RECOMMENDATIONS

COMMISSION RECOMMENDATION (EU) 2021/1222

of 20 July 2021

establishing a 'Practical Handbook' on European cooperation on coast guard functions

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 292 thereof,

Having regard to Regulation (EU) 2019/473 of the European Parliament and of the Council of 19 March 2019 on the European Fisheries Control Agency (EFCA) ([1]), and in particular Article 8(3) thereof,

Having regard to Regulation (EC) 1406/2002 of the European Parliament and of the Council of 27 June 2002 establishing a European Maritime Safety Agency (EMSA) ([2]) and in particular Article 2b thereof,

Having regard to Regulation (EU) 2019/1896 of the European Parliament and of the Council of 13 November 2019 on the European Border and Coast Guard and repealing Regulations (EU) No 1052/2013 and (EU) 2016/1624 ([3]) and in particular Article 69(3) thereof,

Whereas:

(1) According to the above articles in the founding Regulations of the three EU agencies, the Commission shall, in close cooperation with the Member States, EFCA, EMSA and Frontex, make available a Practical Handbook on European cooperation on coast guard functions (hereafter, 'the handbook'). The handbook shall contain guidelines, recommendations and best practices for the exchange of information.

(2) The three agencies work closely together under the inter-agency cooperation framework ([4]), in accordance with their legal acts, with the direct support of the European Commission. They provide enhanced support and assistance to the national authorities performing coast guard functions at national and EU level and, where appropriate, at international level.

(3) The European Commission tasked the three agencies with developing the handbook in close cooperation with Member States' experts.

(4) The revised European Union Maritime Security Strategy Action Plan ([5]), adopted on 26 June 2018 by the Council, recalls the importance of addressing the coast guard aspects of maritime security by promoting synergies between civil and military actors fulfilling coast guard functions. The Plan encourages EFCA, EMSA and Frontex to continue to deepen their inter-agency cooperation in this field,

HAS ADOPTED THIS RECOMMENDATION:

1. This recommendation establishes the handbook as a practical guide for EU civilian and military authorities when carrying out coast guard functions, facilitating close cross-border and cross-sector collaboration among them.

([1]) OJ L 83, 25.3.2019, p. 18.
([2]) OJ L 208 5.8.2002, p. 1.
([3]) OJ L 295, 14.11.2019, p. 1.
([4]) A Tripartite Working Arrangement establishing the inter-agency cooperation between EFCA, EMSA and FRONTEX was jointly developed by the three agencies and approved by their respective governing bodies. It entered into force in March 2017 and was extended in March 2021.
([5]) https://data.consilium.europa.eu/doc/document/ST-10494-2018-INIT/en/pdf

2. The handbook provides a transparent compilation of services and information available through the three agencies. It helps to create synergies and avoid duplication and/or redundancy of effort in the cooperation between Member States and the three agencies, resulting in economies of scale.

3. The handbook focuses on the five inter-agency cooperation areas: information sharing; surveillance and communication services; capacity building; risk analysis; and capacity sharing. The handbook is mainly limited to cross-sector subjects, and covers EU Member States and European Free Trade Association (EFTA) States.

4. The main end users of this handbook are the national authorities for each coast guard function in each Member State. The handbook aims to support national authorities in charge of planning and coordinating activities, who need to know and understand how their partners are organised and what services and cooperation they provide.

5. The 'exchange of information' fully respects agreed access rights to data, information and intelligence through a range of mechanisms, either manually or through automated processes/systems. It is within the limits of the agencies' legal framework and complies with fundamental rights, including data protection requirements.

6. The handbook shall not create any new rights or duties for national authorities responsible for coast guard functions, nor shall it offer any interpretative guidance on existing roles, rules and responsibilities. The handbook shall not influence the legal obligations of Member States or agencies and shall not be used to promote aspirational activities by stakeholders.

7. This handbook is complemented by practical information including: a) catalogues of services, products, training courses, best practice guidelines and manuals of all inter-agency activities supporting coast guard functions in Member States; b) regional/ international/national/bilateral/multilateral cooperation frameworks; and c) 'country factsheets' providing details on the structure and organisation of coast guard functions in EU Member States and EFTA States.

8. This practical information should be kept up to date by the three agencies, with input from the national authorities as regards the 'country factsheets'. It will be displayed on an online platform operated by EFCA in close cooperation with the other two agencies and the Commission.

9. Member States should follow the guidelines, recommendations and best practices for the exchange of information contained in the handbook, cooperate between themselves to keep the 'country factsheets' updated, without double reporting if the information has already been made available to the agencies.

10. This Recommendation is addressed to the Member States

Done at Brussels, 20 July 2021.

For the Commission
Virginijus SINKEVIČIUS
Member of the Commission

ANNEX

1. INTRODUCTION

Within the European Union, there are more than 300 civilian and military authorities responsible for carrying out coast guard functions. There is a need to ensure close cross-border and cross-sector ([1]) collaboration and coordination between these authorities to avoid duplication and redundancy of effort and to build synergies.

In the EU and the European Economic Area, the European Fisheries Control Agency (EFCA), the European Maritime Safety Agency (EMSA) and the European Border and Coast Guard Agency (Frontex) support national authorities in carrying out coast guard functions. To provide this support at national and EU level and, where appropriate, at international level, the founding Regulations of each of the three agencies were amended in 2016 with a common article on European cooperation on coast guard functions ([2]). The common Article identifies five areas for cooperation, as follows:

(1) 'Sharing, fusing and analysing information available in ship reporting systems and other information systems hosted by or accessible to those agencies, in accordance with their respective legal bases and without prejudice to the ownership of data by Member States;

(2) Providing surveillance and communication services based on state-of-the-art technology, including space-based and ground infrastructure and sensors mounted on any kind of platform;

(3) Building capacity by drawing up guidelines and recommendations and by establishing best practices as well as by providing training and exchange of staff;

(4) Enhancing the exchange of information and cooperation on coast guard functions including by analysing operational challenges and emerging risks in the maritime domain;

(5) Sharing capacity by planning and implementing multipurpose operations and by sharing assets and other capabilities, to the extent that these activities are coordinated by those agencies and are agreed to by the competent authorities of the Member States concerned.'

