



Grant Agreement Number: 821911

Project acronym: **CoRDiNet**

Project full title: **Copernicus Relays for Digitalisation spanning a Network**

## D4.3 Policy briefings



The CoRDiNet project is financed by the European Union under the Horizon 2020 program, grant no. 821911

GRANT AGREEMENT N.	821911
PROJECT ACRONYM	CoRdiNet
PROJECT FULL NAME	Copernicus Relays for digitalisation spanning a Network
STARTING DATE (DUR.)	1 Oct. 2018
ENDING DATE	30 Sep. 2020
PROJECT WEBSITE	<a href="http://www.CoRdiNet.net">www.CoRdiNet.net</a>
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Workpackage n.   title	WP4 Support in the creation of pilot projects to create business links between users & suppliers of Copernicus related services
Workpackage leader	GMV
Deliverable n.   title	D4.3 Policy Briefings
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Version   status	V1.2
Nature	Report
Due date	30/09/2019
Delivery date	01/10/2019
Dissemination level	PU
Authors (partner)	GMV, bav

VERSION	MODIFICATION(S)	DATE	AUTHOR(S)
V1.0	Start	06/09/2019	Anastasiia Sokolovska
V1.1	Contribution WP4 leader	26/09/2019	Julia Yagüe
V1.2	Finishing-up	30/09/2019	Jürgen Vogel

## List of Acronyms

Acronym	Meaning
CDTI	Centro para el Desarrollo Tecnológico Industrial
CSC	Copernicus Space Component
CUF	Copernicus User forum
DIAS	Copernicus Data and Information Access Services.
EARSC	European Association of Remote Sensing Companies
ECMWF	European Centre for Medium-Range Weather Forecasts
EEA	European Environmental Agency
EEEs	Copernicus Entrusted Entities
EGNOS	European Geostationary Navigation Overlay Service
EMSA	European Maritime Safety Agency
EO	Earth Observation
ESA	European Space Agency
EU	European Union
FRONTEX	The European Border and Coast Guard Agency
FWC	Framework Contract
JRC	EU Joint Research Centre
PWC	Price Waterhouse Copper
RUS	Copernicus Research and User Support
SME	Small and Medium-sized Enterprise
TBD	To be determined
WP	Work Package
LULUCF	Land Use, Land Use Change and Forestry
CAP	Common Agricultural Policy
HAPS	High Altitude Pseudo-Satellites
UAS	Unmanned Aerial System
LRA	Local Regional Agency

**Definition of terms:**

- **Copernicus Stakeholders:** Most generic reference to the large Copernicus family of individuals and entities involved in the Copernicus programme
- **Copernicus users:** Refers to individuals, industries, research, public entities, etc. actually using and benefiting from Copernicus data, services and added value services
- **Copernicus potential users:** Refers to the said individuals or communities, knowledgeable of Copernicus, that have not yet begun using it for the implementation of their mandate or obligations.
- **Copernicus Entrusted Entities (EEEs):** Dedicated service providers through "Delegation Agreements" by the European Commission for the implementation and operation of Copernicus [core] services".
- **Copernicus Service Providers:** Dedicated service providers, either institutional or industrial, through Framework Contracts with the EEEs, for the development of core services
- **Copernicus downstream service providers:** Dedicated service providers, either institutional or industrial, that implement the core services with specific added value assets.
- **Copernicus Networks:** Refers to the Copernicus Academy and Copernicus Relays
- **Copernicus Ecosystem:** Refers to the overall Copernicus components and architecture: services, providers, users, EEEs, Relays, RUS, Academy, DIAS platforms, National Representatives, National Fora, Copernicus User Forum
- **Copernicus User Forum (CUF):** EU Member States representatives assisting the Commission in relation to the implementation of existing Union legislation, programmes and policies, in the preparation of delegated acts and providing expertise to the Commission when preparing implementing measures, i.e. before the Commission submits these draft measures to a comitology committee
- **Copernicus data:** Refers to raw data provided by geo-positioning GNSS, Sentinel mission, third party contributing missions and in situ data
- **Copernicus information:** Refers to Copernicus data and Copernicus Services, either core or downstream added value.

COPERNICUS ENTRUSTED ENTITIES		DOMAIN
<b>EEA</b>	European Environment Agency	Land
<b>JRC</b>	Joint Research Centre	Land
<b>JRC</b>	Joint Research Centre	Emergency
<b>ECMWF</b>	The European Centre for Medium-Range Weather Forecasts	Atmosphere
<b>Mercator Ocean</b>	Mercator Ocean	Marine
<b>ECMWF</b>	The European Centre for Medium-Range Weather Forecasts	Climate Change
<b>FRONTEX</b>	Agency for the Management of Operational Cooperation at the External Borders of the Member States of the European Union	Security
<b>EMSA</b>	European Maritime Safety Agency	Security
<b>SatCen</b>	European Union Satellite Centre	Security

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## Abstract

The D4.3 Policy Briefings presents first recommendations for Copernicus stakeholders to increase the level of interest, maturity of service offers and satisfy user needs in the Copernicus program's services.

