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POLICY PAPER ON MARITIME SURVEILLANCE

Implementation of multilevel governance in Maritime Surveillance

THE PROBLEM

Maritime surveillance is a key transnational issue in the Mediterranean area encompassing safety, security and environmental dimensions in a context of increasing pressure with vessels traffic, mass tourism, climate change, illegal fisheries and pollution. A better management of safety, security and marine activities, requires a maritime surveillance system implemented both at national and transnational level to tackle these dimensions while also contributing to the European Green Deal objectives, as part of the European efforts to implement the United Nation's 2030 Agenda for Sustainable Development and its goals.

However, currently those systems cannot address all the new challenges resulting from increasing pressures and diversified activities at sea and the necessity to consider migration, environmental risks and protection, environment and climate change. It represents a specific challenge on crossing various inputs from many sources, as well as the comprehensive range of the different actors including the different territorial levels and constituencies.

The **European Green Deal**, published in December 2019, clearly states that:

- Conventional approaches will not be sufficient to overcome current challenges and;
- Experimentation and working across sectors and disciplines (involving also local communities) will be key to better protect natural resources, restore ecosystems and improve human health.

The global climate and environmental challenges are a significant threat multiplier and a source of instability that will reshape geopolitics, including global economic, trade and security interests. On the Mediterranean basin, specific activities will be required to increase climate and environmental resilience, while preventing conflict, food insecurity, population displacement and forced migration. Consequently, climate policy implications should become an integral part of the EU's thinking and action on external issues, including in the context of the Common Security and Defence Policy (CSDP).

A better sharing and management of information and data between different institutional levels, the involvement of public and private bodies, universities, local authorities and citizens through their **digital transformation**[1], is the guarantee for improving the efficiency and response of existing systems.

Interreg transnational European programmes, thanks to their cross thematic and multilevel approach, provide a relevant support to progress in multilevel governance approach better involving local / regional authorities and even making EU citizens engaged in strategic issues. Nevertheless, nothing will change without the involvement of national and EU policy makers is required to focus strategies, adapt regulations and coordinate funding.

[1] *Transformation in the sense that will address elements of a comprehensive change including the new technological capabilities, the adaptation of supporting regulations, and the way actors will operate in future.*

Our common challenge: conciliate the complex and fragmented aims and purposes of Maritime Surveillance

The maritime surveillance must ensure safe and secure maritime related activities (vessels traffic, yachting, fisheries, aquaculture, tourism, energy, etc.) through maritime safety including search and rescue, taking into consideration environmental threats and risks requiring a high level of coordination between numerous stakeholders in order to tackle them.

In addition, Maritime Surveillance should :

- Make **maritime transport** more **effective** and **efficient** for the **users and enterprises** embracing their socioeconomic needs and concerns.
- Allow territories, cities and citizens to develop instruments integrating marine environment and climate change into their **risk management practices and responsibilities** through to a better access to data.

Integrated Maritime Surveillance needs to provide authorities with means, functions and procedures to exchange information or data as a pledge of, more effective, affordable and accessible systems able to better tackle organisational and integration issues.

Looking at EU scale the Integrated Maritime Surveillance competences cannot be limited to the maritime policy. It must be enlarged and linked to the International regulatory framework that is under the shared responsibility of the European Commission and the Member States, including for research, **technological development and development cooperation issues.**

Considering such a complex and fragmented framework of relations and competencies, we **recommend** that **future Integrated Maritime Surveillance in the Mediterranean Basin** be addressed according the following perspectives:

- Setting up of a coherent approach **mixing compulsory and voluntary data and information exchanges.**
- Incentive the cooperation with pre-adhesion countries[2] and ENP[3] Countries in the scope of Integrated Maritime Surveillance domain.

[2] IPA countries : Albania, North Macedonia, Montenegro, Serbia, Turkey, Bosnia and Kosovo

[3] ENP countries : Algeria, Morocco, Egypt, Israel, Jordan, Lebanon, Libya, Palestine, Syria, Tunisia in the South and Armenia, Azerbaijan, Belarus, Georgia, Moldova, Ukraine in the East.