The development of a 'Practical Handbook' on European cooperation on coast guard functions was also foreseen in the common article of the amended founding regulations of the three agencies, as described below:

'The Commission shall, in close cooperation with the Member States, the European Maritime Safety Agency, the European Border and Coast Guard Agency and the European Fisheries Control Agency, make available a practical handbook on European cooperation on coast guard functions. That handbook shall contain guidelines, recommendations and best practices for the exchange of information. The Commission shall adopt the handbook in the form of a recommendation.'

The Practical Handbook provides, in one document, a transparent compilation of services and information available through the three EU agencies. Accordingly, it can help to create synergies and avoid duplication and/or redundancy of effort in the cooperation between Member States and the agencies.

2. BACKGROUND

The concept of the Handbook was first developed by the European Commission in a discussion paper presented at the first Annual European Coast Guard Event (AECGE) in Spain in April 2018. The Member States, through the administrative/management boards of each of the agencies, then nominated experts to help develop the Handbook. In parallel, a small inter-agency working group was set up to deliver the first edition.

The project was launched during a kick-off workshop in Lisbon hosted by EMSA on 29 January 2019 and attended by the Member State experts. Before the workshop, a discussion paper was prepared by the inter-agency working group, endorsed by the Commission, then circulated to the workshop participants. Member States and European Free Trade Association (EFTA) States nominated 43 experts to take part in the drafting process. The Commission was represented at the workshop by the Directorate-General for Migration and Home Affairs (DG HOME), the Directorate-General for Maritime Affairs and Fisheries (DG MARE) and the Directorate-General for Mobility and Transport (DG MOVE).

([1]) 'Cross-sector' is defined as involving coast guard functions under the remit of at least two European Union agencies (for example, fisheries and border control).

([2]) Article 8(3) of Regulation (EU) 2019/473; Article 69(3) of Regulation (EU) 2019/1896; Article 2b(3) of Regulation (EC) 1406/2002 (consolidated version of 6 October 2016).

The discussion paper proposed three main elements for the Handbook, namely:

(a) catalogues of services, products, training courses, best practice guidelines and manuals of all inter-agency activities supporting coast guard functions in Member States;

(b) regional cooperation frameworks; and

(c) 'country factsheets' providing details on the structure and organisation of coast guard functions.

This approach to the content of the Handbook was generally endorsed by the representatives from the Member States and by the Commission. It provided the foundation for the drafting process and the continued dialogue with the Member State experts.

2.1. **Users**

The main end users of the Handbook are the national authorities for each coast guard function in each Member State. The Handbook aims to support national authorities in charge of planning and coordinating activities, who need to know and understand how their partners are organised and what services and cooperation they provide.

2.2. **Objectives**

The objectives of the Handbook are to:

(a) describe all the cross-sector services available through the agencies, and provide a guide for the Member States and agencies on how to access those services;

(b) provide an overview of training opportunities and manuals developed by the agencies and how to access them;

(c) provide an overview of existing cooperation mechanisms with a coast guard function which relate to Member States' practical work;

(d) provide Member States with factsheets listing the national authorities involved in coast guard functions, including their points of contact.

The Handbook has been developed as a practical guide and includes references to best practice for end users. It does not seek to cover all the services available, but aims to describe these services and provide a guide for Member States and agencies on how to access them, as appropriate. The catalogues and factsheets, which complement the Handbook, may be amended over time to mirror any regulatory changes or modifications to inter-agency and Member State cooperation.

The Handbook covers existing activities in the area of coast guard functions and is an entry point for Member States' national authorities to obtain the information referred to above. The Handbook is not meant to influence the legal mandates/obligations of Member States or agencies and should not be used to promote aspirational activities by stakeholders (i.e. it is not a 'wish list' of potential activities).

At national level, reference is made to all entities, including those which may not be represented in EFCA, EMSA or Frontex, i.e. navies or custom authorities.

2.3. **Scope of the Handbook**

The Handbook:

(a) covers the five inter-agency cooperation areas;

(b) is mainly limited to cross-sector subjects;

(c) covers single-function subjects that may fall within the remit of at least two agencies (e.g. maritime surveillance);

(d) covers EU Member States and EFTA States;

(e) includes Member States' input in the form of factsheets, including identifying existing regional and international cooperation mechanisms;

(f) includes all entities (civil or military) with a responsibility for coast guard functions (e.g. a Member State's navy with a coast guard function will be covered).

Please note that the Handbook does not cover coast guard functions that are not within the remit of the agencies' mandates.

2.4. **Content of the Handbook**

The Handbook, complemented by the catalogues and factsheets, is comprised of the elements described below.

(a) The Service Catalogue is focused on inter-agency services currently available to Member State stakeholders and which support the carrying out of coast guard responsibilities.

(b) The Training Catalogue, which is an integral part of the agencies' capacity-building activities, covers all training courses provided by the three agencies (in all maritime domains) that are currently available to Member State stakeholders. These training courses are arranged either by a single agency or jointly by two or three agencies.

(c) The Best Practice Guidelines and Manuals Catalogue aims to cover all best practice guidelines and manuals available to stakeholders through the three agencies. These best practice guidelines and manuals are provided either by a single agency or jointly by two or three agencies. In addition, there are several long-established regional cooperation arrangements within and beyond Europe involving EU stakeholders. Within these arrangements, numerous best practice guidelines and manuals have been developed which are deemed relevant for the Handbook, and appropriate references have been included in the Manuals Catalogue.

