e-shape

EuroGEO Showcases: Applications Powered by Europe

D4.2 Liaison strategy
e-shape

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S0	Approved/Released/Ready to be submitted	PU	Public
S1	Reviewed	CO	Confidential, restricted under conditions set out in the Grant Agreement
S2	Pending for review		
S3	Draft for comments	CI	Classified, information as referred to in Commission Decision 2001/844/EC.
S4	Under preparation		

Contents

EC Review comments implemented

Well-structured overview of liaison strategy mapping of actors. it appears that the process is still in its planning phase and that actually liaison meetings only to limited degree have taken place.	The stakeholders mapping is an on-going process and open-document that will be updated and evaluated during the project lifetime. The first deliverable submitted is indeed the planning phase and the first stakeholders identification done at the beginning of the project. The liaison meeting process identifies a first contact by email with an a eventual follow-up by phone with the key person that can either be the right "fit" or addressing EARSC to a different and/or more suitable stakeholder to engage with depending on the link showcase/pilot and institutions. This involves from EARSC a significant amount of time depending on the response of the stakeholder to reach back. The Covid restrictions obliged EARSC to switch the institutional liaison meeting online with clear consequences in terms of communication and dissemination of e-shape. Concrete actions followed by the liaison meeting are underway; it has to be considered that the first meeting is exploratory and of dissemination of the showcases/pilots to which then follow other more specific for actions.	Pg 16,24,25,27
(The role of Copernicus ecosystem support within the greater EO ecosystem), e-shape needs to maximally benefit from all partners having different roles in this ecosystem. It would be interesting to work this out in detail and make the relevant partners accountable for the necessary actions.	e-shape pilots can intensively use existing initiatives such as Copernicus Academy & Relays networks, and their related Copernicus workshops in which many partners are strongly involved to increase the awareness and impact of the project, hereby EuroGEO as well. e-shape will benefit from all partners having different roles in this ecosystem. To reach this, WP4 will define a roadmap with e-shape pilots to analyze their current involvement in Copernicus activities (or not) and promote the general support which e-shape will deploy to the EuroGEO community through the work of the different work packages.	4.2 GEO – p.15
The approach for which contacts will be made within the different organizations identified, e.g. what will be communicated, and the expected outcome are less well elaborated and should be considered and updated. Is	e-shape's institutional liaison strategy is complemented by the interaction with WP2, in charge of co-design activity, which will collect WP4's institutional guidelines and feedbacks to investigate whether it is possible to customize the pilots. In line	Pg 16,24,25,27

the idea to inform about e-shape or to understand these organization potential users' requirements. this is not so clear from the deliverable. also, in this case both travel restrictions and face-to-face meeting restrictions might limit the activity, please provide contingency measures.	with the suggested comment, a contingency plan with the implementation measure for workshops and liaison meetings will be uptaded.	
Thematic organisations and commercial players / industry associations (i.e. for each pilot) should be considered. It is not clear which support WP4 can and will provide towards the pilots. To which extend this is covered through tasks 4.1 and 4.2 is not fully clear, and it is not clear why WP4 has no similar task as T4.3 for the industrial associations and commercial sector, relevant for the e-shape partners.	Community of users: e-shape will engage with thematic organisations, commercial players, EU associations representing primary application sectors in line with the thematic area of the showcases, well aligned with e-shape institutional alignment: PRIMA, Smart City initiatives, ERRIN, CEMA, Water Smart Territories initiative, WaterEurope, Space Climate Observatory will play an important role as multiplier to expand further the community of users.	4.Identification of key stakeholders p.12

1. ABSTRACT

The overarching aim of WP4 is the promotion of e-shape pilots at national and international scale, across vertical markets and among user communities, thereby growing a pool of candidates for co-design, making pilots more globally accessible, and increase the market uptake of the pilots. Through the three tasks assigned to this WP – User uptake, Capacity building and Institutional alignment -, this report focuses on the third task, liaising with stakeholders that can act as multipliers to leverage the efforts of user engagement activities.

The objective of this document is to set out a strategy for organizing engagement actions with key stakeholders. As such it provides a mapping and description of a key but non-exhaustive, set of stakeholders which we consider can help expand the awareness and uptake of e-shape pilots and a first planning for interacting with these stakeholders.

e-shape delivers a comprehensive suite of EO services to EU citizens, businesses and policy makers through the implementation of 27 pilots spanning 7 thematic areas, supporting GEO's global priorities including the UN 2030 Agenda for Sustainable Development, the Paris Climate Agreement and the Sendai Framework for Disaster Risk Reduction and six out of the eight GEO Societal Benefit Areas : food security, health, energy and mineral resources, biodiversity, water resources, disaster resilience and the transverse Climate topic in GEO. These pilots have been carefully selected to ensure scientific and technological excellence, addressing key societal challenges, and leveraging existing results from previous projects to effectively meet user demands.

The report explores to which extent the liaison described by the strategy roadmap, and the actions to support it taken by EARSC, will connect with the communities of direct relevance for e-shape. The report covers those organisations which are most relevant and a first mapping of their structures and relevant bodies: International Organisations, GEO system, Copernicus & the EU and the thematic and sector-oriented offices.

The institutional mapping at macro (showcases) and micro (pilots) level will provide a mapping of the bodies which we shall wish to work with. The action plan strategy complements the linkages of the institutional mapping, through the pilot's implementation and the institutional liaison roadmap, outlining the institutional contact on-going process.

e-shape's institutional liaison strategy is complemented by the interaction with WP2, in charge of co-design activity, which will collect WP4's institutional guidelines and feedbacks to investigate whether it is possible to customize the pilots.

2. Introduction

e-shape is a major European project to develop and promote European Earth Observation capabilities. The objective of the liaison strategy is to identify those key organisations around the world to which we wish to promote e-shape and seek support and to define a strategy for gathering the support. As such, the organisations identified represent levers through which we can build awareness of e-shape and EU capabilities.

Our approach is firstly to identify these key organisations and the bodies within them (groups, departments etc), to describe the role which they play and how this may benefit e-shape and a strategy for promotion of the pilots to them.
The mapping was done through the optic of the e-shape showcases to focus on those organisations which are most relevant.

- Chapter 1 describes the approach and methodology of the institutional liaison.
- Chapter 2 defines organisations which are most relevant and a first mapping of their structures and relevant bodies.
- Chapter 3 provides a mapping of the bodies to engage.
- Chapter 4 present a first strategy for implementing that interaction.

3. Approach and methodology

Work Task 4.3 Institutional Alignment is based on the mapping of the e-shape seven showcases and pilots in relations with key stakeholder institutions. The institutional alignment, called as liaison strategy, is a complementary action to the user uptake strategy, aimed at promoting the utilisation of EuroGEO-enabled services at sectorial, national, and international level.

e-shape, in fact, serves two kind of users: the users of the individual pilots and the further potential users which can be addressed by that pilot and the wide EuroGEO community. Both these users will be targeted in this report, firstly through the institutional liaison activity, then incorporated into the user uptake strategy. The targeted liaison activity with key actors and communities representing application users in line with the thematic areas of the showcases is divided in four categories: International Organisations, GEO ecosystem, Copernicus & EU and Other. The methodology used for the task implementation consists of the analysis of the relevant key stakeholders. In this context, an action plan and a liaison roadmap are being implemented to facilitate the execution of the institutional alignment and of the activities associated.

An institutional alignment work was performed to target the key stakeholders both at macro (showcase-institution) and at micro level (pilot-institution).

e-shape is aligned with the United Nations SDGs, the Paris Agreement and the Sendai Framework. These are the frameworks considered for the mapping. Institutions identified are the United Nations system under the category of International Organisations; followed by the Copernicus & the EU. Moreover, within these four categories not all the institutions have been mapped but only those related to the SDGs and e-shape (Figure 1).

The heterogeneous structure of the stakeholder's institutions, the institutional mandate and level of content, requires a synthesis to outline their most relevant information for the purpose of this task.