Insularity challenges

Islands constitute a particular field of attention due to questions of accessibility, environmental protection, safety or security. Maritime safety and security, in the small islands, is a key element of the European Agenda for Sustainable Development, Security Strategy and Integrated Maritime Policy and the EU Strategy for the Adriatic-Ionian Region (EUSAIR)[4]. Most of Mediterranean islands in particular in Greece, are peripheral regions situated mostly on the EU's external borders being particularly vulnerable to challenges such as globalization, demographic trends, climate change, energy supply and, especially for the eastern areas, exposure to increasing migration flows.

The existing **Blue Growth opportunities** in islands and **the role of Maritime Spatial Planning (MSP) and Integrated Coastal Zone Management (ICZM)** are equally important and have to be implemented differently depending on the respective governance structure and institutional arrangements. Integrated Maritime Surveillance can help MSP/ICZM **to better manage conflict**, promote multi-use and balancing the context-specific socio-ecological needs and economic opportunities of islands in reflecting their ambitions, priorities and challenges, and guiding investment into Blue Economy sector development.

Therefore, a stronger and fairer **Cohesion Policy** should further recognise the **geographic constraints of islands** and outermost regions and provide further tailored assistance to help them overcome these disadvantages and vulnerabilities and exploit their opportunities to achieve the EU objectives. Especially in the **small islands**, the strengthening of key infrastructures such as modern maritime services and sustainable port infrastructure with highly sophisticated maritime surveillance systems is very much needed as the refugee issue worsens, particularly for the Aegean islands. A prioritization of the type of interventions in coastal and island regions is also needed, where port facilities are particularly lagging behind in implementing security and integrated maritime surveillance projects, taking also into account the recently revised EU Maritime Security Strategy Action Plan (2018) for the global maritime domain.

➡ Consider Maritime surveillance as a support pillar for MSP/ICZM and blue growth, especially in islands areas (management of conflicts of use between activities, protection of the marine ecosystem, risk reduction on human activities such as refugee flows, search & rescue, safety of navigation).

[4] Europe's islands are home to over 21 million people. 3.5% of the European Union's population lives on island regions. There are over 2000 populated islands in the national jurisdictions of twenty Member States of the EU.

Maritime Surveillance: a European context willing to more cooperation and better tackling climate change issues

Approved in 2007, the **Integrated Maritime Surveillance (IMS)** is one of the main pillars for the implementation of the **EU Integrated Maritime Policy (IMP)** and a relevant tool to ensure and safeguard the sustainable development of the Seas and Oceans, and their coastal zones, thus leveraging and promoting Blue Growth. IMS could also assist countries in implementing Maritime Spatial Planning at various scales.

The lessons learnt during the current implementation period clearly channel to **improve and ensure information exchange between civilian and military authorities**, since military authorities are one of the main holders of maritime surveillance data and assets. A great deal of data is also produced and managed by the private sector with maritime traffic routes, aquaculture farms, oil extraction platforms, offshore wind parks, fishing and boating… Likewise, other sources of environmental data should be considered (habitats and species (underwater), water temperatures, water quality and pollution rates…)

Policies and the implementation regarding maritime surveillance systems have evolved towards better cross-sectoral and cross-border articulation between partners from the national level revealing more and more **open to cooperation**. Logically, this has been clearly **reflected** in the **EU Maritime Security Strategy (EUMSS)** aimed at strengthening cross-border cooperation and the exchange of information.

As a result, this has optimized surveillance of the maritime space as well as the EU's maritime borders, search and rescue and also improved the conduct of missions of the Common Security and Defense Policy (CSDP) in the global maritime space. In doing so, the EU's maritime surveillance aims at ensuring the safety and security of seas and oceans and have led to a strengthening of the protection and promotion of the EU's maritime interests in the world.

EMSA
European Maritime Safety Agency

FRONTEX
EUROPEAN BORDER AND COAST GUARD AGENCY

At the same time, EU policies have strengthened cooperation between agencies (border, fisheries, security) on the protection and safeguarding of the EU's maritime borders, the customs and economic activities' limits, the fishing areas and other relevant living and non-living resources and maritime activities (ecological areas, cultural, mineral, etc.).