(d) The section on regional/international/bilateral/multilateral cooperation provides a representative sample of some of the coordination and cooperation mechanisms that exist in Europe and beyond, across the full spectrum of coast guard functions. A dedicated section (available through the dedicated online platform) captures a good number of these mechanisms, and each of these is linked to the individual country factsheets (see below). This allows each country to indicate if they participate in each of those mechanisms.

(e) The country factsheets aim to identify which organisation is involved in which specific coast guard function in each country. The template for the factsheets was developed in consultation with the experts nominated by the agencies' administrative board, and the templates were then populated by the individual countries.

3. **COAST GUARD FUNCTIONS AND INTER-AGENCY COOPERATION AREAS**

3.1. **Scope**

For the purposes of the Handbook, coast guard functions (CGFs) are understood as those commonly referred to by the three agencies. The list was originally generated by the European Coast Guard Functions Forum (ECGFF) as follows (in no order of priority):

(a) maritime safety, including vessel traffic management;

(b) ship casualty and maritime assistance service;

(c) fisheries inspection and control;

(d) maritime border control;

(e) maritime environmental protection and response;

(f) prevention and suppression of trafficking and smuggling and connected maritime law enforcement;

(g) maritime search and rescue;

(h) maritime monitoring and surveillance;

(i) maritime customs activities;

(j) maritime accident and disaster response;

(k) maritime, ship and port security.

3.2. **Inter-agency cooperation**

As part of the European Border and Coast Guard Package adopted by the EU in September 2016, the founding regulations of the three agencies were amended to include cooperation between them in support of national authorities carrying out coast guard functions. This was done to enhance the effectiveness and efficiency of the support provided by EFCA, EMSA and Frontex to their respective stakeholders.

The amended regulations also provide an explicit legal basis for the three agencies to join forces and streamline activities to increase maritime situational awareness and response and provide tailored services to national authorities carrying out coast guard functions.

The mandate explicitly defines five areas of cooperation, as outlined in Section 1 of this document, but the co-legislators left it to the agencies to define how this cooperation works in practice and to formalise it in a working arrangement. This working arrangement was approved by the management board of Frontex and the administrative boards of EFCA and EMSA.

A Tripartite Working Arrangement (TWA) was then jointly developed by the three agencies and approved by their respective governing bodies, entering into force in March 2017 and being extended in March 2021. The TWA foresees the establishment of a steering committee to manage inter-agency cooperation in the five areas defined by the co-legislators.

The steering committee approves, before 1 September each year, the annual strategic plan to implement the TWA. The plan is then submitted to the governing bodies of EFCA, EMSA and Frontex for adoption and inclusion in the single programming documents of the three agencies.

The annual strategic plan outlines priorities according to the five areas of cooperation. It serves as the basis for the annual implementation plans, which define in detail the activities that each agency will implement under the coast guard cooperation framework in a given year.

Moreover, it was agreed in 2017 that the AECGE would be organised by the agency currently chairing the TWA steering committee. The aim of the AECGE is to consult national authorities with coast guard functions and other EU and international partners on the three agencies' cooperation activities.

3.3. **Service level agreements**

A number of service level agreements (SLAs) already exist between the three agencies. These SLAs concern the agencies' day-to-day operational support for coast guard functions.

The following is a list of SLAs between the three agencies as of May 2020:

(a) SLA between EFCA and EMSA, which was set up in 2012 and has been regularly renewed and broadened since then. It is currently automatically renewed on an annual basis and covers the provision of dedicated Integrated Maritime Services by EMSA to EFCA and mechanisms for EMSA contracted vessels to be used for EFCA activities. It also allows EFCA to use the EMSA Remotely Piloted Aircraft System (RPAS) for fisheries monitoring and control activities and cooperation on pollution response.

(b) SLA between EMSA and Frontex, which was set up in 2013 and has been regularly renewed and broadened since then. It currently runs for an indefinite period and covers the provision of dedicated maritime services by EMSA in support of EUROSUR for Frontex and a mechanism for Frontex to use the EMSA RPAS for border control activities.

(c) SLA between EFCA and Frontex for the provision of services in support of EFCA activities, including aerial surveillance services and deployment of offshore patrol vessels (OPV). It is automatically renewed on an annual basis.

(d) SLA between EFCA and Frontex for the provision of services for border surveillance within EUROSUR. It is automatically renewed on an annual basis and has been regularly updated and amended.

4. **SERVICE CATALOGUE**

The Service Catalogue lists the services that are available to Member States and the three agencies, and that involve contributions by two or more agencies in their delivery.

As coast guard functions entail 'incident-driven' ([3]) actions and/or 'monitoring-driven' ([4]) actions, the three agencies develop services to support such actions.

([3]) 'Incident driven': authorities are on standby to respond to ad hoc situations when requested, e.g. search and rescue cases.
([4]) 'Monitoring driven': authorities are continuously patrolling and surveying sea basins to identify potential unlawful situations, e.g. illegal fishery activities or vessels involved in smuggling or illegal oil discharges.

The list of services, with information on who can access those services and details on how to do so, are provided in the accompanying online platform. In parallel, descriptions of the main data sets used in the provision of those services can be found below.

The service may be composed of an array of datasets, associated databases, platforms and tools. It may combine processes involving data collection, management, exploitation and visualisation.

4.1. **Vessel positions, characteristics and related data**

A range of data sources are used to provide these services. For example, the EMSA services are based on advanced data processing, using data available either directly through the Agency's maritime applications or from external sources. Depending on the user, different combinations of data can be streamed directly to national systems, presented on a user-friendly graphical interface, and delivered on mobile devices. Data is distributed according to established access rights.