It is important to highlight that these targeted stakeholders may change during the project. As an output of the institutional liaison meetings, reference persons contacted may also suggest e-shape to liaise with other organizations, Directorate-Generals or institutions, that were not targeted before in the institutional mapping. This bilateral institutional cooperation help extending the scope of e-shape and its interaction with other entities.

The role of the liaison strategy will be in synergy with the user uptake strategy and institutions may act as multiplier in order to identify potential new users for the e-shape showcases and pilots.

This report is conceived as a "living document", which will be updated regularly to keep track of new stakeholders involved in the process of mapping. It does not create a hierarchical mapping of the composition of each institution, rather horizontally creating linkages based on the relevance of each institutions.
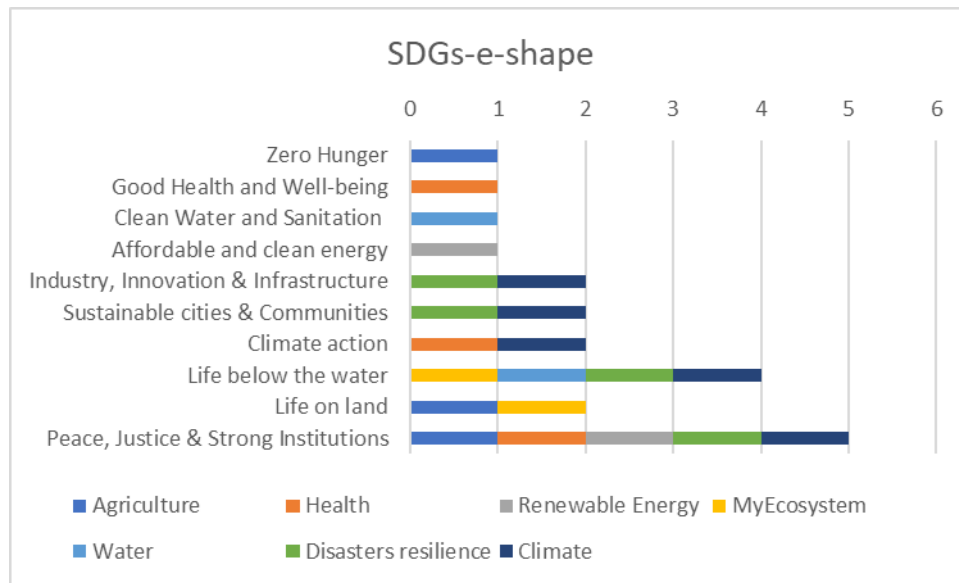
Figure 1 SDGs - e-shape

Figure 1 shows the linkages between the Sustainable Development Goals and e-shape showcases. In this figure appear only the SDGs related to e-shape.
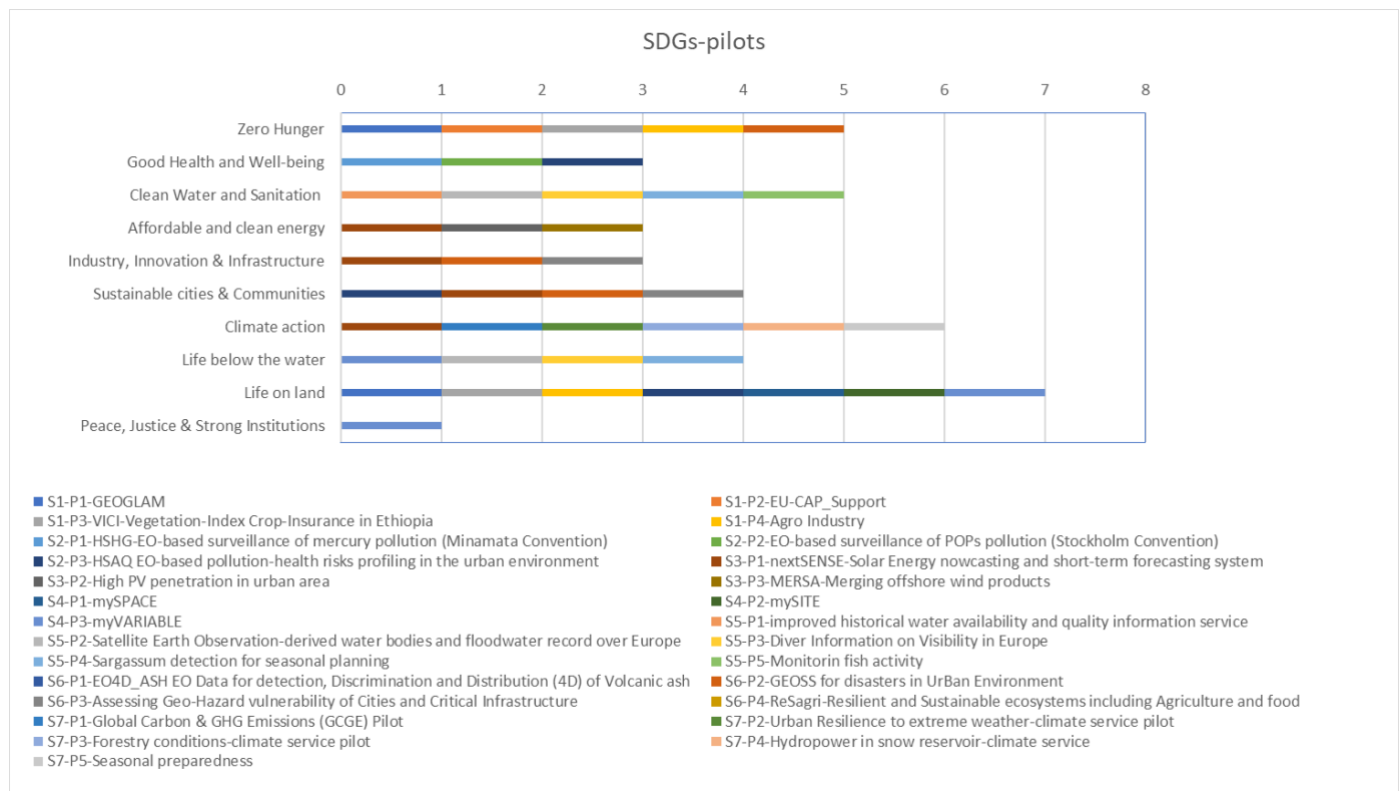

Figure 2 SDGs-pilots

Figure *2* shows the linkages between the Sustainable Development Goals and e-shape showcase pilots. In this figure appear only the SDGs related to e-shape showcase pilots.

4. Identification of key stakeholders

This paragraph analyses the key stakeholder institutions of the liaison alignment strategy, providing clearance about the reason why and which institutions have been targeted (Figure *3*).

The key stakeholders are mapped with the e-shape showcases, in order to establish the relevant connections between the showcase and institutions' **thematic areas**. Several showcases can match the same institution. The term "thematic area" may differ from institution to institution: for the EU system it refers as "policies" and "science areas"; "topics" or "commissions". For the UN system, the sustainable development goals are the *fil rouge* to map the different UN **agencies**. For Others, "areas", "objectives", "topics", "commissions".

e-shape engages with International Organisations as they are the core of the 2030 Development Agenda and its Sustainable Development Goals, enhancing the economic, social and environmental dimensions of sustainable development.

e-shape engages with GEO as it builds on existing EU GEO initiatives and flagships and Copernicus related activities by bringing together the key partners engaged therein. e-shape makes use of the vast knowledge and strategic directions laid out by the EuroGEO initiative through its Coordination Group, High Level Working Group and the implementation working groups, as well of the GEO Work Programme. Each showcase endorses and contributes to the engagement priorities of GEO, securing the e-shape showcases and pilots' impact within the GEO ecosystem and beyond.

e-shape it is not only about international organisations, but also about European Institutions: e-shape engages with the European Institutions to identify potential stakeholders and new markets to where expand the e-shape services. The European Union is committed to the SDGs which are in line with the European Commission's ten priorities, and aligning its approach to international cooperation and development policy with the 2030 Agenda, placing the SDGs, the Paris Agreement on climate change and the European Green Deal at the heart of its action.