Added to this was the protection of the coastline, its populations, its infrastructure and equipment and goods, linked to the pressures of climate change and the need to strengthen climate resilience, prevention and management of the coastal areas of the Mediterranean Sea.

This major problem is a new challenge for maritime surveillance. Responding to it requires us to have more coordination and cooperation between institutional levels in a Mediterranean context characterized by the presence not only EU countries, but pre-accession countries and third countries on the South shore that operate in different institutional and regulatory contexts.

European **Interreg** programs, thanks to their long and robust cooperation processes between transnational partnerships and a dedicated budget, should better address and complement current and future European and international initiatives by opening up the strengthening of links between local, regional, national and those of European levels.

- Information exchange (including between civilian and military authorities) can increase safety, security and help to address climate change challenges. This shall be done bearing in mind that many parameters cannot be made accessible by military ships and that this issue should be addressed at higher level
- Social and environmental responsibility of the private sector operating at sea can bring to benefits to Maritime Surveillance as part of the Green Deal.

Multilevel governance approach in maritime surveillance: an opportunity to catch to better address Mediterranean issues

As already mentioned, Maritime Surveillance involves numerous and various stakeholders acting both at different institutional, geographical and sectoral levels.

With such a diversity of actors and sectors acting in the same sea basin one can advocates for adopting a converging scheme of implementation, creating a maritime surveillance user's community from different levels according to their specific needs and responsibilities. To do so, two different levels shall be involved and articulated:

- **National/European scale** to implementing sectoral strategies and regulations
- **Local/regional scale** to effectively implement the strategies

This diversity leads to a **demand** which is still far from being properly explored and of which, however, the potential socio-economic benefits have been proven.

Through regional and local awareness-raising, **the engagement of actors in data exchange can be encouraged**. For example, thanks to open data combined with a voluntary contribution from the scientific community, citizens and businesses, the potential to increase users' ecosystem and the range of data exchanged can be significantly increased with benefits at the different decision-making domains and other end-users, as well as to the service-providers themselves.

These opportunities are part of a global context of the Mediterranean basin for which European guidelines are defined through the EU Green Deal, the Agenda on Migration and the digital single market, which promote the interoperability and standardization of the maritime surveillance system and operations. This would mean strengthening efforts to achieve a safer, more secure and cleaner Mediterranean Sea as a fundamental prerequisite for investment and jobs in the blue economy sectors. For example, **Earth Observation** (EO) and **In-situ sensing** provide an immense amount of data having an enormous potential for data re-usage. In this context the Copernicus Programme plays a crucial role by both providing a specific marine monitoring service (CMEMS) as well as the In-Situ component supporting the provision of in-situ data collections.

A broader and better involvement of **territorial actors** (public and private) of the maritime surveillance community as, first, **recognised producers of territorial data** and, secondly, as **trusted user of data** produced by National or European civil or even military authorities under certain conditions. This requires to better identify and remove focused constraints and to adapt organisations.

- The demand side (data users) deserves to better explore data services
- The supply side (data providers) could be further strengthened with the contribution of newcomers (from citizens to remote earth observation)

TECHNOLOGICAL AND OPERATIONAL TRENDS

Technology plays an important role in addressing key security challenges for the EU in the area of maritime surveillance. Innovative technologies are promoted by EU bodies to follow research and development from the industry and implemented in Agencies and Member States' operations. Digital technologies are a critical enabler in many different sectors including Maritime Surveillance.

Advanced technologies: managing data inflation at the service of stakeholders, territories and citizens

Nowadays **satellite technologies** are increasingly embedded in maritime surveillance as they provide versatile solutions for gathering relevant information. Satellites are suitable both for wide area surveillance, as well as for monitoring targeted locations; they have access to remote areas; they operate independently of air traffic control; and they can be used for a broad range of activities in maritime security and safety, including those related to maritime pollution, maritime border security, fisheries control, search and rescue, or accident and disaster response. However, real-time observation is a highly resource demanding and expensive task. Nevertheless, and apart from its time-critical costly capability, remote Ocean observation from satellites is an unsurpassable low-cost source of data for provision of early warning through adequate data modeling, prediction, and re-usage.