The following are some of the main data sources:

(a) Terrestrial Automatic Identification System

The Terrestrial Automatic Identification System (T-AIS) is a maritime broadcast system, based on the transmission of very high frequency radio signals. Ships send reports with their ship identification, position and course, as well as information on their cargo. In Europe, the exchange of AIS messages is implemented through the SafeSeaNet system (SSN).

(b) The Union Maritime Information and Exchange System (SafeSeaNet)

The Union Maritime Information and Exchange System (SSN) ([5]) is a cross-sector and cross-border information sharing and exchange system, providing integrated maritime services for the purpose of maritime safety, port and maritime security, marine environment protection and efficiency of maritime traffic and maritime transport as well as situational awareness at sea and maritime surveillance ; the system links maritime authorities from across Europe through a network of maritime data exchange. SSN includes vessel information from AIS, Mandatory Reporting Systems (MRS), data on port calls, dangerous and polluting goods, security, waste and cargo residues, and information on safety-related incidents.

EMSA is responsible for developing, operating and maintaining the central SSN system and interacts with users on an operational basis.

(c) Satellite AIS

Satellites can also receive AIS position messages. The exchange of AIS information via satellite, through commercial providers, has increased the geographical range over which ships can be tracked; in such a case, the data is provided in less than an hour.

The satellite AIS data available through EMSA and shared with EFCA and Frontex has global coverage.

(d) Long Range Identification and Tracking

Long Range Identification and Tracking (LRIT) is a global ship identification and tracking system based on satellite communications. Under International Maritime Organisation (IMO) regulations, passenger ships, cargo ships (300 gross tonnage and above) and mobile offshore drilling units on international voyages send mandatory position reports once every 6 hours. EMSA operates the LRIT Cooperative Data Centre (CDC), through which users of 'EU LRIT CDC Participating Countries' can access the LRIT information on their flagged ships worldwide.

Member States receive the mandatory position reports for free, as associated costs are paid from the EU budget by EMSA. An arrangement is in place whereby Member States can choose to share data on their flagged ships with other Member States for free.

([5]) Directive 2002/59/EC of the European Parliament and of the Council of 27 June 2002 establishing a Community vessel traffic monitoring and information system and repealing Council Directive 93/75/EEC (OJ L 208, 5.8.2002, p. 10) (later amended) established a Community vessel traffic monitoring and information system 'with a view to enhancing the safety and efficiency of maritime traffic, improving the response of authorities to incidents, accidents or potentially dangerous situations at sea, including search and rescue operations, and contributing to a better prevention and detection of pollution by ships.'

In addition, users of 'EU LRIT CDC Participating Countries' can receive, upon request but at cost, data regarding vessels of any flag bound to or sailing within 1 000 nautical miles of EU waters.

(e) EMSA maritime central reference databases

EMSA manages numerous maritime central databases. Of particular current interest (also in relation to the European Maritime Single Window environment, EMSWe) are the Central Organisation Database (COD), Central Hazmat Database (CHD) and the Central Ship Database (CSD).

The COD stores information related to public organisations, such as local and national authorities involved with the SafeSeaNet Ecosystem. The initial purpose of the COD was to serve as the Shore-based Traffic Monitoring Infrastructure Database (STMID), which simplifies and facilitates the sharing of information on authorities and coastal stations which have been designated by Member States under Article 22 of Directive 2002/59/EC establishing a Community vessel traffic monitoring and information system.

The CSD can be used to cross-check ship identity data (IMO, MMSI, name, call sign and flag) stored within national ship databases or received from reporting parties. Ship particulars (e.g. tonnage, length, beam) are also available when relevant stakeholders provide these details. The CSD is hosted at EMSA and provides a common service for internal EMSA users and all Member States.

The main objective of the CHD is to enhance the quality of reporting on dangerous and polluting goods in the SafeSeaNet system. It includes a comprehensive list of all the dangerous and polluting goods that have to be notified under Directive 2002/59/EC establishing a Community vessel traffic monitoring and information system, as amended ([6]). It also provides access to the marine chemical information sheets (MAR-CIS) database of associated hazards and risks of dangerous and polluting products. The CHD is accessible to Member State authorities, industry and the general public.

(f) Fisheries-specific data and information

As part of the Joint Deployment Plans (JDP) and under international obligations, EFCA receives a range of fisheries-related data and services from Member States' competent authorities and international organisations.

— Vessel Monitoring System

The Vessel Monitoring System (VMS) is a satellite-based monitoring system, which at regular intervals provides data to the flag state fisheries authorities on the location, course and speed of fishing vessels. In the EU, the use of this system is mandatory for fishing vessels of 12 metres' length overall or more ([7]).

The fishing vessels are fitted with an on-board, tamper-proof terminal. This terminal receives, via satellite, Global Navigation Satellite Systems (GNSS) positional data and then transmits via satellite the VMS data, normally every 1 or 2 hours (maximum), to a Land Earth Station (LES) for onward transmission to the relevant fisheries monitoring centre. The system is designed to operate in a fully automatic way with no manual input required.

VMS is used to check the near real-time and historical positions of a fishing vessel to comply with catch records, to support the implementation of legislation on Illegal, Unreported and Unregulated (IUU) fishing activities and to assist coast guard functions. As part of the JDP, EFCA receives VMS data from all EU Member States involved in each JDP. Member States also send, to EFCA, VMS data they have received from third-country vessels authorised to fish in their waters.

As EFCA also coordinates JDPs in international waters, fisheries management organisations send data to the EFCA VMS from third-country fishing vessels active in these areas.

([6]) Directive 2002/59/EC.