Copernicus, GSA and ESA, engage with e-shape: Copernicus by offering information services based on satellite Earth Observation for atmosphere, marine, land, climate change, security and emergency; GSA's involvement with Copernicus by developing new solutions supporting the SDGs, and ESA supporting the SDGs through its programmes.

e-shape engages with other European and International bodies, as the European Institute of Innovation and Technology (EITs), the European Innovation Partnerships (EIPs), the Committee of Regions, etc., the Africa Union, ECOWAS. They are key players for e-shape to engage with as they represent primary applications sectors in line with the thematic areas of the showcases and support the SDGs. e-shape also engages with countries that aim to develop and uptake the use of Earth Observation to address global societal challenges, such as the African Continent.

Community of users: e-shape will engage with thematic organisations, commercial players, EU associations representing primary application sectors in line with the thematic area of the showcases, well aligned with e-shape institutional alignment: PRIMA, Smart City initiatives, ERRIN, CEMA, Water Smart Territories initiative, WaterEurope, Space Climate Observatory will play an important role as multiplier to expand
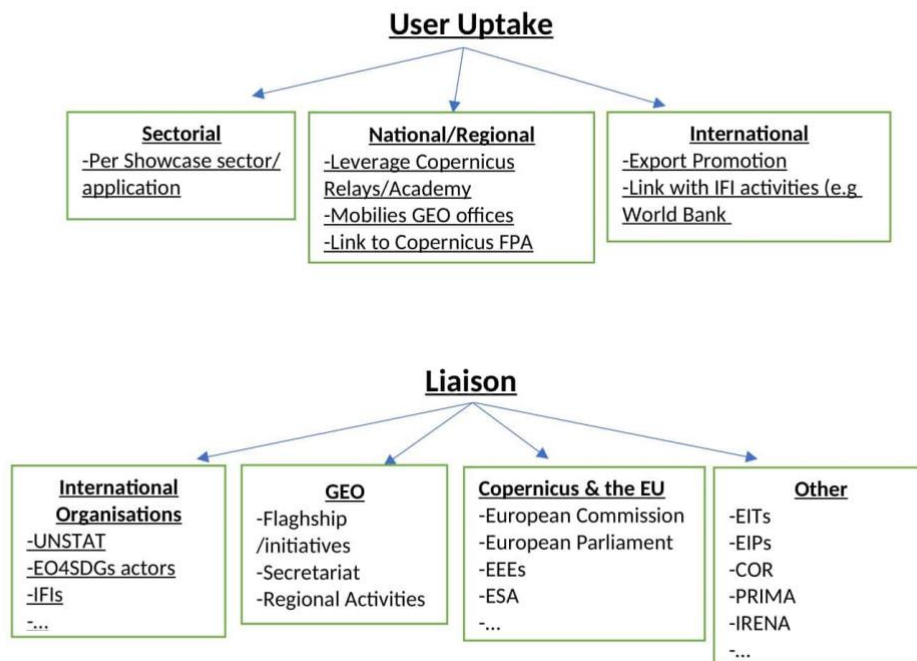
further the community of users.

Figure 3 EARSC's distinct approaches to User Uptake and Liaison

4.1. International Organisations

IAEG-SDGs

The United Nations Interagency and Expert Group on SDGs indicators is tasked to develop and implement the global indicator framework for the Goals and targets of the 2030 Agenda. It developed the global indicator framework. It is composed of Member States and including regional and international agencies as observers. The IAEG-SDGs group the custodian agencies that provide data to the international system on a set of indicators. These custodian agencies have been mapped with the e-shape showcases and pilots.

UNSTAT

The IAEG-SDGs is created by the United Nations Statistical Commission, UNSTAT, which compiles and disseminate global statistical information, develop standards and norms, supporting the countries' consolidating their national statistic system. The statistics division provides input and secretarial support to the United Nations Statistical Commission. It facilitates the follow-up and review process of the 2030 Agenda for Sustainable Development, acting as Secretariat of the Inter-agency and Expert Group on SDG indicators and maintaining the global SDG indicators database.

UN-GGIM

The United Nations Committee of Experts on Global Geospatial Information Management is a key player in the combined management of Geospatial Information and Earth Observation data.

It was created under the UN Economic and Social Council (ECOSOC), has a leading role in setting the agenda for the development of global geospatial information and in promoting its use within and across countries. The UN-GGIM vision is to make accurate, authoritative and reliable Geospatial Information (including satellite Earth Observations) readily available to support national, regional and global development.

The United Nations Sustainable Development Solution Network, The Global Partnership for Sustainable Development Data, the International Institute for Sustainable Development (IISD), and the Committee on Earth Observation Satellites (CEOS), are relevant key players within the UN SDGs, as they enhanced global partnership and the use of a wide range of tools, aimed at developing shared value products in service of the SDGs.

EUROSTAT

Eurostat is called to regularly monitor progress towards the SDGs in an EU context. For this purpose, it coordinated the development of the EU SDG indicator set and keeps it up to date. It also produces regular monitoring reports on progress towards the SDGs in an EU context.

For the mapping, SDGs target were mapped with the e-shape showcases, while for the pilots, the SDGs indicators, as more specifics for their nature.

UNITAR

For capacity building activities, UNITAR, the United Nations Institute for Training and Research, is aligned with the 2030 Agenda and uses the Sustainable Development Goals as the guiding principle for our work with the strategic objectives organized around four out of five thematic pillars of the 2030 Agenda, - Peace, People, Planet and Prosperity.

UNOOSA

The United Nations Office for Outer Space Affairs (UNOOSA), tasked with the implementation of the decisions of the United Nations General Assembly of the United Nations Committee on the Peaceful Uses of Outer Space.

Important stakeholders for the implementation of the SDGs are the International Financial Institutions, as they provide mechanism for international cooperation.

The most well-known are: World Bank (WB); European Bank for Reconstruction and Development (EBRD); European Investment Bank (EIB); European Investment Fund (EIF); African Development Bank Group (ADB).

4.2. GEO

GEO is the international, informal group on Earth Observations. GEO members are Countries which commit to participate. The secretariat is based in Geneva.

The GEO Work Programme is the primary instrument used by GEO to facilitate collaborations among its members, participating organisations, and associates to realise the GEO mission. The GEO Work Programme is formed by five categories of activities, known as GEO Implementation Mechanism.

The Work programme draws together a number of disparate activities to which member and participating organisations commit their support on an ad hoc basis:

- GEO Initiatives and GEO Flagships together form the core of GEO Work Programme, ensuring the transition of innovative results from the research communities into EO service products, supporting a wide range of users. GEO Flagships in particular, are initiatives that gain a political endorsement from a key organization and exemplify the kind of impact and support to global, national, and local decision making that GEO aims to encourage and replicate.
- Regional GEOs emerge from GEO Initiatives. Its role includes engagement of countries and organizations within their region, including those which may not yet be GEO Members or actively involved; coordination of GEO activities within their region, and initiation of new activities to serve regional needs.
- The GEO Community Activities may be early-stage projects or pilots or already well-established services. GEO Community Activities serve as an entry point for new activities which may go on to become GEO Initiatives.
- GEO Foundational Tasks are the means by which GEO implements certain critical activities needed to ensure coordination across the GEO Work Programme.

Four new Working Groups have been established as part of the GEO Work Programme that will help implementing part of the GEO Foundational Tasks:

- The Capacity Development Working Group (CD-WG)
- The Climate Change Working Group (CC-WG)
- The Disaster Risk Reduction Working Group (DRR-WG)
- The Data Working Group (Data-WG)

4.3. Copernicus & the EU

The EU serves as a multiplier through the policy areas departments of the European Commission, the Directorate-Generals (DGs) and its executive agencies.

The main DGs involved are:

DG RTD: for research and innovation, is responsible for EU policy on research, science and innovation, with a view to help create growth and jobs and tackle our biggest societal challenges. The Directorate covers three main areas: Bio-based products and processing, Agri-food chain, and Marine Resources. DG RTD provides the EU lead towards GEO seeking also to co-ordinate between the EU MS which are also members of GEO.