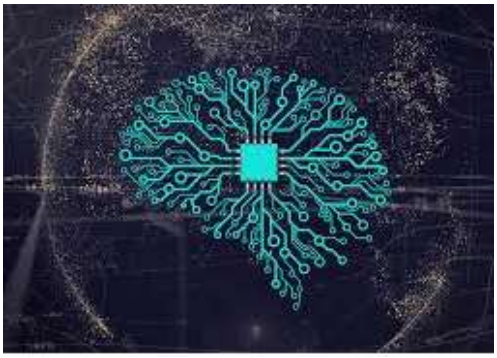
In this context the European Programme for Earth Observation, Copernicus and its core service on Marine Environment Monitoring (CMEMS, marine.copernicus.eu) play a crucial role by providing free and open satellite data and ocean monitoring products essential for evaluating the state and trends in European and Global ocean environments.

Innovative technologies are promoted by EU bodies to follow research and development from the industry and implemented in Agencies and Member States' operations, in particular with regards to the use of maritime surveillance. In order to accurately and effectively monitor a maritime area, the vast depth and breadth of incoming data **must be interpreted and managed**. Many stakeholders recognize the potential of large-scale image availability for **decision-making process** in domains such like meteorology, security, safety, natural resource inventories, climate change or prevention and monitoring of natural disasters. In this context, HAPS (**High Altitude Pseudo**

Satellite) is considered as highly complementary to deployment of satellite systems. This platform, evolving in the stratosphere, could provide a significant added value for applications requiring high versatility, great availability and capability of redeployment, and when the customers are looking for permanent mission, real-time information or high frequency revisit on the target. These developments could help to support evolution of existing and future missions based on Earth observation satellites by exploiting the synergy with HAPS capabilities. This could consist on **an opportunity for space technologies to find new markets and applications**.

Unmanned and autonomous systems are increasingly becoming part of daily life. Autonomous vessels and aircraft may soon become the norm rather than the exception on the global Maritime Domain. This context raises the question of how the Maritime Surveillance stakeholders might best use these emerging technologies. On shore side centres could monitor autonomous vessels. In spill assessment and response, autonomous systems would provide authorities with a rapid and clear operating picture while simultaneously acting as a force multiplier for responders. Moreover, utilising autonomous drones can perform SAR patterns at a fast rate with a greater probability of detection. Utilised by cutters and boarding team members for oversight and video evidence during vessel inspections would increase the security of the members on board the vessel being inspected by producing a live video feed directly.

Digital technologies are a critical enabler for attaining the sustainability goals of the Green Deal in many different sectors including Maritime Surveillance, by exploring measures to ensure that digital technologies such as **artificial intelligence, 5G, cloud and edge computing** and the internet of things can accelerate and maximise the impact of policies. Digitalisation also presents new opportunities for remote monitoring of air and water pollution, or for monitoring and optimising how energy and natural resources are used.



➡ Space technologies, digital technologies and autonomous systems constitute crucial tools for the future of Maritime surveillance.

Towards a data management strategy

A very large amount of data is produced regarding maritime activities, marine environment, or weather monitoring (maritime surface/underwater, air, remote-piloted air systems (RPAS), satellite, civil administration, military, leisure and tourism actors, marine research and monitoring, extraction, shipping industry, non-governmental organizations).

"What decisions could we make if we had all the information we need?"

Due to functional responsibilities, **the collection of data is done separately without being shared** and consequently the same data may be collected more than once and follow different criteria, which hinders harmonization and integration. This leads to the need of **improving data collection**. By the way, these data must permit to interpret and use with adequate technical and human resources. A lot of data is available but used in a limited way and could be exploited for more various purposes. This pushes the creativeness about the potential of external and new sources of data. Social media generates unstructured data, photos, and video and emphasise the fact of organising data to allow a better data analysis. The expectation is that bigger and better data would give both panoramic and granular views and increase our ability to see what was previously invisible and thus improve strategies and operations.

"How to build trust?"