([7]) Exemptions apply according to Article 9(5) of Council Regulation (EC) No 1224/2009 of 20 November 2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy, amending Regulations (EC) No 847/96, (EC) No 2371/2002, (EC) No 811/2004, (EC) No 768/2005, (EC) No 2115/2005, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007, (EC) No 676/2007, (EC) No 1098/2007, (EC) No 1300/2008, (EC) No 1342/2008 and repealing Regulations (EEC) No 2847/93, (EC) No 1627/94 and (EC) No 1966/2006 (OJ L 343, 22.12.2009, p. 1).

— Electronic Recording and Reporting System

The Electronic Recording and Reporting System (ERS) is used for the automatic exchange of fishing activity data. This data is reported by fishing vessels to the national authorities of the flag state and is exchanged through the ERS using a standard format and protocol between the flag state and other parties (coastal state, control state, EFCA). The ERS is in use for EU fishing logbooks (including catches and landing declarations, etc.) and EFCA receives data for a pre-established list of vessels.

4.2. **Earth Observation-based sources**

(a) Copernicus Maritime Surveillance Service

(b) Synthetic Aperture Radar (SAR) satellite images

SAR sensors use microwave frequencies to retrieve backscatter measurements from the detected surface below (sea or land). The images can be acquired regardless of weather conditions and cloud cover, and at any time of day or night.

SAR images of the ocean greatly depend on surface roughness caused by wind stress on the sea. By measuring wave heights, resulting images display features which stand out against the background; for example, vessels and other man-made structures appear as bright spots, while oil spills or areas with very low wind appear as dark shapes.

(c) Optical satellite images

Optical images can provide a wealth of information in different spectral bands. They provide easier image interpretation and object identification due to the combination of Red-Green-Blue (RGB) frequencies and higher contrast, albeit with very high dependency on sunlight and weather conditions. Optical sensors cannot capture images during the night or in cloud cover conditions.

(d) Copernicus Marine Environment Monitoring Service ([8])

(e) Oceanographic Satellite products

Some Sentinel satellites are dedicated to ocean monitoring with instruments such as altimeters, radiometers and optical instruments with dedicated spectral bands. These three types of sensors (onboard e.g. Sentinel3, Sentinel6) provide reference observation to derive any information on the ocean state and physics to deliver ocean forecasts : currents, waves, sea level, sea-ice, temperature, salinity. Combined with many sources of optical imagery they deliver as well observations of the biogeochemical content at sea (including for related forecasts).

4.3. **Aerial platform-based sources**

(a) Remotely Piloted Aircraft Systems

The Remotely Piloted Aircraft Systems services assist in maritime surveillance operations, supporting authorities involved in coast guard functions undertaken by Member States and EU agencies, such as:

— maritime pollution detection and emissions monitoring;

— detection of illegal fishing, anti-drug trafficking, and illegal immigration;

— support for marine pollution response operations;

— search and rescue operations;

— support for law enforcement activities.

Used as a complementary tool in the overall surveillance chain, RPAS have the ability to fly for a long time (more than 10 hours, depending on the system). This allows for the monitoring of large areas, and RPAS can stay 'on site' if needed both during the day and at night.

The current EMSA RPAS portfolio includes vertical-take-off-and-landing (VTOL) systems as well as fixed-wing RPAS, some of which use satellite communication to enable beyond radio line-of-sight operations. VTOL RPAS are particularly useful for fisheries control, ship emission monitoring (using 'sniffers' in a ship's plume) and pollution

([8]) http://marine.copernicus.eu/about-us/about-your-copernicus-marine-service/

response operations. Depending on their maximum payload mass, RPAS can carry an array of sensors, such as optical and/or infrared video cameras for day/night surveillance, infrared radiation (IR) and/or radar sensors for ship and oil slick detection.

The live video streams and data collected through RPAS are distributed via a web-based RPAS Data Centre, which allows access from work and/or at remote locations. The data is fused with the maritime picture that is already available through the integration of other maritime surveillance services.

(b) Manned aircraft-based sources

The manned services allow for real-time monitoring, among other things, of the 'pre-frontier' areas of interest, whereas the surveillance data is made available to the requestors immediately during the operation.

A real-time video and information streams are provided by sensors installed on the aerial platform and transmitted directly to the monitoring room and partner coordination centres in the EU.

The primary aim is to support the national authorities of Member States and Schengen Associated Countries involved in coast guard functions, EU agencies and entities in surveillance and monitoring activities within a specific area of interest (AOI) focusing on the EU's 'pre-frontiers'.

Multipurpose aerial surveillance supports users engaged in:

— maritime surveillance activities related to coast guard functions;

— detection of boats in distress, triggering search and rescue operations, and further contributions to national search and rescue authorities upon request;

— combating illegal migration and cross-border crime;

Frontex and EFCA provide these services through a joint inter-institutional framework contract.

4.4. **Other main data sources**

(a) Meteorological-oceanographic data

A range of meteorological-oceanographic data is available and has been integrated in EMSA systems. The data sets are described below.

— The European Marine Observation and Data Network (EMODNet) ([9]) provides access to data from over 1 500 in-situ platforms. Information is geo-located and divided per type of platform.

— The European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) ([10]) provides access to meteorological satellites sensing oceans at coarse resolution but in real-time specifically for weather prediction services and ocean surface monitoring.

— The Copernicus Marine Environment Monitoring Service (CMEMS) ingests satellite, weather and in-situ data to deliver operational ocean forecasting services for the blue ocean (temperature, currents, sea level, winds, waves), the white ocean (more than 10 sea-ice parameters including concentration, thickness, drift and icebergs), and the green ocean (e.g. chlorophyll, plankton, optical properties, nutrients, carbon-related products and chemical content such as iron, phosphate, nitrate).