DG Agri: responsible for EU policy on agriculture and rural development and deals with all aspects of the common agricultural policy (CAP). EU rural development and agricultural policy also furthers the aims of several other SDGs, including goals 1 (ending poverty), 8 (decent work and economic growth), 12 (responsible production and consumption) and 15 (life on land).

DG Environment: works together with several services to develop and implement environment policy. It deals mainly with policy development and implementation where its work is guided by multiannual Environment Action Programmes. The General Union Environment Action Programme to 2020 (7th EAP) 'Living well, within the limits of our planet' guides European environment policy until 2020.

DG Mare: ensure that the ocean resources are used sustainably and that coastal communities and the fishing sector have a prosperous future; promote ocean governance at international level; promote maritime policies and stimulate a sustainable blue economy.

DG Energy: It focuses on developing and implementing the EU's energy policy – secure, sustainable, and competitive energy for Europe. The Clean energy for all Europeans package is a significant step towards the implementation of the energy union strategy, facilitating the transition away from fossil fuels towards cleaner energy and to deliver on the EU's Paris Agreement commitments for reducing greenhouse gas emissions.

DG Regio: for regional and urban policy, works with EU member countries, regions and other stakeholders to assess needs, finance investments and evaluate the results from a long-term EU perspective.

DG Defis: It develops and carries out the Commission's policies on defense industry and space. DG DEFIS is the lead for the Copernicus programme which is the primary EU contribution to GEO.

Concerning the agencies of the European Union, there are many, but for the liaison, only the executive agencies have been mapped, give their executive tasks and coherence with e-shape. These are: The Executive Agency for Small and Medium-sized Enterprises (EASME), the Consumers, Health, Agriculture and Food Executive Agency (CHAFEA), the European Research Council Executive Agency (ERCEA), the Innovation and Networks Executive Agency (INEA), and the Research Executive Agency (REA).

e-shape interacts with Copernicus as it is one of the programme of the European Union for Earth Observation which, by offering information services based on satellite Earth Observation and in situ data for atmosphere, marine, land, climate change, security and emergency, helps assist governments and stakeholders in developing strategies and actions to assess, track and attain the goals that are formulated in these different international agreements/conventions.

The Copernicus services are six and each of one is delegated to a service provider, the Entrusted Entities (EEEs): ECMWF, Mercator, EEA, FRONTEX, EU-Satcen and EMSA. The JRC (EC joint research centre) leads the emergency service and parts of the global land service.

e-shape pilots can intensively use existing initiatives such as Copernicus Academy & Relays networks, and their related Copernicus workshops in which many partners are strongly involved to increase the awareness and impact of the project, hereby EuroGEO as well. e-shape will benefit from all partners having different roles in this ecosystem. To reach this, WP4 will define a roadmap with e-shape pilots to analyse their current involvement in Copernicus activities (or not) and promote the general support which e-shape will deploy to the EuroGEO community through the work of the different work packages.

In the recent Copernicus regulation setting out the next phase of work (Copernicus 2.0), the involvement of the Global Navigation Satellite System Agency (GSA) is foreseen. The GSA (or soon to be known as European Space Programmes Agency) will help to promote synergies between the Geo-positioning ecosystem (GNSS and Galileo) and that for Copernicus, to develop new solutions supporting the SDGs. Both unleash an array of synergies that will have a substantial impact on sustainable development. The synergy brings already societal benefits in two areas and will be in many more, such as precision farming and the contribution of space technologies to the development of smart cities.

SDSN particularly mentioned the importance of geo-referenced data that can be collected now by phones to provide location-specific information on government facilities, water points, and environmental challenges.

The European Space Agency and Eumetsat are separately responsible for developing and operating parts of the space component of Copernicus; the Sentinel satellites. Both organisations are also active in supporting the monitoring of SDGs through its programmes, as part of its commitment to improve life on Earth while making scientific and engineering breakthroughs in space.

ESA for every SDG has related projects sustaining them. The 17 goals for land, oceans, waterways, climate, health, etc, are aligned with the e-shape showcases and pilots, specifically, the table down figures only the SDGs related to (*Figure 4*)
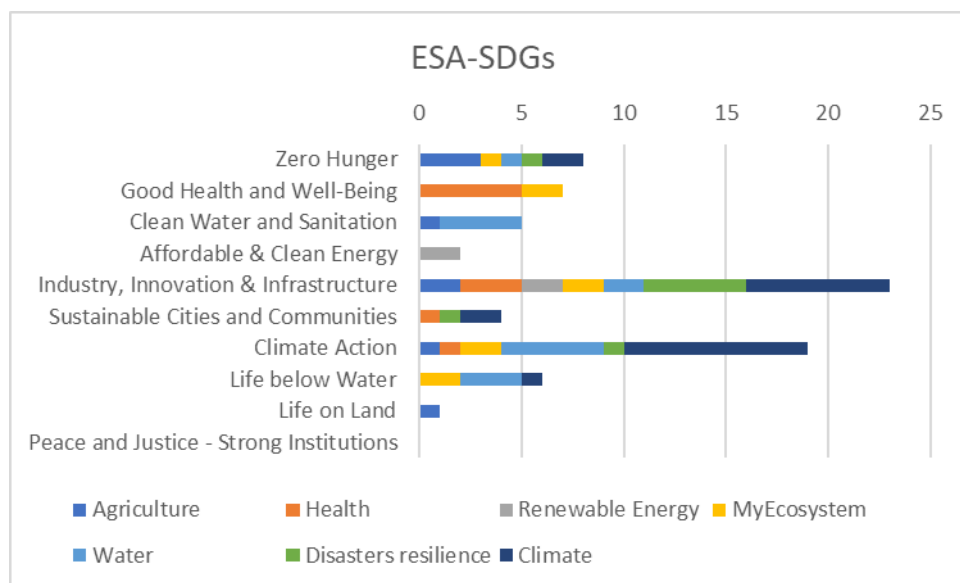

Figure 4 SDGs-ESA

Figure *4* shows the linkages between the SDGs and e-shape showcases considering ESA related programmes.**Error! Reference source not found.**

4.4. Others

Stakeholders at European and International level as European Institute of Innovation and Technology (EITs), European Innovation Partnerships (EIPs), Committee of Regions (COR), PRIMA and IRENA; the Africa Union, ECOWAS, and the Regional Center for Renewable Energy and Energy Efficiency, are key players for e-shape to engage with as they represent primary applications sectors in line with the thematic areas of the showcases and support the SDGs.

The EIT is a body of the European Union. The EITs strengthen Europe's ability to innovate by integrating business, education and research to find solutions to pressing global challenges. These partnerships are called Innovation Communities, and each is dedicated to finding solutions to a specific global challenge, the so-called Knowledge Innovation Communities (KICs): EIT Climate KIC, EIT Innoenergy, EIT Raw Material, EIT Digital, EIT Health, EIT food, EIT manufacturing and EIT Urban Mobility. Each KIC strategically aligns with the SDGs and potentially could be a best practice for the improved implementation of the SDGs into funding and research cooperation instruments.

Climate KIC: building a zero-carbon economy and climate resilient society. SDG 13, Climate Action.

EIT Energy: Secure adequate supply of energy produced in a sustainable and affordable manner and transitioning towards a zero-carbon economy. SDG 7, Affordable and Clean Energy.

EIT Raw Material: enable sustainable competitiveness of the European minerals, metals and materials sector along the value chain by driving innovation, education and entrepreneurship. Minerals and metals are essential to modern society and the key to a more sustainable and carbon-neutral future. EIT Raw Material aligns specifically with SDG 12 – by 2030 the sustainable management and efficient use of natural resources.

The European Innovation Partnerships (EIPs) are also bodies of the European Union. The EIPs represent a new approach of partnerships by focusing on the social benefits of Research and Innovation and on a rapid modernisation of the associated sectors and markets. The EIPs make some of the key initiatives established under the Innovation Union, one of the targets of the European Union 2020 strategy. The EIPs cover different areas such as EIP Water, EIP agriculture, EIP SCC Smart cities and communities, EIP Raw Material, EIP AHA Health and Healthy ageing. Each EIP facilitates the development of innovative solutions to address the major European and global challenges in the mentioned fields.

