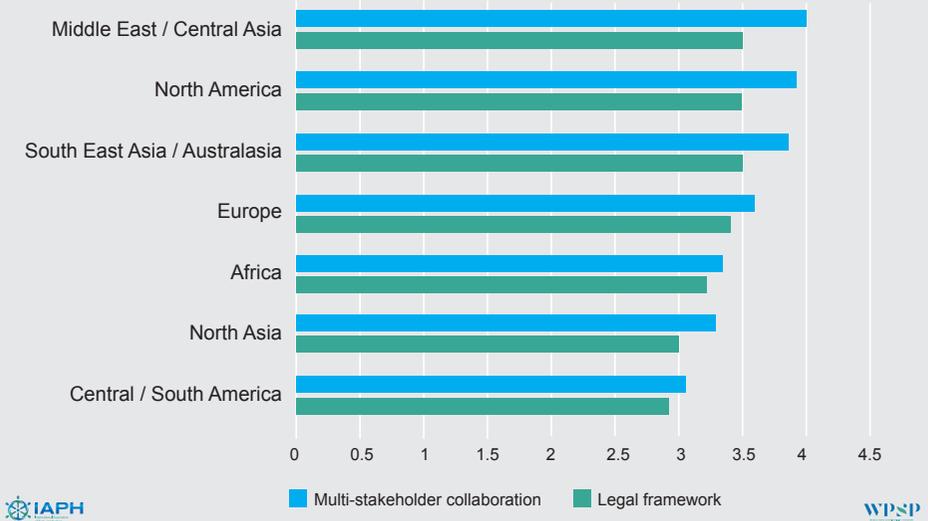


Table 5.2 Two main challenges analyzed by region (multi-stakeholder collaboration and legal framework)

- Full consistency can be observed when looking at the regional responses regarding the ranking of the top two challenges. For all geographical regions, multi-stakeholder collaboration and the legal framework are the first and second most important challenges respectively.
- In that sense, the results of the survey indicate that the challenges faced are similar between the developed and developing economies.
- It is worthwhile to cite anonymous comments from this question to get an indicative picture from some ports around the world. The assertions provided in the following feedback overleaf concur with those made confidentially on legal framework and multi-stakeholder collaboration in the free comments section at the end of the survey, which reaffirms that many ports face similar challenges to the ones mentioned here.

“Two different stakeholder collaboration problems exist: firstly, for private operators, sometimes a little paper still being used and somehow certain inefficiencies offer room for additional billing or minor commissions for additional services; secondly, for public operators the real problem is the non-declared war for power between different administrations in a port. The possibility to record a misconduct or malpractice forces many public officers to take it very easy when it comes to sharing data and decisions. The motto is “the more you collaborate the more you lose your real power”. The real consistent power for public administrations is to say ‘no’ instead of ‘yes’”

“Harmonization of the data models and necessary processes (like how to deal with change request of new requirements and maintenance of the standards) are not easy to establish. It takes a lot of effort and understanding of the different factors which could affect both reporting and operating activities within the port. The individual interest of each port must be overruled by the common interest. This requires also willingness to change and the adaptability of all stakeholders to “give and take” to reach the common goal of harmonization. The synchronization of available existing standards and getting these adopted by the industry are another challenge. Standards mean nothing if the industry will not invest to adopt and implement them in their business.”



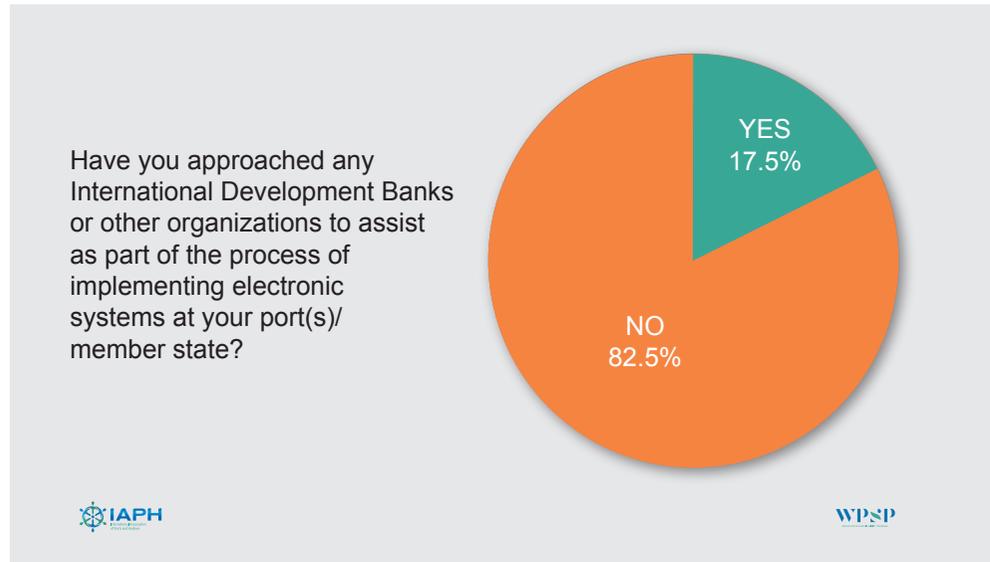
“IT technology and budget are both not a challenge. The highest challenges are human factors (mind shift, awareness), legal framework (the parliament of the country has to do this), stakeholder collaboration (they are not willing to share their information because of the very small community and therefore very competitive environment.)”