— The Copernicus Atmosphere Monitoring Service (ECAMS) ([11]) provides forecasts along the different layers of the atmosphere about its content in

— sulphur dioxide;

— nitrogen dioxide;

— carbon dioxide.

([9]) www.emodnet.eu/what-emodnet
([10]) www.eumetsat.int/website/home/AboutUs/WhoWeAre/index.html
([11]) https://www.ecmwf.int/en/about/what-we-do/environmental-services/copernicus-atmosphere-monitoring-service

(b) Additional ship-related and voyage information

Member States also exchange additional data (on ships, voyages, inspections and other related information) through the EMSA systems. This includes, among other things: inspection data and alerts related to international or EU regulations (THETIS, THETIS-EU); accident investigation reports (EMCIP); seafarers' certification data (STCW-IS); marine equipment approvals (MarED); notifications of port arrival and departure, carriage of hazardous goods and incident reports (SafeSeaNet).

4.5. **Data analysis tools and visualisation**

As mentioned earlier, there is a need to exploit and visualise data and associated databases. Some of the related tools and platforms are listed below.

(a) Automated Behaviour Monitoring (ABM) algorithms/Anomaly Detection Service

ABMs are algorithm-based tools that analyse ship positions to detect specific ship behaviour and alert the relevant operator. More than 20 algorithms have been developed to date, including algorithms for entering an area of interest, an encounter between two ships at sea, and a ship approaching shore. All ABMs can be selected and configured directly by the user; operators are automatically alerted in real time via email or through the SafeSeaNet Graphical User Interface (SEG) graphical user interface.

ABMs are used by an ever-growing number of EU Member States and bodies in various operational contexts, such as fisheries control, border control, security, safety of marine traffic, coastal protection, and environmental protection.

ABMs are available through the EMSA Integrated Maritime Services (IMS) to Member States and EFCA. The associated platform is the 'SEG'. They are also provided to Frontex, on a system-to-system basis, through the Joint Operation Reporting Application (JORA). On the Frontex platform, they are known as the Anomaly Detection Service.

(b) Earth Observation value-added products

Value-added products aid users by extracting particularly valuable information from the basic image products, allowing authorities to undertake higher-level analysis of objects, features or activities at sea more quickly and efficiently. The value-added products can be provided either as a layer on top of the original satellite image product or as a separate layer of information, for example a vector layer, or as a forecast or a climate reanalysis/prediction. The value-added products currently being offered to users include:

— vessel detection;

— feature detection;

— activity detection;

— oil spill detection;

— wind and wave information.

These added-value Earth Observation products are available through the EMSA IMS to Member States and EFCA. They can be free at the point of use for the Member States and EFCA, as funding can be covered under the Copernicus Maritime Surveillance Service with the help of the Copernicus Marine Environment Monitoring Service ([12]). They can be visualised in the SEG and can also be provided to Frontex, on a system-to-system basis, through JORA. On the Frontex platform, they are known as the Vessel Detection Service (VDS) and the Activity Detection Service.

(c) Earth Observation vessel correlation

Vessel detections derived from SAR and optical images are correlated against vessel data (e.g. AIS, LRIT and VMS data). This can provide an overview of which vessels are reporting in a given area, and which are not. This information is shown in two vector layers:

— VDS correlated with vessel reporting information (a vessel detected by the satellite can be matched with vessel reporting information and therefore identified); and

— VDS not correlated with vessel reporting information (a vessel detected by the satellite cannot be matched with vessel reporting information and therefore no identification of the vessel is possible).

([12]) https://marine.copernicus.eu/access-data/myocean-viewer

Users will only receive correlations of vessel reporting information for which they have been granted the relevant access rights.

4.6. **Other maritime-related information platforms**

The agencies have developed different information platforms driven by the needs of their specific user communities and mandates. These platforms integrate, according to the needs and access rights, some of the data and tools described above. The main platforms are as follows:

(a) EFCA: The EFCA IMS provides an integrated maritime awareness picture, specifically tailored for fisheries control, which supports Member States' fisheries control activities. It is made and built upon via the SEG developed by EMSA.

The EFCA IMS has the ability to integrate and fuse, in real time, position data sets collected through channels such as VMS, terrestrial AIS and satellite AIS, as well as LRIT and VDS reports and satellite images delivered through the Copernicus Maritime Surveillance Service.

The application includes a wide variety of functionalities and reference data sets and can cater for specific fisheries control tasks. These tasks range from monitoring fishing activities in EU and Regional Fisheries Management Organisations (RFMO) waters to providing a trustworthy source of worldwide historical vessel movement information (not limited to fishing vessels) for IUU catch certificate verification (IUU Regulation ([13])).

In addition, the integration of fisheries-specific information on maritime boundaries and fishing areas and, more importantly, on specific attributes of fishing vessels fishing activities – such as Food and Agriculture Organisation (FAO) vessel types, gear types, Community Fleet Register (CFR) external markings and fishing authorisation information – allows for advanced filter and search functionalities. The numerous functionalities include:

— Smart search and advanced search:

Smart search of vessels in real time, using various IDs. Advanced search on a wider set of attributes (i.e. gear type, the International Commission for the Conservation of Atlantic Tuna ID) giving access to historic positions.

— Single and multiple track making:

Real-time and/or historic tracks can be made for single and multiple vessels.

High frequency position data and the capacity to fuse various position data sources allows for comprehensive activity monitoring (i.e. transhipment and fishing activities, access monitoring).

— Automated Behaviour Monitoring:

ABM alerts are based on specific algorithms defined according to operational needs. ABMs are particularly useful for detecting vessels entering closed areas (i.e. RTCs) or certain behaviours (i.e. transhipment).

— Export and upload:

Results from queries such as track making, vessel searches and ABM alerts can be exported in various formats. Vessel positions and area files can be imported and linked to existing vessels.