Based on local Copernicus info events and workshops to foster the creation of pilot projects, first, sector-independent policy recommendations are presented. They comprise three areas: Easy data accessibility and usage, increase awareness and use and support for innovations. To set the context, some of the EU regulative framework linked to the Copernicus services on land, water and air / climate was put together and discussed.

## 1 Introduction

This document corresponds to CoRdiNet's deliverable D4.3 Policy Recommendations. These early policy recommendations are targeted at policy makers in order to make them consider practitioners' experiences evidenced by initiatives, other activity groups of stakeholders or projects undertaken. The recommendations aim at influencing future European, national, regional and local policies for making EO services in Europe stronger and wider, removing actual usage, market and knowledge barriers.

The objective of D4.3 is framed within the general goal of CoRdiNet's Working Package WP4: To offer support in the preparation of pilot projects, to create business links between users and suppliers of Copernicus related innovative services. In fact, the scenario of Copernicus challenges and opportunities needs to be acknowledged within:

- The scenario of the EU Space Policy and its flagship programmes of Copernicus and Galileo & GNSS.
- The Copernicus services evolution
- The Copernicus Data Policy Post-2020.

## 2 Methodologies for deriving policy recommendations

This section describes the methodologies used to identify and formulate recommendations for a wider use of EO – Copernicus data and services in the context of EU policies. Some assumptions for a coherent formulation of the recommendations are made:

- WP4 has planned a series of activities with Copernicus Stakeholders involved or close to EU policies, which facilitate the formulation of recommendations
- Other CoRdiNet Working Packages, like WP 2 on Stakeholder Analysis, WP 3 on Info Events and WP7 on the Copernicus European Regional Strategy Panel, are also close to users and service providers, who are ready to give advice, suggestions and recommendations from different standpoints of EO technologies and varied policy frames
- More focus for recommendations is placed around environmental policies. Not all policies can be tackled in the context of the project. Environmental matters are favoured because some environmental authorities have shown great interest since the beginning of the project and offered open collaboration. In addition, the EU put a lot of directives and regulations around environmental protection, offering big opportunities for Copernicus, which has been called GMES before, with an emphasis on environment
- Key policies for which recommendations are elaborated include land (land use, land-use change and forestry), atmosphere as well as continental & shore waters

CoRdiNet has carried out consultations, workshops, hackathons, info events including Copernicus presentations to various communities, gathered requirements, listing stakeholders and their priorities in order to enlarge the Copernicus network. All that knowledge serves as base knowledge to support the recommendations included in D4.3. Figure 1 below traces the backbone components of this deliverable:

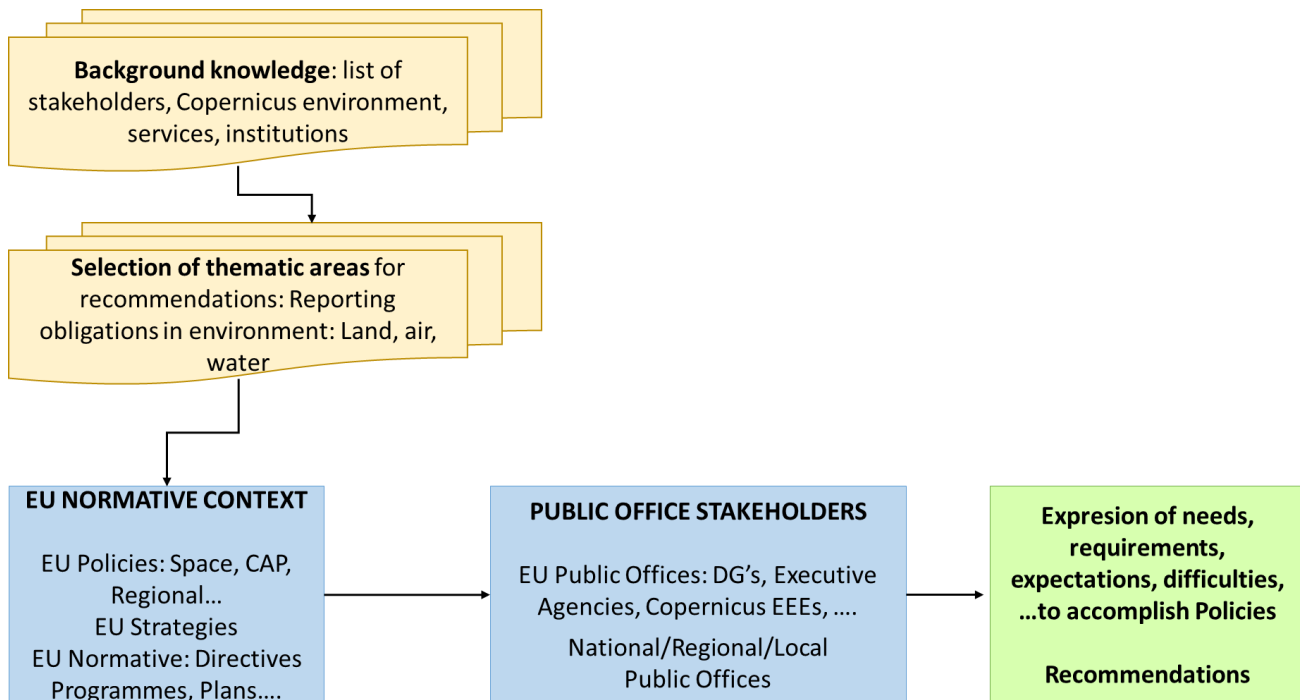


Figure 1: Methodology logic flow

There is a group of stakeholders particularly relevant when it comes to policy matters and that is the personnel in public administrations, including all possible rank categories and administration levels: EU, national, regional and local at town hall level. Public servants and the public administration abides and directs the daily work within the limits of legal frameworks, policies, executive plans, transposition of directives, programmes, etc. In doing so, they often encounter handicaps to keep up with all the novelties and the natural resistance to change and ingest new procedures and technologies.

This is very much the case when referring to the assimilation and adoption of a European programme like Copernicus by public administrators: They are at the forefront of bringing the benefits of such a programme into society, e.g.: technical such as the use of the clean air index in town halls, or legal, as for the obligation of using Copernicus satellite imagery in following the subsidies planned by the Common Agriculture Policy (CAP).

The view of public officers on Copernicus is key to the recommendations made in D4.3. They express concerns, suspects and issues while acknowledging the tremendous potential of Copernicus:

- Public offices follow a set of standard procedures: Question: why change?
- Just few public officers have the technical knowledge surrounding Earth observation via satellites
- Many public officers would need training for specific technical literacy and processes needed for using Earth observation-based services
- Validation of satellite data and products is opaque to many public offices, so trust is limited
- The cost and value for money of the new data sets is not contrasted and clearly shown

- More often than not, there is no explicit reference to the use of Copernicus in most policies, but just mere reference to the convenience of seeking synergies.

### 3 EU normative context

This section provides some insights into the European directives and reporting obligations. The key question is: What EU regulatory frames already encourage improving monitoring and reporting.

The 2016 Space Strategy for Europe (COM(2016)705, 26 Oct 2016) fosters to maximise the role of space for society and the EU economy and recommends the Commission to promote the uptake of Copernicus data and information, in particular in support of EU policies.

Addressing the needs of the European Union policy should remain the main driver in identifying requirements for the evolution of any programme on Earth Observation, from Copernicus to any other.

The analysis of user requirements carried out in preparation of the future Copernicus generation (NEXTSPACE) shows, from the voice and point of view of end users that the European Parliament and the European Commission are doing a steady work to consolidate the use of remote space observations through the directorates (DGs) as policy units. For instance, DG AGRI, DG REGIO, DG CLIMA, DG DEVCO and DG ENV for monitoring land cover, and the new Common Agricultural Policy (CAP). In relation to the information on climate change, space observations are to provide policy makers with new adaptation measures. Other policy units, although not so involved in remote observations, have manifested an interest in the potential future use of remotely sensed data on air quality, such as DG ENER, DG MOVE, DG REGIO. Lastly, other DGs have a more global outreach, such as DG DEVCO, DG ECHO, DG MARE.

The following sections review the EU policy and legal context for the chosen topics, i.e.: the European Commission's Policy Offices ruling those policies and therefore bounding national officers to compliance and reporting.

#### 3.1 Land use and change

**DG ENVIRON:** Policies and legal context relative to land:

Agriculture has a direct impact on the environment: Europe's Common Agricultural Policy (CAP) identifies three priority areas for action to protect and enhance the EU's rural heritage; out of the three, the first has the most impact on land use and change:

- Biodiversity and the preservation and development of 'natural' farming, forestry systems and traditional agricultural landscapes.

The CAP ensures that its rules are compatible with environmental requirements and that CAP measures promote the development of agricultural practices preserving the environment and safeguarding the countryside. Farmers are encouraged to continue playing a positive role in the maintenance of the countryside and the environment.



This is achieved by:

- Targeting aid at rural development measures promoting environmentally sustainable farming practices, like agri-environment schemes
- Enhancing compliance with environmental laws by sanctioning the non-respect for these laws by farmers through a reduction in support payments from the CAP.

This calls for monitoring of the status-quo and its temporal developments in the use of land.