“There are multiple federal government departments that are key stakeholders. Lack of alignment, resources, and responsibilities are significant challenges.”

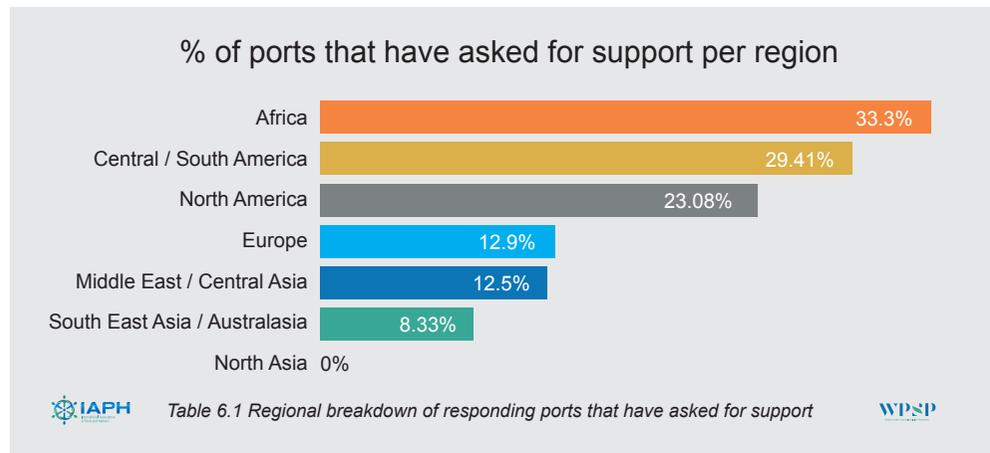
“The main challenge in sharing data is the “need” to protect information - even if there really isn’t an actual need. It has a lot to do with trust.”

6. Assistance requested from financial institutions

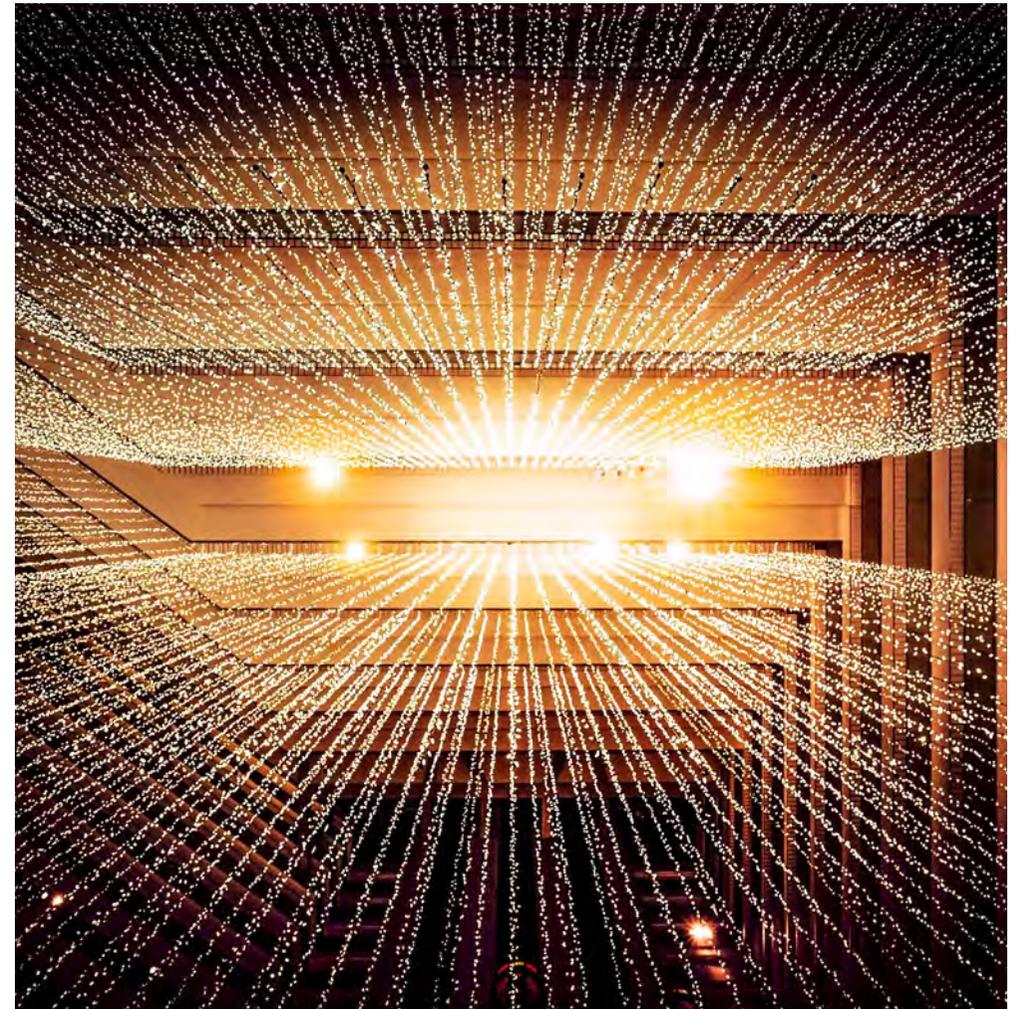
This section investigates the degree of involvement of financial institutions in assisting the development of electronic data exchange systems.