(b) EMSA: The SEG is the main platform for the visualisation of SafeSeaNet and the Integrated Maritime Services, including Automated Behaviour Monitoring, for most user communities. The Integrated Maritime Services can be accessed through the SEG online graphical user interface, which is available on desktop, laptop and mobile devices (via the IMS app). These services are also available on system-to-system interfaces, which interfaces enable users to view integrated data on their own systems and receive alerts for specific pre-determined surveillance cases.

([13]) Council Regulation (EC) No 1005/2008 of 29 September 2008 establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing (IUU Regulation), amending Regulations (EEC) No 2847/93, (EC) No 1936/2001 and (EC) No 601/2004 and repealing Regulations (EC) No 1093/94 and (EC) No 1447/1999 (OJ L 286, 29.10.2008, p. 1).

— SEG platform:

The SEG platform integrates and combines many different types of data, including data provided by the end user, to provide the most comprehensive and up-to-date maritime picture possible. This offers a customised service tailored specifically to the user's requirements, and the data can be shared easily and selectively based on a set of unique capabilities.

— Data sources:

Data is extracted from: vessel tracking systems (terrestrial AIS, LRIT and VMS); a global stream of satellite AIS; Earth Observation satellite imagery and related products; an enhanced search and rescue feature (E-SARSURPIC); additional ship and voyage information (Hazmat, port, waste, security and incident-related); nautical charts; and meteorological-oceanographic data. See Sections 4.1, 4.2 and 4.3 for further details.

— Data serving different functions:

Integrated Maritime Services are offered to all maritime authorities and respond to the needs of users from a wide range of different functions. Users can share relevant and function-specific information with other national, regional and international authorities for missions at sea.

— Data from users:

Users may also provide their own data, which can be correlated with other data, then sent back to them and to those with whom they choose to share it.

— Scale and geographical coverage:

Different levels of detail can be shared at different geographical scales (national, regional and international). Users can choose to receive a general overview or specific data covering the areas of most interest to them. They can also query a specific time in the past, going as far back as 36 months.

— Access rights management:

Distribution policies are set by the data and information owners, complying with complex landscapes of access rights management.

— Automated Behaviour Monitoring:

The algorithm-based ABM system analyses ship positions to detect abnormal and specific vessel behaviour. Users are alerted automatically, and in real time, when certain behaviour patterns are detected.

In addition, the main platform for managing Earth Observation products is the Earth Observation Data Centre. For RPAS operational data, the main platform is the RPAS Data Centre.

(c) Frontex:

— EUROSUR:

According to the Regulation (EU) 2019/1896 on the European Border and Coast Guard, the European Border Surveillance system (EUROSUR) is the framework for information exchange and cooperation among European Border and Coast Guards when performing border management tasks. It comprises of several elements, among them a variety of EUROSUR Fusion Services (EFS), which contribute to the compilation of the European Situational Picture (ESP) and supports Member States in defining their National Situational Pictures (NSP). They are based on the common application of surveillance tools and inter-agency cooperation at EU level, including the provision of Copernicus security services (Copernicus Border Surveillance Service).

EFS collects data from diverse data sources and platforms, and aggregates and fuses them into customised information services related to European integrated border management. These services are then delivered to authorities and other partners in EU Member States and Schengen Associated Countries.

— JORA:

As part of EUROSUR, the Joint Operation Reporting Application is used for managing data flows and exchanging sensitive and non-sensitive unclassified data between Frontex and its internal and external stakeholders.

Frontex introduced JORA as a web-based solution for operational information exchange in January 2011, since when it has been continuously developed, with new functionalities added gradually over the years. Now it is a state-of–the-art solution for information exchange, including operational statistics and personal data, and delivers various EUROSUR Fusion Services to system users. More than half a million reports have been collected via JORA, contributing significantly to the European Situational Picture.

5. CAPACITY BUILDING AND TRAINING CATALOGUE

5.1. Capacity building and training

Common, standardised and comparable capacity-building and training programmes are critical for efficient and effective coast guard cooperation. To start addressing the challenges related to education and training in this area, the Commission's Directorate-General for Maritime Affairs and Fisheries financed a project for coast guard academies ([14]) (European Coast Guard Functions Academies Network project - ECGFA Net) between 2015 and 2019.

The main aim of this project was to enhance educational cooperation in the field of coast guard functions, facilitate interoperability and cooperation between different bodies carrying out these functions, and enhance the coherence and effectiveness of these activities. The project covered an exchange programme (including an on-the-job officer exchange programme and a programme of training courses for other authorities), the development of a Sectoral Qualifications Framework (SQF), and the development of a dedicated portal.

The SQF aims to provide coast guard academies with the means to compare qualifications. It is a voluntary framework for describing what the holders of various qualifications are expected to know, understand and be able to do at certain levels in order to perform tasks related to coast guard functions ([15]). The SQF could therefore serve as a basis for developing education and capacity-building programmes for coast guard academies on coast guard cooperation and common operations. The SQF is available on the European Coast Guard Functions training portal ([16]).

Since capacity building and training is one of the five coast guard cooperation areas, the three agencies are integrating the relevant project outcomes and results in their existing cooperation framework.

5.2. Training Catalogue

The main purpose of the Training Catalogue is to provide a list of all training courses currently undertaken by the three agencies. As requested by the Member States, the Catalogue lists all available courses and not just those that involve two or more of the agencies. Where applicable, the lists also indicate the relevant cooperation area for that training course.

A short overview helps users identify whether the available course applies to their needs. This overview may cover one or more of the following:

— the aim of the course;

— the objectives of the course; and

— the target audience of the course.