- Europe is one of the most intensively used continents on the globe. It has the highest proportion of land - up to 80 % - used for settlement, production systems, in particular agriculture and forestry, and infrastructure. However, conflicting land-use demands often arise, requiring decisions that involve hard trade-offs.
- In addition, the link between economic activity, increased mobility and growth of transport infrastructure usually results in land take. Land is a finite resource: how it is used constitutes one of the principal drivers for environmental change, with significant impacts on [ecosystems](#) and quality of life, as well as on the management of [green infrastructure](#).

Source: [https://ec.europa.eu/agriculture/envir\\_en](https://ec.europa.eu/agriculture/envir_en)

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#### DG ENV: Policies and legal context relative to land: Activities of EEA

The European Environmental Agency reports to DG ENV. Land-use planning and management are essential in order to better reconcile land use with environmental concerns. Monitoring and mediating the environmental consequences of land use while sustaining the production of essential resources and at the same time protecting the environment is a major priority for policy-makers around the world. Land-use planning and management decisions are usually taken at local or regional level, e.g. as part of urban planning or agricultural and forestry practices. However, the [European Commission](#) has a role to play in ensuring that Member States consider environmental concerns in their land-use development plans and practice integrated land management. The [7<sup>th</sup> Environmental Action program](#) presents the issue of land use and land resource management as an element of natural capital that is crucial to maintaining ecosystems and the services they provide.

- European Union policies on [climate change adaptation](#) are directly relevant to current and future land-use practices and the economic sectors that depend on them. Land use is also an important consideration for many other policy areas such as territorial cohesion, transport, the climate and energy framework and the protection of nature and biodiversity.

EEA activities focus on monitoring, documenting and assessing the spatial pattern, extent and dynamics of land use and land cover in Europe. This is based on data from remote sensing and in situ information, facilitated through Geographic Information Systems (GIS) analysis and documented in the framework of land and ecosystem accounting tools. The EEA has also been

tasked with the development of a knowledge base, integrated assessments and indicators for land systems by combining land data with urban, rural and soil information, as a contribution to the environmental knowledge community in Europe.

- The main EEA data source is the [Copernicus land monitoring service](#), which includes the [Corine Land Cover](#) data set that was produced for 1990, 2000, 2006, 2012 and 2018 and is based on cooperation with EEA member and collaborating countries and the [Copernicus programme](#). It is the basis for the [Land take indicator](#), for example. Additional Copernicus data sets, such as [Imperviousness](#) and other high-resolution thematic layers, and the [Urban Atlas](#) have been developed to complement Corine Land Cover time series data and are used for further assessments such as land recycling and landscape fragmentation. The EEA is receiving technical support from the European Topic Centre on Urban, Land and Soil Systems ([ETC/ULS](#)).

#### References:

- EU [Forest](#) Strategy
- [EU Biodiversity Strategy to 2020](#)
- [European Commission's Thematic Strategy for Soil protection](#)
- [2030 Agenda for Sustainable Development](#)

Source: <https://www.eea.europa.eu/themes/landuse/intro>

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#### DG ENV: Policies and legal context relative to coastal zones:

Coastal regions are tremendously important for Europe's economy. Approximately 40% of the EU's population lives within 50 km of the sea. Almost 40% of the EU's GDP is generated in these maritime regions, and a staggering 75% of the volume of the EU's foreign trade is conducted by sea.

The European Commission in 2013 issued a proposal for a new directive. This directive would establish a framework for integrated coastal management and for 'maritime spatial planning' (public policy that deals exclusively with managing maritime space but not land space). Following the debates in the EU institutions, the proposal was modified and adopted as Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning. The directive highlighted the need to integrate in a coherent way all of the EU policies that touch on maritime and coastal issues (such as the Habitats Directive, the Water Framework Directive, and the Marine Strategy Framework Directive etc.). It sets up the legal framework providing guidance for how to better manage the competing claims of economic sectors on space and resources in marine areas.

- In close cooperation with Copernicus Marine Environment Monitoring Service (CMEMS), CLMS is now working on a comprehensive coastal zone monitoring solution that is capable of addressing the complex and dynamic situations found

in coastal environments. The European Environment Agency (EEA) plays a key role in the development of the Copernicus services, in particular in the technical coordination of the Copernicus Land Monitoring Service (CLMS) and the In Situ Component.

A roadmap addressing the short and the long-term evolution of Copernicus activities for Coastal zones was prepared by CLMS and CMEMS and submitted to DG GROW at the end of 2018 (see [Library](#)).

- In 2019 the EEA launched the implementation of a new thematic hotspot product to monitor landscape dynamics in coastal zones. The new products will cover all European coastal territory to an inland depth of 10 km with a total area of approximately 730,000 km<sup>2</sup>. The products will have a minimum mapping unit of 0.5 ha and record around 60 LC/LU classes. Thematic hotspot mapping activities within the CLMS aim, complementary to generic wall-to-wall mapping, to provide specific and detailed land cover / land use (LC/LU) information to address environmental challenges and issues.