The production and use of data raise the question of **confidentiality** and **cyber security** issues of connected information systems in the maritime domain, especially where sensitive information is concerned (ensure trust level of data). In order to take best use of data resources for the purpose of multilevel approach, the emphasis should be on the use of unrestricted data resources not involving military/security data. A general statement should be to be able to define datasets that will remain **restricted only whenever necessary**. There are some systems which cannot be on the cloud for security issues. In some cases, data must be stored within national borders.

The elaboration of **data strategies** at institutional level (i.e. Maritime authorities, transport authorities, Territorial cooperation bodies, maritime clusters) that integrate multilevel and cross-sectoral perspectives, including the use of **open data systems**. This requires a better connection to territorial actors (public and private) of the maritime surveillance community. To do so, institutions must identify constraints and adapt their standards. A major challenge would be the quality of the data. If some data are obtained from unknown sources, it might be the whole that loses the confidence of the user. Traceability remains therefore essential.

➡ Necessity of well-defined data management tools and strategies to build trust, ensure confidentiality and improve policy efficiency

EU backbone systems as a reference for better exchange of information

Since each Member-state has its own Maritime Surveillance system, the EU level has developed **coordination tools** to improve surveillance and intervention capacities at transnational level (example with EMSA and the **Common Information Sharing Environment - CISE)**.

These tools constitute an overall framework that can be upgraded, developed and adapted in order to improve the capacities and working conditions of actors involved in maritime activities (providers and users of marine data at EU, national, regional and local level).

To exchange maritime information between authorities various frameworks are co-existing: EUROSUR (FRONTEX), SAFESEANET (EMSA), VMS (EFCA), COPERNICUS (ESA), MARSUR (EDA), Maritime Single Window.

Initiated in 2014, the CISE is gradually and currently being developed jointly by the European Commission and EU/EEA member states. It will integrate existing surveillance systems and networks and give all concerned authorities access to the information they need for their missions at sea. **CISE will make different systems interoperable** so that data and other information can be exchanged easily through the use of modern technologies. Following the deliverables of project EUCISE2020 and national interoperability projects, EMSA launched a CISE transition phase, **moving it from an R&D phase to an operational implementation phase** of information exchange which will ensure the coordination between stakeholders.

Considering that the CISE is a good starting point for initiating the multilevel governance approach, and where most of legal obstacles posed by National/EU Regulations are being tackled, CISE can in fact progress towards a more integrated information sharing system. In that regard, a specific attention should be paid to **IPA countries** to integrate them in EU maritime surveillance systems.

➡ CISE is a reference tool to develop further multilevel governance systems

POLICY

RECOMMANDATIONS

- Increase the complementarity between actors and systems
- Increase connections with environmental issues
- Promote innovation with the support of private stakeholders

Objectives for Multilevel governance for Maritime Surveillance in the Mediterranean

Considering the above-mentioned context, the main assumed hypothesis is that the **implementation of a voluntary maritime information exchange process** addressing multilevel Integrated Maritime Surveillance, and enhancing access and mobility, including an open access level to citizens in the Mediterranean Basin, could increase the users ecosystem and the territorial socioeconomic benefits, while complementing the major EU and Member-States systems.

Besides, the EU Agenda for Migration (2015) and the Digital Single Market vision (DG CONNECT) for promoting interoperability and standardization impacting over the Mediterranean Basin, complement this approach.

This could be done through the following main objectives established for Integrated Maritime Surveillance pillar within the EU Integrated Maritime Policy:

1- **Increasing the complementarity between actors and systems would require to:**
   - Increase the complementarity of assets and assessment
   - Increase interoperability of observation systems (increase user systems mobility, interoperability and accessibility in the Sea basin)
   - Make the maritime domain a connected environment
   - Update existing systems and improve their organizations
   - Ensure maintenance and update of data
   - Adapt legal framework to new assets and organizations

2- Increasing connections with environmental issues would require to:

- Share a common understanding of environmental risks
- Link environmental/biodiversity protection to Maritime Spatial Planning (links to human activities in coastal and marine areas, with conservation and protection as a main use for certain key ecological areas)
- Address the identified threats
- Better consider land-sea interactions (coordination of land and marine managers)
- Approach and engage local constituencies and citizens