Both EITs and EIPs are mapped as focal multiplier for the showcases and pilots.

Committee of the Regions (COR) is a body of the European Union. The COR is the assembly of local and regional representatives that provides sub-national authorities (i.e. regions, counties, provinces, municipalities and cities) with a direct voice within the EU's institutional framework. Local and regional authorities have become new drivers of change, striving to make the SDGs a reality. Regions and cities are responsible for implementing around the 65% of the SDGs, therefore, their involvement in the implementation of the SDGs, the Paris Agreement and the 2050 strategy is paramount.

PRIMA, the Partnership for Research and Innovation in the Mediterranean Area is the ambitious joint programme in the frame of Euro-Mediterranean cooperation. It addresses thematic as climate change, environment, water and sustainable agriculture, aligned with the e-shape showcases.

IRENA, the International Renewable Energy Agency, an intergovernmental organisation with the mandate to facilitate cooperation, advance technology, and promoting the adoption and sustainable use of renewable energy. It is the only agency focusing on an exclusive mandate and is United Nations observer.

The African Union is the continental body consisting of the 55 member states that make up the countries of the African Continent. The 2063 Agenda is the strategic framework that aims to deliver on its goal for inclusive and sustainable development. Through the Africa-EU partnership, the African Union Commission signed a Cooperation Arrangement with the European Commission in 2018 to facilitate AU's access to Earth observation data from the Sentinel satellites of the Copernicus Programme. For a continent like Africa that deal with climate change and environmental challenges, paying a high toll on communities and ecosystems, these challenges can be untapped using Earth Observation. Moreover, partnerships with the European Union

and initiatives with GEO like Digital Earth (DE) Africa, and the Agenda 2063, Africa shows a strong willing to incorporate the usage of Earth Observation data in its political and development agenda.

Ecowas Centre for Renewable Energy and Energy Efficiency (ECREE): ECOWAS Commission has gradually taken steps to mainstream renewable energy and energy efficiency into its regional activities and policies. The experience of the European Union has shown that regional integration can be a useful tool to facilitate the adoption and implementation of RE&EE policies and incentive schemes on national levels (e.g. EU Directive with binding renewable energy targets).

ECREE's mandate aligns with broader strategic goals of ECOWAS Vision 2020, namely: (1) sustainable development, including agricultural and mineral resource development strategy; (2) environment and resources, promotes modes of equitable and sustainable development in economic, social and environmental fields.

At regional level, ECREEE's mission contributes to several goals of the ECOWAS Regional Strategic Plan 2011–2015: Promote Infrastructural Development and a Competitive Business Environment; Sustained Development and Cooperation in the Region.

Regional Center for Renewable Energy and Energy Efficiency (RCREEE). Is an intergovernmental organization with diplomatic status that aims to enable and increase the adoption of renewable energy and energy efficiency practices in the Arab region. RCREEE strives to lead renewable energy and energy efficiency initiatives and expertise in all Arab states based on five core strategic impact areas: facts and figures, policies, people, institutions, and finance.

5. Mapping

Mapping is a matching process where the points of one set are matched against the points of another set. Theoretically, institutional mapping is a cognitive process that involves inventory of institutions involved, identification of the key players, assessment of the potential support or opposition among them and highlighting the relevant institutions' roles and their institutional linkages. Institutional mapping can involve also a stakeholder analysis to identify the stakeholders and maps out their relative influence and interests-in a certain area, indicating the priority/linkage to be addressed with regards to meeting the interests of the stakeholders, and therefore the output of the project.

For e-shape, the institutional mapping is an important tool to define interactions between institutions and counterparts. In the framework, a first mapping establishes the linkages between the stakeholders and the showcases, then a second mapping will display the linkages between the stakeholders and the pilot. A linkage unit depends on the institutional mandate of each institution (see example in Figure 6 and 7). The institutional mapping represents an action and a prediction tool to analyse the linkages between the 7 e-shape showcases and relative pilots, and the targeted stakeholder institutions.

The following institutional mappings is a "***living document***" which will be updated regularly all along the project, as power/influence relations may evolve.

To best visualize these linkages, the 2-D stacked bar chart has been used as a standard data visualisation for the 4 institutional mappings.

5.1. Macro-level institutional mapping

Through the macro-level institutional mapping, linkages between key stakeholder institutions and the showcases are mapped and visualized. The institutional mapping is one for each category of stakeholders (International Organisations, GEO, Copernicus & the EU, Other). As an example, only the International Organisation mapping is visualized. This chart displays the total of linkages that each showcase has with the single institutions (Figure 5). For a matter of dimension, only a part of the IAEG-SDGs is represented in this example. The data visualization representation of each mapping can vary depending on the "institutional mandate" of each institution.
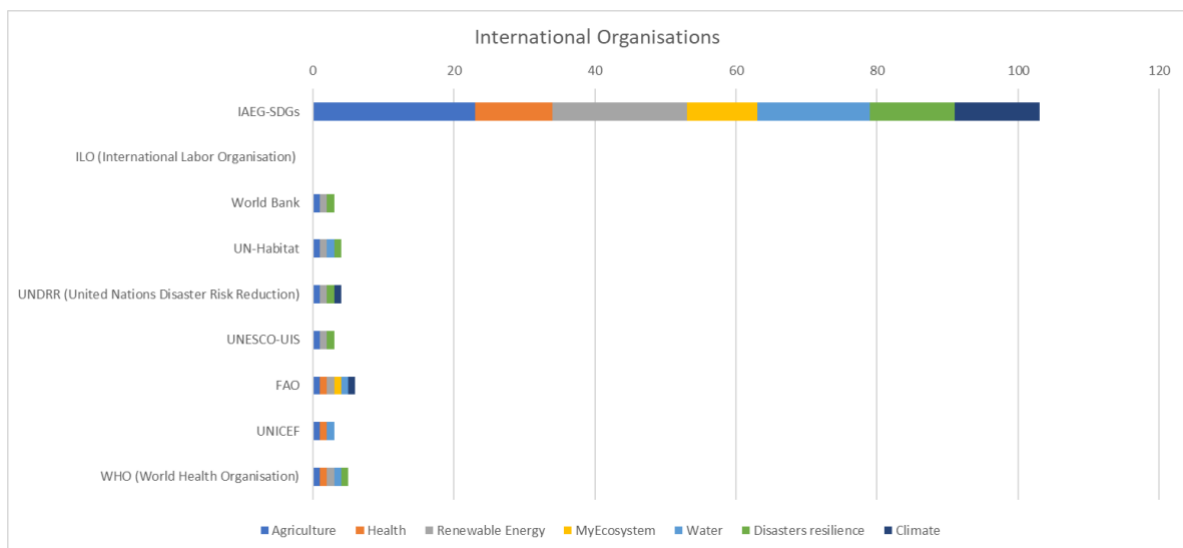

Figure 5 International Oganisations – number of linkages relative to e-shape's scope for showcases