6.1. The most noticeable observation is just how low the percentage is of ports that have approached financial or other institutions for support (just under 18% of the 97 responding ports).

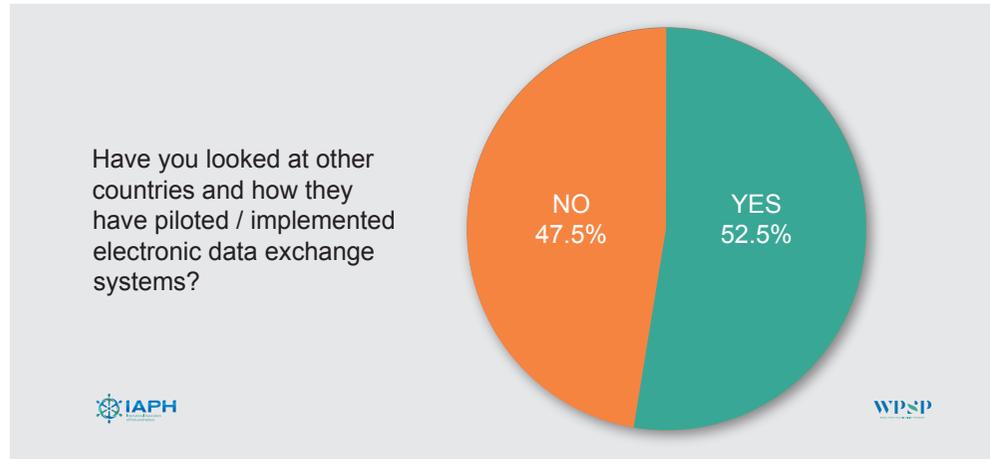


- 6.2. Looking at the regional breakdown, significant variations can be observed, with request for support appearing to be a more common practice in Africa and Central/South America as opposed to North Asia and South East Asia and Australasia.
- 6.3. The diversity of the organizations approached is also worth mentioning. Those ports responding in the comments section with specific organizations have pointed towards requests for support at regional level, with the Inter-American Development Bank (IDB), African Development Bank (ADB), the Connecting Europe Facility (CEF) for Transport funding mechanism for the European Union mentioned more than once. On an NGO/ institutional level, organizations approached for capacity-building support include the International Port Community Systems Association (IPCSA), JICA and the IMO itself.



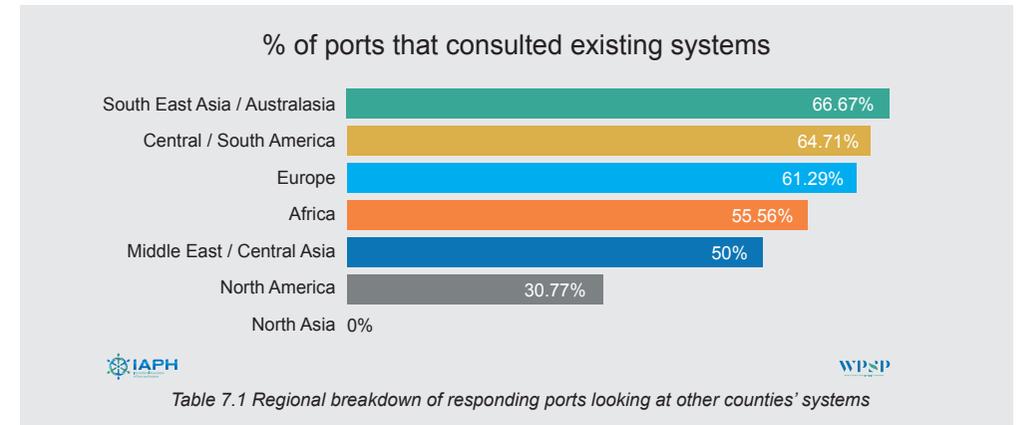
7. Consultation of systems and approaches in other countries