3- Promoting innovation with the support of private stakeholders would require:

- Give growth opportunities in the maritime environment for business (security, intelligence, services, environment protection of natural resources, key to a sustainable economy)
- Develop a voluntary approach
- Disseminate documentation to develop new services

Dissemination to regional strategies in the Mediterranean

Dissemination must be seen as embracing integration/mainstreaming, liaising/cooperation and communication activities. In this context, a two folded formal process must ensure, in one hand that ESIF mainstream programmes having potential for overlapping and correlation with MED project results are properly addressed in terms of a transfer planning activity, thus informing discussions on the future of MED/INTERREG Programme by involving their community, the European Commission and other relevant policy-makers. To this end, **appropriate policies and financial instruments** supporting such territorial and maritime basin's strategic projects need to be improved and put in place, thus ensuring implementation coherence, and system's life-cycle sustainability for the medium to long-term.

On the other hand, a liaising activity is required as referred to strengthen of functional relationships, community's engagement, and capitalization of results/outputs achieved through networked initiatives. To this end, EUSAIR Strategy, ADRION, *WestMed Initiative for the sustainable development of the blue economy in the Western Mediterranean* together with the *BlueMed – Research and innovation initiative* to promote the Blue Economy in the Mediterranean – will complement the set of more relevant objectives to be pursued, thus requiring stronger liaison mechanisms.

The policy choice to build-up such an envisaged bottom-up strategy from the territories engaging all the relevant stakeholders, represents a challenging innovative approach. By investing in the capacity to integrate their project results into mainstream Programmes, thus aligning the different sources of financing towards strategic goals, while promoting strong liaison links between their communities, will capitalize on the improvement of transnational cooperation in the MED.

- Integrate new technologies and services
- Allow the emergence of multiple cross-sectorial knowledge
- Develop clusters from citizens up to EU and multinational institutions
- Overcome sectorial, transnational and multinational barriers

Implementation guidelines

The promotion of a **voluntary and decentralised framework for multilevel maritime surveillance** is key to enlarge the user's ecosystem. In turn, this approach should bring added value and complementarity to existing maritime data systems, services and sharing processes, while avoiding duplication. Moreover, such multilevel implementation approach should be part of a more comprehensive information and exchange framework across the EU and its implementation should work towards coherence within that framework.

Thus, the implementation of a **voluntary and decentralised framework for multilevel maritime surveillance would follow a vision expressed with for guidelines:**

1. Be ready to integrate **new technologies and services** to develop the Blue Economy
2. **Move from information sharing to data sharing** as a raw material allowing the emergence of multiple contexts/cross-sectorial knowledge
3. **Develop clusters** from citizens up to EU/Multinational institutions to build trust between different levels
4. **Overcome sectorial, transnational and multinational barriers** to access to data and adapt decision making processes

Key principles

In a more operational way, these recommendations should be implemented following the five key principles necessary to ensure their efficiency and sustainability.

TRANSPARENCY

To promote **transparency** for projects and systems dealing with data management and maritime surveillance; support systems that provide a better and more open access to public and private data

SUSTAINABILITY

To support projects, tools and systems that will have the capacity to evolve, integrate and use different types of inputs and data, including with the perspective of future new commers not identified yet (public and private contributors, citizens, NGOs, …)

SIMPLIFICATION

ICT systems generate very high flows of information and data with and increasing number of systems and applications. It is essential to

To raise **simplification** as a systematic concern and priority for projects focused on networking, systems, and data management (use existing systems, upgrade, improve and do not create new ones…)

CALLS FOR PROJECTS

To use calls for projects to promote multilevel data sharing systems in key issues related to maritime surveillance and marine environment (protection, monitoring, coordination, Maritime spatial planning, integrated coastal zones management, management of marine protected areas…)

OPEN TO NEWCOMERS

To mobilise actors not used to Interreg and cooperation projects a create links between sectors or governance levels (transnational and national agencies, arbitral proceedings, legal instances, DG Mare, DG Research and Innovation, private bodies…).