It is not accurate to analyse the total number of interactions as they are, just comparing one total to another. The totals of the linkages must be considered then for each institution mandate: the more categories they have, the more interactions they possibly have, therefore, higher totals of interactions. For example, DG ENV is formed by 18 divisions therefore has a high total linkage (75) across the seven showcases. This does not imply that the linkages with DG ENV are more important than those of DG AGRI (Figure 6 and Figure 7) which also show interactions across the seven showcases (26). This is because the number of categories' policies differs from DG to DG
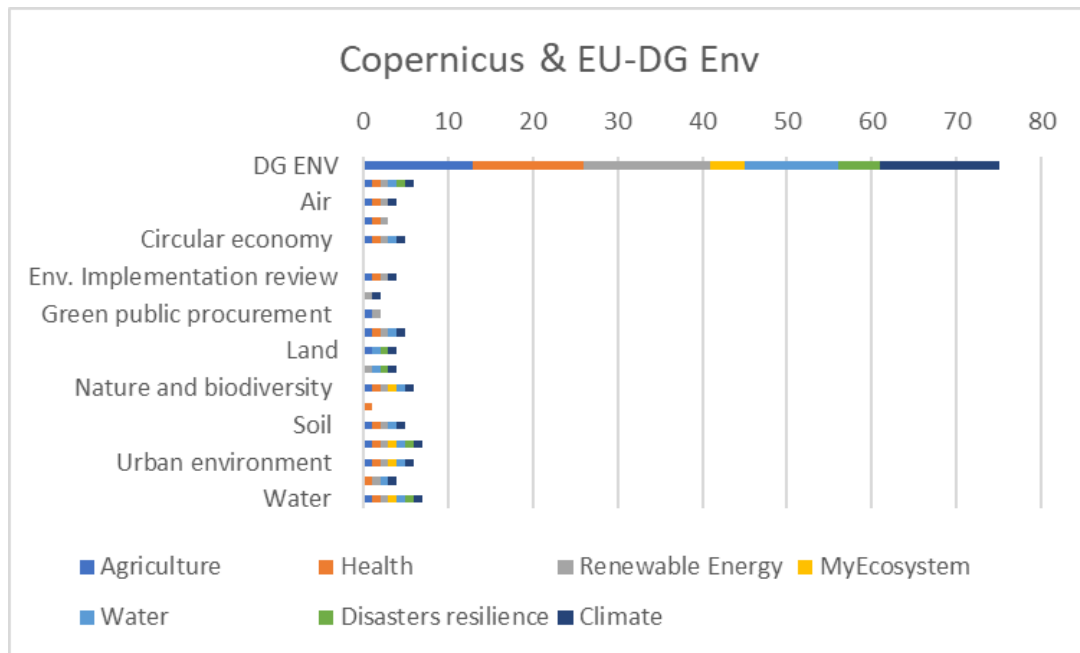
Figure 6 Copernicus & the EU - DG Environment – number of linkages relative to e-shape's scope for showcases
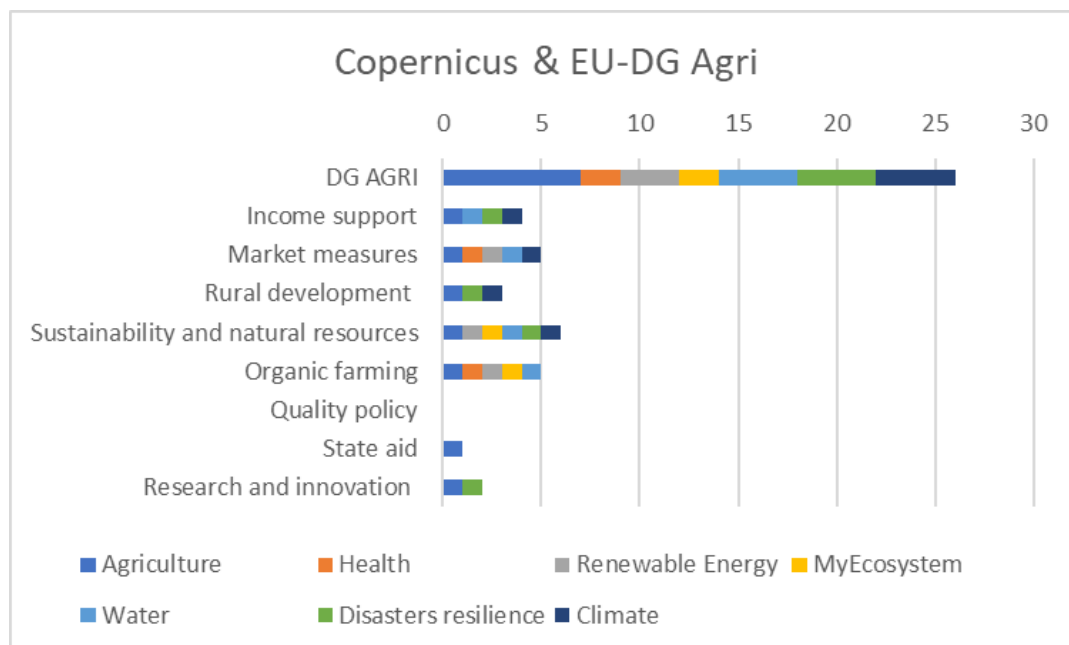
Figure 7 Copernicus & EU-DG Agri – number of linkages relative to e-shape's scope for showcases

5.2. Micro-level institutional mapping

The same mapping was applied to the pilots-institutions mapping. This time, at micro-level, the pilots have been put in relations with the institutions but taking in consideration the relations of the showcases. As an example, SC5 pilot 2 "Satellite Earth Observation-derived water bodies and floodwater record over Europe" displays only 10 linkages and SC5 pilot 3 two linkages with the "Subcommitee of Geodesy". For this reason, only the institutions matching with the showcases thematic areas were taken in consideration, downsizing the scope of connection for the pilot (Figure 8).

Figure 8 International Organisations – number of linkages relative to e-shape's scope for pilots

6. Action Plan Strategy

The institutional mapping at micro level highlights the key stakeholders with whom to pursue the institutional liaison.

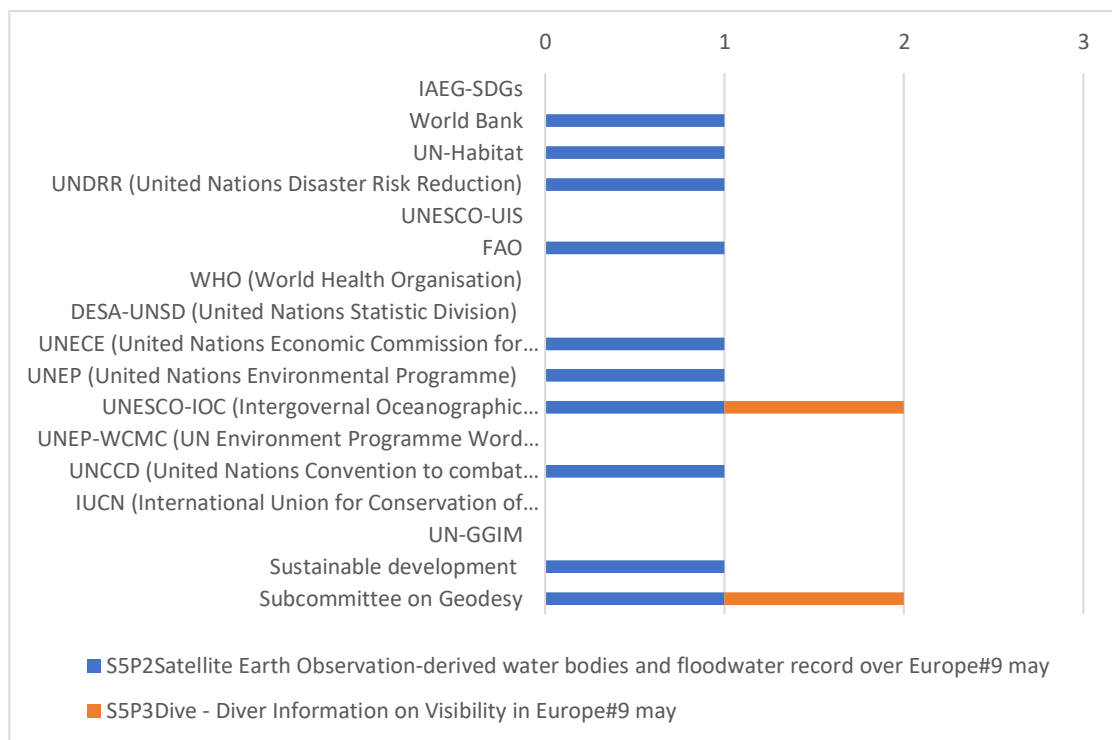The report highlights some of the stakeholder examples with which EARSC will engage. The different meetings EARSC will have with the mentioned actors will be ready for consultation on the e-shape Confluence platform and updated.