This section discusses trends regarding the countries or regions that are often consulted as best practices of electronic data exchange systems deployed to assist ship and port clearance processes.



7.1. The overall results indicate a roughly even split between those who have and have not looked at other countries and their experience in piloting or implementing systems for electronic port clearance.

7.2. However, the regional breakdown of the results highlights significant variations. North American ports appear to have consulted other countries' practices to a lesser extent. Strikingly, in the region of North Asia, not a single respondent looked beyond its own shores.



7.3. Singapore followed by the Netherlands are by far the most cited countries by those who have investigated and looked at systems in other countries. Other countries cited by more than one port include Belgium, France, Germany and Spain. The predominance of European countries cited is attributable to advanced relevant European Union legislation since 2010 (2010/65/EU) and the resulting higher maturity of systems in place.

7.4. A few ports have looked at a regional level, with mentions of ASEAN, the European Commission and the Organization of Eastern Caribbean States (OECS), whilst others have looked at the International Port Community Systems Association (IPSCA) as well as the European Maritime Safety Agency (EMSA).



8. Conclusions and next steps

- 8.1. The IAPH global ports survey investigated the current level of implementation of systems to conform with the IMO FAL Convention mandatory requirement for national governments to introduce electronic information exchange between ships and ports, in order to facilitate the clearance of vessels, cargo, crew and passengers. The survey also identified the main associated challenges in this process. The key findings can be summarized as following:
- i. The majority of respondents struggle to conform with the mandatory requirement on electronic data exchange under the FAL Convention. Approximately a third of the global sample of ports have not commenced the process of implementing respective electronic data exchange systems. Of those that have, another third are either designing or implementing their system with only the final third being operationally active.
 - ii. The survey confirms the complexity of clearance processes in ports due to the number of different authorities involved, each with their roles and responsibilities, data needs, established cultures and practices.
 - iii. The major barriers to conform with the FAL requirement for electronic data exchange are twofold: Firstly, multi-stakeholder interests in port communities and established practices and cultures need to be addressed in order to enable the sharing and reuse of data, which is key for achieving efficient electronic reporting and clearance of vessels, cargo, crew and passengers. Secondly, the legal framework is a barrier, as it is often dependent on competing and/or overlapping public administrations and governmental agencies at municipal, state, or national level.
 - iv. Port authorities are largely involved in all categories of clearance and associated reporting requirements, confirming their central role as the overarching managing authority of the movement of vessels, people, cargo, as well as associated data.
 - v. Immigration authorities, and to a lesser extent health authorities, have a dominant role on clearance procedures for crew and passengers. As such, in the context of COVID19, these authorities play a central role in addressing the challenges associated with crew changes.
 - vi. The low conformity rate with the FAL requirement stresses the need for accelerating digitalization to mitigate the impact of crises such as the COVID19 pandemic. Despite this sense of urgency, 54% of the respondents only foresee further implementation of electronic data exchange systems after a period of one year.
- 8.2. The survey was supervised by the IAPH Data Collaboration Committee which brings together experts from some of the world's most advanced ports in terms of digitalization aiming to support the wide-ranging adoption of secure electronic data exchange in ports. The work program of the committee is principally defined by all nine priority areas

as established by the industry-wide call to action communiqué to accelerate digitalization of maritime trade and logistics. This survey only addressed the first priority area. Following up on the survey results, the IAPH Data Collaboration Committee will:

- i. Officially bring the outcomes to the attention of the IMO Facilitation committee.
- ii. Conceive a more permanent IAPH dashboard to track progress with digitalization in ports worldwide, also considering indicators beyond the FAL mandatory requirement.
- iii. Evaluate the outcomes in view of identifying needs and targeting the IAPH engagement in capacity building to assist digitalization of ports.

As part of its work program, the IAPH Data Collaboration Committee joined forces with the World Bank to develop the joint publication [Accelerating Digitalization: Critical Actions to Strengthen the Resilience of the Maritime Supply Chain](#) in order to provide short- and medium-term measures for ports based on existing best practices.





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