The initial production of the Coastal Zone hotspot thematic mapping will consist of:

- a LC/LU status layer for 2012
- a LC/LU change layer between 2012 and 2018
- LC/LU status layer for 2018.

As with the other thematic hotspot products, the Coastal Zones product will provide change/status every 6 years. The release of the Coastal Zones products is expected to begin by the end of 2020

Source: <https://land.copernicus.eu/user-corner/technical-library/coastal-zone-monitoring>

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## References

- With the adoption of the LULUCF regulation in 2018 (Regulation (EU) 2018/841), greenhouse gas emissions and carbon dioxide removals from land use, land use change and forestry (LULUCF) have become part of the 2030 Climate and Energy targets. The LULUCF regulation requires that greenhouse emissions do not exceed removals in all of the land accounting categories in the period 2021 to 2030. This “no net debit” obligation will be assessed for the period 2021-2025 and 2026-2030 and a land-based accounting framework has been established.
- The basis for the reporting on LULUCF emissions and removals are the annually reported greenhouse gas emission inventories that are at present reported by the EU Member States as part of the reporting requirements of the UNFCCC and the EU mechanism for monitoring and reporting of greenhouse gas emissions (Regulation (EU) No 525/2013). Monitoring and reporting on the LULUCF sector is complicated by the fact that emissions and removals are affected both by natural events and anthropogenic activities and it is not always easy to distinguish between the two factors.

- In addition, carbon stock changes have to be calculated for different carbon pools and the uncertainty in these calculations is rather large (32 % in the 2019 EU inventory, with large variations between the different LULUCF reporting categories).
- In order to improve the quality of emissions data, the LULUCF regulation introduced reporting requirements so that significant sources of emissions and removals are calculated using at least Tier 2 methodologies in accordance with the 2006 IPCC guidelines, with the encouragement to use TIER 3 methodologies. With the move to higher tier methodologies, the LULUCF regulation calls for the use geographically explicit land-use conversion data (Approach 3), and that best use should be made of available Union and MS land use/land cover data including data from the Copernicus land monitoring program and other services/surveys such as LUCAS (Land Use and Coverage Area frame Survey).

Sources: <https://land.copernicus.eu/user-corner/events/using-copernicus-land-monitoring-services-clms-to-support-the-land-use-land-use-change-and-forestry-lulucf-regulation> and <https://land.copernicus.eu/user-corner/land-use-cases>

## 3.2 Water quality

The main overall objective of EU water policy is to ensure access to good quality water in sufficient quantity for all Europeans, and to ensure the good status of all water bodies across Europe. Therefore, policies and actions are set up in order to prevent and to mitigate water scarcity and drought situations, with the priority to move towards a water-efficient and water-saving economy.

**DG ENV:** Policies and legal context relative to water:

Right now, the EU Water Legislations undergoes a fitness check, a comprehensive policy assessment as per the [Better Regulation Guidelines](#). This also includes the [Better Regulation Guidelines-Monitoring](#). The former enable Earth Observation technologies to gain further access to monitoring tasks.

### References

- [Water Framework Directive](#) (WFD, 2000/60/EC), its main objective being to protect and enhance freshwater resources with the aim of achieving good status of EU waters, and its 'daughter directives':
- [Groundwater Directive](#) (GWD, 2006/118/EC) and
- [Environmental Quality Standards Directive](#) (EQSD, 2008/105/EC) and the
- [Floods Directive](#) (FD, 2007/60/EC).
- Other linked directives are Evaluation of the Urban Waste Water Treatment Directive (UWWTD, 91/271/EEC), as the measures under the UWWTD are essential for the achievement of the Water Framework Directive objectives.
- The European Commission adopted in February 2018 a proposal for a revised **Drinking Water Directive** (Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption) to improve the quality of drinking water and provide greater access and information to citizens. The proposal for modernizing the 20-year-old Drinking Water Directive comes as a result of the REFIT evaluation, the implementation of the Commission's

response to the European Citizens' Initiative 'Right2Water' and as a contribution to meeting the UN Sustainable Development Goals.

Source: [https://ec.europa.eu/environment/water/fitness\\_check\\_of\\_the\\_eu\\_water\\_legislation/index\\_en.htm](https://ec.europa.eu/environment/water/fitness_check_of_the_eu_water_legislation/index_en.htm)

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#### **DG AGRI:** Policies and legal context relative to water:

The Common Agricultural Policy supports investments to conserve water, improve irrigation infrastructures and enable farmers to improve irrigation techniques. It also helps to protect water quality. Agriculture affects in different ways the good chemical and good quantitative status of groundwater and surface waters. Water quality may be negatively affected by the presence of pesticide residues, nutrients from fertilizers, or sediments from soil erosion. In terms of quantity, on average, 44 % of total water abstraction in Europe is used for agriculture. Southern European countries use the largest percentages of abstracted water for agriculture. This generally accounts for more than two-thirds of total abstraction. In northern Member States, levels of water use in agriculture are much lower, with irrigation being less important, but still accounting for more than 30 % in some areas. Protecting water quality is a key issue of the Common Agricultural Policy. The central aim is to avoid water pollution through agricultural activity, mainly through a sustainable use of pesticides and fertilizers for avoiding, in particular, nitrate pollution. The main CAP instruments promoting sustainable water management are the following:

- Certain rural development measures support investments for improving the state of irrigation infrastructures or irrigation techniques that require the abstraction of lower volumes of water, as well as actions to improve water quality.
- The [cross-compliance framework](#) includes statutory requirements related to water protection and management arising from the implementation of the groundwater directive and nitrates directive, as well as GAEC standards.
- At EU level, the [Water Framework Directive, see above](#), plays a vital role in protecting water quality and quantity. This Directive requires Member States to establish river basin management plans (at the latest by end 2009), and to ensure that water pricing policies provide adequate incentives for users to use water resources efficiently (at the latest by end 2010).
- Payments under Art. 38 of Rural Development Reg. contribute to implementation of Water Framework Directive.

The EU also regulates to protect water quality with respect to [nitrates](#) and [pesticides](#). In addition, there is a range of initiatives of EU environmental policy contributing to promote the protection of waters see some additional references right below below:

#### **References**

- [Thematic Strategy on Soil Protection.](#)
- [EU action against climate change](#)
- [White Paper on adaptation to climate change and the](#)

- Communication on water scarcity and droughts
- Compulsory Cross-Compliance Regulation: [Council Regulation 73/2009](#) & [Commission Regulation 1122/2009](#).
- EU-Nitrate Directive: Council Directive 91/676/EEC of 12 December 1991
- EU-Pesticide Regulation: Regulation EC No 1107/2009

Source: [https://ec.europa.eu/agriculture/envir/water\\_en](https://ec.europa.eu/agriculture/envir/water_en)

### 3.3 Air quality / climate change

This review focusses on EU policy aspects relative to air quality, following the legal frames and topics that trace the work of the DG's somehow linked to air quality and remotely sensed AQ properties, namely DG CLIMA, DG ENV and DG ENER.

**DG CLIMA:** Policies and legal context relative to air quality

**Regulation concerning substances depleting the Ozone layer** ([ODS Regulation](#)), as per the [Vienna Convention](#) for the Protection of the Ozone Layer and the [Montreal Protocol](#) on Substances that Deplete the Ozone Layer. DG CLIMA has a role in monitoring the effects of current legislation, including fluorinated greenhouse gases (F-gases) and in updating the regulation in order to limit greenhouse effects as per international agreements (e.g. negotiating on behalf of the EU on policy matters related to the Montreal Protocol on substances that deplete the ozone layer). The Commission launched in 2017 an [evaluation of the ODS Regulation](#) to examine the actual implementation and performance of the regulation. The evaluation is meant to be completed in 2019.

Concerning F-gases, the baseline regulation adopted in 2006 was replaced in 2014 and entered into force in 2015 ([Regulation 517/2014](#) on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006 Text with EEA relevance ). This regulation bans F-gases in new types of equipment, and tries to prevent emissions of F-gases from old equipment's through regular checks, proper servicing and recovery of the gases at the end of the equipment's life.

**Climate change policies** and assessment of economic, social and environmental impacts. Results are the 2050 Low Carbon Economy Roadmap ([COM\(2018\) 773 final](#)) and the 2030 climate and energy [policy framework](#). Thematic data interests include: better Greenhouse Gas emissions data, in particularly of non-CO2 Greenhouse Gases, to improve modelling tools used to develop strategic options for the EU's in line with the Paris Agreement.

Legislation on [effort sharing](#) (i.e. emissions reductions in sectors outside of the scope of the EU Emissions Trading System). To track the progress of climate objectives DG CLIMA leads the [monitoring, reporting and verification systems](#) of greenhouse gas emissions in the EU and globally.

Policies that frame the EU actions on **climate change and emissions reduction** are:

- The United Nations Framework Convention on Climate Change (UNFCCC) ([1994](#))

- The Paris agreement ([2015](#)), which requires greenhouse gas emission inventories from each signatory country, that can be complemented with in-situ and space-borne greenhouse gas measurements to support an independent and scientific verification of the reported inventories

**Global anthropogenic CO<sub>2</sub> emissions from Agriculture Forestry and Other Land Use (AFOLU)**<sup>1</sup>: 1) **Agriculture** for all non-CO<sub>2</sub> gases from agricultural activities such as nitrogen from fertilizer application and manure management or methane from rice fields, and 2) **Land Use, Land Use Change and Forestry (LULUCF)** for all other land categories and gases. 3) **REDD+**. Reducing Emissions from Deforestation, forest Degradation, conservation and sustainable management of forests plus the enhancement of forest carbon stocks<sup>2</sup>.