The Action plan strategy identifies the first key institutions:

- International Organisations
    o IAEG-SDGs
        ▪ Custodian agencies: World Bank, UN-Habitat, FAO, UNEP, etc.
    o IFIs
        ▪ World Bank
        ▪ European Investment Bank
        ▪ African Development Bank Group
- GEO
    o GEO Work Programme

- Copernicus & the EU
    o DG AGRI, DG ENV, DG MARE and DG ENERGY, DG REGIO, DG DEFIS;
    o EEEs
    o ESA

- Other
    o Committee of Regions
    o EITs
        ▪ Climate KIC
        ▪ Energy
        ▪ Raw Material
        ▪ PRIMA
        ▪ ~~CEMA~~

The institutional liaison action plan strategy goes in hands with the Users' Uptake strategy by organizing workshops to inform potential users on the relevant capabilities of the EO sector. These are known as Primary user communities. By addressing them at their sectorial events, we will necessarily come in contact with those acting in closely related sectors/positions, who may also have needs that could be satisfied by our Pilots or close facsimiles thereof. These contacts are our sectoral secondary communities and are the commercial sector and the thematic organisations which act as multipliers for the e-shape pilots.

To stimulate synergies with other projects, private entities identified by FIRE project, shall act as potential multipliers for e-shape to engage with.

The FIRE project provides (potential) users with an entry point to the sector to find the services they need & the supplier to deliver them throughout six sectors: Agriculture, Energy, Infrastructure, Marine, Raw Material & Urban.

To the scope of e-shape, only the sectors of Agriculture, Energy and Marine shall be of reference.

AGRICULTURE
Copa-cogeca
CIA - Confederazione Italiana Coltivatori
Coldiretti
Danish Agriculture & Food Council
AIHO – Associação Interprofissional de Horticultura do Oeste
AHSA
Irish Farmers Association
Agro-Analitica
AGPB (Association Générale des Producteurs de Blé et autres céréales) board member, farmer
Estonian Chamber of Commerce
MTK - The Central Union of Agricultural Producers and Forest Owners
Confagricoltura
European Agricultural Machinery Association
European agricultural machinery industry
European Council of Young farmers
European Crop Protection
European Crop Protection Association
European Crop Protection Association
European Landowners' Organization
European Organisation of Agricultural, Rural and Forestry Contractors
Euroseeds
Fertilizers Europe
FOOD+i
Gaia
World Soil Information
RISE Foundation

MARINE
Pole Mer Bretagne Atlantique
Ecole National de la Marine Marchande
IBERDROLLA
ECA Robotics

CMA CGM
Marine South East

ENERGY
EGEC - European Geothermal Energy Council
EIT InnoEnergy
EUREC - The Association of European Renewable Energy Research Centers
Eurogeosurveys
European Biogas Association
European Geothermal Energy Council
European Renewable Energies Federation
Geological Remote Sensing Group
International Renewable Energy Agency
Ocean energy
Pole-Avenia
Smart Energy Europe
Solar Europe
The Association of European Renewable Energy Research Centers
Wind Europe

6.1. Pilots' roadmap

The **pilot's roadmap** to achieve a successful institutional liaison activity, is described through the following chart (Figure *9*).

Figure 9 e-shape pilot's implementation roadmap

WP3 is leading the development Sprints of e-shape. The Sprints are organized around challenges and implemented through milestones. Challenges are based on e-shape Specific Objectives:

- Develop operational EO services with and for the users active in key societal sectors.

- Demonstrate the benefits of the EO pilots through the coordinated downstream exploitation of EO data and the utilisation of existing EO resources.

- Promote the uptake of pilots at national and international scale, across vertical markets (private and public) and amongst key user communities.

- Enable the long-term sustainability of the numerous pilots, their penetration in public and private markets and support their upscaling.

- Increase uptake by raising awareness on the solutions developed through tailored and well targeted communications, dissemination and outreach activities.

At the beginning of the Sprint, all the pilots are required to select three challenges based on the e-shape specific objectives. These challenges are, among others, expanding the user community/key organisation of each pilot. Independently of the challenge selected, but on the needs of the pilot, each pilot goes through the process of co-design of the service with WP2.

WP2 is the leader of the co-design activity, the process through which each pilot co-design their needs through a data-information-usage framework. WP4 supports WP2 after its first diagnosis process, in two ways:

- firstly, the WP3's pilot's roadmap provides WP4 with a timeline to engage with the relevant institution's stakeholders and community of users. WP4 will collect their guidelines and share the knowledge to the pilots. Pilots will analyse the feedbacks and will investigate with WP2 to co-design, if possible, the customized service.
- Secondly, implementing the "potential user identification" methodology by using the taxonomy approach.
  WP2, following the interviews results gathered during the first telco diagnosis, will share them with WP4, who will use the taxonomy approach to identify potential new areas and therefore new potential users to which the pilot can extend to inserting them again in the co-design process.

The challenge approach based on e-shape specific objectives and the co-design activity work together, allowing WP4 to support those pilots during the different sprints that for challenge have selected to expand their user communities and at the same time feeding WP2's co-design knowledge.

It is important to mention that these organisations even if not directly engaged with the e-shape pilot users are an access channel and policy influence to reach the services' costumers.

As an example, between Q1 and Q2 2020, pilots S6P2, S6P3, S6P4 identified respectively challenges 9 and 10 in March and April. S1P3, selected the challenge 10 in April. WP4 has initiated the institutional process for March and April interacting with FAO, UN-GGIM, DG AGRI, DG MARE, DG REGIO, DG RTD, CoR. Actions for Q2 are undergoing (Figure *10*).

	FAO	UN-GGIM	WB	EIB	AFDB	GEO	DG AGRI	DG ENV	DG MARE	DG ENERGY	DG REGIO	DG RTD	DG DEFIS	climate K	raw mate	COR	EEA	EP
S1P3 VICI- Vegetation-Index Crop-Insurance in Ethiopia #10 April	Q2	Q2		Q1	Q1		Q1				Q2							
S6P2 Geoss for Disasters in UrBan Environment#9 March	Q1	Q1		Q1	Q1		Q1	Q1	Q1		Q1	Q1	Q2			Q1		
S6P3 Assessing Geo-hazard vulnerability of Cities and Critical Infrastructures #10April		Q2		Q1	Q1			Q2			Q2		Q2	Q2		Q2	Q2	
S6P4 ReSAgri - Resilient and Sustainable ecosystems including Agriculture and food #9 April		Q2		Q1	Q1		Q2	Q2			Q2			Q2		Q2		Q2
S5P2 Satellite Earth Observation-derived water bodies and floodwater record over Europe#9 may		Q2		Q2			Q2	Q2	Q2			Q2	Q2			Q2		
S5P3Dive - Diver Information on Visibility in Europe#9 may							Q2	Q2	Q2									
							contacted											

Figure 10 Pilot's implementation quarter sprint

6.2. Institutional liaison roadmap

The following Institutional liaison roadmap table shows the current situation for the institutional contact process (Figure *11*).

The e-shape institutional liaison roadmap table is composed:

- e-shape contact: entity relevant to e-shape;
- First contact: a reference person is identified and contacted;
- Meeting: meeting organized (schedule / achieved);
- Actions: activities/plans are identified with the reference contact (schedule / achieved);
- Joint Action Plan: both parties engaging in a long-term perspective actions.

	e-shape contact	First contact	Meeting	Joint Action Plan
FAO		March 2020		
UN-GGIM			April 2020	Juin 2019
World Bank				
European Investment Bank				
African Development Bank Group				
GEO				
DG AGRI		February 2020	March 2020	April 2020
DG ENVI		February 2020		
DG MARE		February-April 2020	April 2020	
DG REGIO		February 2020		
DG RTD		February 2020		
DG DEFIS		February 2020	Jan. 2020	
EIT Climate KIC			TBC	
EIT Raw materials			January 2020	Summit 2020
EEA			December 2019	June 2020 sharing knowledge expertise
COR		March 2020		
EP			March 2020	June/September 2020 EP roundtable breakfast
	yes	yes	yes	

Figure 11 e-shape Institutional liaison roadmap

Institutional actors will support and contribute to the promotion of the pilots through different actions:

- institutional meetings with the refence person of the institution;

- raise awareness to the reference person;

- extend awareness to others in the community;

    - execution of events/trainings/workshops to display the pilots' capabilities to the EO area. Possibly, by inclusion in events organized by the stakeholders;

    - active involvement of the showcases and pilots' leaders to attend EO events at European level;

    - creation of ad-hoc workshops to gather the EO community with the showcase's pilots.