The Catalogue (available through the dedicated online platform) is split between training courses provided in person and those provided via one of the agencies' e-learning training platforms ([17]). The beginning of each section of the Catalogue includes appropriate web links, where users may explore further details on each of the courses listed, including details of how to access/apply for those training courses ([18]). Further details can also be obtained by contacting the relevant agency via the email address provided.

([14]) The project was financed in three phases: EASME/EMFF/2014/1.2.1.1; EASME/EMFF/2016/1.2.1.11; and EASME/EMFF/2018/1.2.1.3.
([15]) https://ecgff-trainingportal.efca.europa.eu/pages/100-what-is-sqfcgf-and-its-purpose
([16]) https://ecgff-trainingportal.efca.europa.eu/pages/99-visual-tool-of-the-sqfcgf
([17]) As a consequence of the pandemic situation in 2020, the format of certain courses was changed to webinars.
([18]) Frontex training courses are organised mainly to prepare the deployment of EBCG team members. Thus, Member States are expected to react to the call for nomination of participants and to invitations they receive, and not to indicate beforehand their preferences for attending different training courses.

A number of training courses have been developed by two, or even all three, agencies and may involve the provision of trainers and/or facilities from each of the agencies in delivering the courses. It is also envisaged that, over time, further joint training courses will be developed to supplement those already provided.

As stated above, further details on all these courses are provided within the Training Catalogue and will be available on the online platform.

6. BEST PRACTICE GUIDELINES AND MANUAL CATALOGUE

The Best Practice Guidelines and Manual Catalogue aim to establish a comprehensive list of all such documents available within the three agencies, not just those that involve two or more of the agencies, and of guidelines available from coast guard cooperation fora. The Catalogue provides Handbook users with a short overview of each document.

In this regard, the conceptual model of Multifunction Maritime Operations (MMO) developed by the ECGFF could be relevant for capacity sharing, for planning and implementing multipurpose operations, and for sharing assets and other capabilities, to the extent that those activities are coordinated by the relevant agencies and agreed to by the competent authorities of the Member States concerned.

The Catalogue, operated by EFCA in close cooperation with the other two agencies and the Commission, will be available on an online platform and includes a web link where further details can be accessed.

7. REGIONAL/INTERNATIONAL/BILATERAL/MULTILATERAL COOPERATION

Across Europe, there are many long-standing regional/international/bilateral/ multilateral cooperation agreements and/or mechanisms covering a wide range of maritime-related issues. Most of these agreements cover some aspects of coast guard functions and many of them stretch beyond European boundaries and may involve a number of third countries. There is also a wide variety of more local agreements and mechanisms between neighbouring countries on a bilateral or multilateral basis.

The legal basis, scope, complexities, obligations, sanctions, etc. associated with all of these mechanisms varies considerably. Some might have a strong legal basis with clearly defined obligations and a limited number of contracting parties. Other mechanisms might be voluntary in terms of participation, non-binding in terms of obligations, and be open to a wide group of stakeholders. The Handbook does not aim to categorise the mechanisms or quantify any obligations on participants, but to provide an overview by listing the mechanisms, their general field of activity and their stakeholders.

To give an appreciation of the wide variety of such mechanisms, the Handbook and the accompanying catalogues and factsheets map and list some of the main agreements, along with a selection of other bilateral and multilateral arrangements. This list, which will be provided through the dedicated online platform, includes a short high-level description of each mechanism and a hyperlink to the relevant website, where applicable. In addition, the countries participating in or associated with each agreement are also listed.

While the list is not meant to give a complete picture of every single agreement in place, it does offer a broad representative sample of what has already been developed and implemented. This provides Handbook users with elements that could be a basis for developing their own mechanisms; this is a core principle and one of the aims of the Handbook.

Also notable is the European Union Maritime Security Strategy, as one of the EU's overarching instruments for maritime multilateralism. It promotes a comprehensive, cross-sector and cross-border, coherent and cost-efficient approach at European, regional and national level.

Since the amendment of their founding regulations, the three agencies have supported initiatives on coast guard cooperation at a regional level, such as the ECGFF and the Mediterranean Coast Guard Functions Forum (MCGFF).

European Coast Guard Functions Forum

The European Coast Guard Functions Forum ([19]) is a self-governing, non-binding, voluntary, independent and non-political forum, with experience of border control. It brings together coast guard authorities from 22 EU Member States and two Schengen Associated Countries, as well as representatives of the EU institutions and bodies with competencies related to EU coast guard functions.

The Commission and the agencies have supported the ECGFF since its establishment in 2009. The Forum has a rotating chairmanship responsible for implementing an annual programme defined at the start of the chairmanship. The agencies support the implementation of this work programme by co-leading thematic workshops.

The agencies also take part in various specific projects implemented by the ECGFF to ensure continuity and compatibility with their work.

8. COUNTRY FACTSHEETS

8.1. Purpose

The main purpose of the country factsheets is to provide an easy reference document outlining the following information:

(a) national Points of Contact (POC) in ministries and at a strategic level, with relevant contact details, i.e. email and phone;

(b) the ministries/department/agencies/organisations involved in the various coast guard functions, along with their address, 24/7 contact details (phone and email), and relevant website if applicable;

(c) the factsheet also identifies the 'lead' organisation responsible for each of the coast guard functions, along with any other organisation with a role or responsibility related to these functions. It will also identify if and when this 'lead' role will change, depending on maritime area/jurisdiction (i.e. territorial seas, contiguous zone, exclusive economic zone and high seas);

(d) a list of the various regional/international organisations in which the country is participating or involved.

The country factsheets will be available through the dedicated online platform.

8.2. Up-to-date content

The country factsheets will need to be updated on a frequent basis, particularly when Member States submit new or amended contact details. Such amendments will appear on the online platform operated by EFCA in close cooperation with the other two agencies and the Commission.

([19]) https://ecgff.emsa.europa.eu/