The key policy instrument to be addressed in this chapter is the recent [EU LULUCF regulation](#), including for the first time the LULUCF sector in the EU 2030 climate targets.

#### References:

- [UN Framework Convention on Climate Change (UNFCCC): [UNFCCC Decision 1/CP.16 \(REDD+\)](#)]
- [UN Framework Convention on Climate Change (UNFCCC): [Paris Agreement](#), 2015]
- [REGULATION \(EC\) No 1005/2009 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 September 2009](#) on substances that deplete the ozone layer
- [REGULATION \(EU\) No 517/2014 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 April 2014](#) on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006
- [REGULATION \(EU\) 2018/841 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 May 2018](#) on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy ... Regulation (EU) No 525/2013 and Decision No 529/2013/EU
- [DIRECTIVE 2003/87/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL \(13.10.2003\)](#), establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC
- [DECISION NO 529/2013/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 21 May 2013](#) on accounting rules on greenhouse gas emissions and removals resulting from activities relating to land use, land-use change and forestry and on information concerning actions relating to those activities.
- [Commission Communication COM\(2013\) 659 of 20.9.2013](#) on A new EU Forest Strategy: for forests and the forest-based sector.
- [Commission Communication COM\(2011\) 363 of 20.6.2011](#) on Rio+20: towards the green economy and better governance.
- 2050 low carbon road map with [EU energy, transport and GHG emissions trends to 2050 – Reference scenario 2013](#) of 18 December 2013 and with COM (2011) 112: [A Roadmap for moving to a competitive low carbon economy in 2050](#) of 8 March 2011

<sup>1</sup> IPCC 2006

<sup>2</sup> [http://unfccc.int/land\\_use\\_and\\_climate\\_change/redd/items/7377.php](http://unfccc.int/land_use_and_climate_change/redd/items/7377.php)

- 2030 Climate and energy framework with Conclusions of [European Council 23/24 of 28 October 2014](#), [European Council 26/27 of 27 June 2014](#), [European Council 20/21 of 21 March 2014](#), COM(2014) 15 - [Communication: A policy framework for climate and energy in the period from 2020 to 2030](#) and SWD(2014) 15 - [Impact assessment](#)
- [https://ec.europa.eu/clima/policies/ets\\_en#Main\\_legislation](https://ec.europa.eu/clima/policies/ets_en#Main_legislation)
- [https://ec.europa.eu/clima/policies/ets/revision\\_en](https://ec.europa.eu/clima/policies/ets/revision_en)
- [http://ozone.unep.org/sites/ozone/files/Meeting\\_Documents/research-mgrs/5orm/index.html](http://ozone.unep.org/sites/ozone/files/Meeting_Documents/research-mgrs/5orm/index.html)

**DG ENV:** Policies and legal context relative to air quality:

The specific mandate for AQ falls under the EU **Clean Air policy**, which seeks actions in three areas:

- **The ambient air quality directives** (Directives [2008/50/EC](#) and [2004/107/EC](#), which set common methods and criteria to assess air quality in a comparable and reliable manner in all Member States, and establishes ambient air quality standards for twelve key air pollutants<sup>3</sup> deemed to be most relevant;
- Control on national emissions under **the new National Emissions Ceiling Directive (NECD)** [2016/2284/EU](#), which sets the total national emissions of the main air pollutants and requires monitoring of the ecosystem impacts of that pollution. The Commission has identified potential new policy initiatives, such as the EU's role in the hemispheric background concentration of ozone;
- **Control on the sources of air pollution**, like transport, industry, shipping, domestic combustion, etc; accordingly emission standards for key pollution sources are established e.g. via legislation on fuel quality, vehicle emissions, industrial emissions, etc.<sup>4</sup>

## References

- [Directive 2008/50/EC](#) of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe
- [Directive 2004/107/EC](#) of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air
- [Directive \(EU\) 2016/2284](#) of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC (Text with EEA relevance )

**DG ENERGY:** Policies and legal context relative to air quality

DG-ENER develops and implements innovative policies aimed at:

<sup>3</sup> These are sulphur dioxide, nitrogen dioxide and nitrogen oxides, particulate matter (PM10 and PM2.5), ozone, benzene, lead, carbon monoxide, arsenic, cadmium, nickel, and benzo(a)pyrene

<sup>4</sup> The relevant source controls are of the sulphur content of fuels, in particular their use in shipping.