Institutional meetings represent a key moment in the institutional liaison. EARSC referents may receive from the institutional stakeholders' guidelines about their expectations and needs with regards to the pilots' services, for the overall promotion of the pilots. Relevant information will be gathered and shared with the pilots and the WP2 in supporting the co-design activity. Consequently, both the pilot's implementation and the institutional liaison roadmaps will be updated.

The institutional liaison represents a key moment to engage with the policy influence counterpart. Even if the institution does not represent the end user, the reference person will be able to raise awareness about the pilots within its own network and eventually flag the right customer to target.

An understanding will be developed with the identified institutional stakeholders and international organisations highlighting the importance of e-shape showcases to attend events and fora organized at European level. Understanding may come under the form of:

    -formal exchange of letters;
    - Mou
    - associate status work with us
    - membership relations:

Examples where EARSC has already established relations are:

- Formal exchange of letters with AARSE and AIPU
- MoU with Japan Space System, Eurochile, AGI (India), FrontierSI (Australia) Italian Society of Remote Sensing.
- Associates: EARSC (participant to GEO) has associate status with UN-GGIM
- Memberships relations: all of our 120 (presently) members who pay an annual fee. EARSC is also a fee paying member of Eurogi.
  Informal partnerships with Nereus, Eurisy and others.
  EARSC has many further informal relationships and works with many organisations. EARSC has recently established a South-East Europe group of EARSC members to further promote and encourage activities in the region. Further partnerships are being explored.

Liaison strategy activities intend to:

- Attends meetings at European level to interact with the stakeholders and promote e-shape showcases' pilots. For this, EARSC will closely monitor the SDGs planning calendar for 2020, the UNFCCC agenda, and the UNFCCC CoP, following their related SDGs events. EARSC will also attend GEO events to increase the visibility of e-shape within GEO ecosystem.

- Support the upscale of the e-shape pilots into new markets and community of users through the organization of dedicated workshops and side events at European and international conferences, as well as organized by EARSC. At the beginning of the project some workshops are thought to be more generic with an EO main audience (Primary Users communities) to create awareness about e-shape, establishing a first connection between the pilots and the potential users, and also a hands-on experience on the data and layers on information used by the pilot.

Dedicated workshops with a focus on specific sectors are in program and have been updated to online events due to Covid-19 restrictions, potentially implementing an online user-friendly platform to best replicate networking and interactions among the pilots and the audience.

As an example, EARSC and EURISY organized in October a workshop focused on smart farming where pilots could meet a target audience while presenting the EO sector to a "non-EO expert" audience in the framework of the user communities expansion.

These workshops intend to inform potential users on the relevant capabilities of the EO sector and gather input on Pilot shaping for WP2. By addressing the Primary user communities at their sectoral events we will necessarily come in contact with those acting in closely related sectors/positions, who may also have needs that could be satisfied by our Pilots or close facsimiles thereof. These contacts are our sectoral secondary communities and can act as multipliers for the e-shape pilots.

In the following table are listed the workshops that took place and those programmed for 2021.

Location	Date	Name of workshop	Objectives	Pilots	Audience
Online	July 2020	e-shape and onboarding presentation Copernicus Relays Office and Copernicus Academy	To present e-shape project and the onboarding call to the Copernicus communities	EARSC	Copernicus Relays: 85 members from academia, companies, innovative SMEs, etc. Copernicus Academy: research, training institutions, associations, universities, downstream service providers, others
Online	September 3rd, 2020	UN/Austria Symposium 2020	exchange of best practices in the use of space applications for concrete climate change mitigation and/or climate-related adaptation activities.	S6 P3	The wider space community, including the diplomatic community, statisticians, the private sector and academia, as well as UN entities
Online	October 9th, 2020	Smart Farming Conference	Awareness of EO capabilities in the field of smart farming to an audience of agri consultants, farmers, policy making.	S1 P2; S6 P3	Farmers | Growers |Agricultural industry| Technology suppliers (corporate, start-up)| System integrators | Governmental bodies (Local, Regional, National) | Project developers | Finance / Consulting | Logistics suppliers | anyone interested in smart farming
Online	October 27th, 2020	Space for cities; from innovation to operation	Awareness of EO capabilities to support cities' resilience and sustainability	S3 P1, P2; S6 P3	Cities, municipalities, local administrations, decision-makers, policy-makers, interested organisations
Online	October 14th , 2020	e-shape Space Climate Observatory	identifying the challenges, benefits and building connections among the e-shape communities of users and the Climate Space Observatory within the	S5P3, S6P3, S7P4	e-shape and SCO communities (space agencies, scientists, private users)

			greater ecosystem of earth observation, contributing to GEO social benefit areas and expanding the EuroGEO community		
Online	November/December	e-shape EUROGI introductory webinar	identifying the challenges, benefits and building connections among the e-shape communities of users and the EUROGI members and community of users.		
Online	TBD	EIT Raw Material		S5, S6	
Online	2021	IGARSS			
Online	June 2021	ExpandEO			
Online	TBD	EO4GEO		S7P1, S6P3	
Online	February 2-4 2020	Global Symposium on Soil Biodiversity	to fill some critical knowledge gaps and promote discussion among policy makers, food producers, scientists, practitioners and other stakeholders on solutions to live in harmony with nature, and ultimately, achieve the SDGs through the conservation and sustainable use of soil biodiversity.	S4	policy makers, food producers, scientists, practitioners and other stakeholders
TBD	TBD	Seanergy		S5	marine renewable energy industry -fixed and floating wind turbines, tidal, floating solar, wave

					energy, marine thermal energy - and to strengthen synergies between all the players in this sector
Online	March 9 – 10 2021	5th International Hybrid Power Systems Workshop	discuss the future of hybrid power systems. Participants will look at applications in a variety of locations and operating environments with a focus on system design, operating experience, business models, economics, and implementation issues.	S3, S5	system planners and designers; operators of small systems; universities and research institutes; technology vendors of distributed variable generation & storage technology; regulators and NGOs
Online	February 2-4 2020	Global Symposium on Soil Biodiversity		S4	
Online	March 10-11 2021	4th ECRA General Assembly		S6, S7	
TBD	September 6-10 2021	Organic World Congress		S1, S4	

Support is also provided by the WP6 Communication, which helps spreading and endorsing the pilot's involvement in the project.

Progress of the user' uptake will be measured on the basis of the Key Performance Indicators (KPIs) which, for WP4 specific objective O3 is "*Promote the uptake of the pilots at national and international scale, across vertical markets (private and public) and amongst key user communities*". The KPI for O3 in terms of number of key organisations involved (non partners) is (Figure *12*):

O3	User uptake of the pilots	No. of key organizations involved (non partners)	> 3 per showcase
	User uptake of the pilots	No. of user communities involved (non partners)	> 1 per showcase
	Undertake a series of capacity building activities with the aim to train users in a given sector on the integration of EO-based and in-situ data-based solutions in their workflow	No. of capacity building exercise	> 1 per showcase

Figure 12 e-shape KPI

7. Conclusion

The Institutional liaison strategy describe the promotion of the pilots at institutional level, making use of the inputs and needs of the institutions to customise the pilot's service. In order to achieve this, the institutional mapping has proved to be an important tool for displaying the connection between the pilots and the institutions targeted as potential pilot's multiplier. Through the data visualisation chart, the pilots-institutions connections were displayed, paving the way to the action plan strategy defining the pilot's implementation process and the institutional liaison roadmap to support it. EARSC is engaging with the international organisations, GEO and the institutions of the European Union, and with community of users. Based on the pilots' quarterly roadmap, WP4 is having specific interaction with the European Commission, as it shows multiple linkages, organising institutional meetings and joint actions for the overall benefit of the e-shape pilots. Further interactions with the UN system and key communities are undergoing and in the process of organization, in line with e-shape KPI number of key organizations involved (non-partners).