- setting up a market with affordable energy, competitive prices and technologically advanced services
- promoting sustainable energy production, transport and consumption in line with the EU 2020 targets and with a view to the 2050 decarbonisation objective
- enhancing the conditions for safe and secure energy supply in a spirit of solidarity between EU countries

The relation of DG ENER to air quality lies in the need to gather specific AQ information determined by the policy documents:

- To monitor natural gas leakages
- To differentiate biogenic methane and anthropological methane
- To determine the source of trace gases (e.g. ethane, propane for oil/gas related emissions, stable isotopes ( $^{13}\text{CH}_4$ ,  $\text{dD}$ ), and  $^{14}\text{CH}_4$ )
- To detect atmospheric particulate matter (aerosols)
- To measurements of atmospheric  $\text{CO}_2$  and  $\text{CH}_4$  (hot spot emissions)
- To assess emission changes against local reduction targets.
- To assess national emissions and changes every 5 years to estimate the global stock take

## References

- Common Rules for the Internal Market in Electricity Directive ([2009/72/EC](#))
- Common Rules for the Internal Market in Natural Gas Directive ([2009/73/EC](#))
- Regulation Establishing an Agency for the Cooperation of Energy Regulators ([713/2009/EC](#))
- Regulation on Conditions for Access to the Network for Cross-Border Exchanges in Electricity ([714/2009/EC](#))
- Regulation on Conditions for Access to the Natural Gas Transmission Networks ([715/2009/EC](#))
- European Energy Security Strategy ([COM\(2014\)330](#))
- Proposal for a regulation on risk-preparedness in the electricity sector and repealing Directive 2005/89/EC ([COM\(2016\) 862](#))
- The Clean Energy For All Europeans Communication package ([COM\(2016\) 860](#)).

## 4 Stakeholder contributions

The CoRDiNet partners are organising info events in the framework of WP3 as well as events to initiate pilot actions in the context of WP4. Currently, the number of events organised for the various thematic areas around land, water/maritime and air/climate are too small to give sector-specific, targeted policy recommendations, which have been verified and discussed in relevant stakeholder groups. The CoRDiNet consortium therefore suggests improving on the deliverable 4.3 in the months to come, when more and more sector-specific events in national and local regional agencies within the CoRDiNet regions have been successfully organised, properly reworked, and evaluated.

## 5 Framing the early policy recommendations

This task seeks the preparation of policy briefings with recommendations from the experiences on the actions taken as described in 5 and in the Tasks 4.1 and 4.2 to promote and encourage end-user uptake at European, national, regional and local levels.

### Procedure:

1. Analyse the stakeholders and their needs for Copernicus program in specific sectors and application areas
2. Elaborate on their needs for Copernicus information for the very specific challenges, relevant subdomains and/or target user communities linked to the CoRdiNet project.

The objective for the formulation of the policy recommendations is the following:

1. Increase level of interest in Copernicus services for small and large commercial organizations (companies. Enlarge level of Copernicus products proficiency in clusters and ministries in order to get the higher level of project promotion at the market.
2. To increase level of interest in wide the areas of applications, especially those linked to European policies for more effective application of Sentinel-family satellites data.
3. To increase the maturity on Copernicus services adoption.

The policy briefings have the following strategy for action:

- To support program actions, launched in Europe at national and regional level ensuring a broad, coordinated, sustainable coverage for the Copernicus program members.
- To help selected stakeholders to leverage existing tools and resources in order to strengthen the impact of user uptake initiatives:
- To ensure a communication and a feedback loop:
  - Via networking of stakeholders
  - Via workshops for education and training
  - Via working groups to bring together user organizations, e. g. LRAs
  - Via research institutes and service providing companies.
  -

### 5.1 Formulation of early policy recommendations

In order to ensure the enlargement of interest in Copernicus services at commercial market, three criteria are to be fulfilled:

- Easy data accessibility
- Increase in awareness & use
- Support for innovations.

Thus, the policy briefings and recommendations for stakeholders of the commercial sector are formulated in the following way, taking into account the above-mentioned criteria:

### 5.1.1 *Easy data accessibility and usage*

- Copernicus should be made easy to use
- Address the non EO-literate users through dedicated tutorials: still, it is the scientific community, which is mainly using EO data, as it is not so easy to manipulate. The EC should provide basic tutorials to facilitate the usage and processing of EO data by non EO-experts
- Simplify and harmonize the data access infrastructure: Accessing Copernicus data is a significant issue. The multiplicity of access points does not ease the work of non-data specialists, although private intermediate users express that it is positive to have such a large choice. Data access infrastructures should be simplified and harmonized in order to facilitate data access by end users
- Enhance the distribution of Copernicus data sets: Small companies encounter difficulties when downloading Sentinel data sets compared to commercial data. The distribution method, such as downloading specific pictures and not a whole data set, and the delivery channels should be made more user friendly. The creation of an own standard data format could be considered
- Federate newcomers to the Copernicus community: End users report a lack of understanding between their specific job issues and the EO experts. The EC could offer workshops between the Copernicus community and potential end users. An exchange platform could be established, where end users post their needs and value-adding statement stakeholders offer their expertise
- The images provided by Copernicus should all be georeferenced as well as always error margins given
- DIAS: Difficult to download and process data, not sufficiently developed, yet.

### 5.1.2 *Increase awareness and use*

- There is a lack of awareness from the side of the local authorities: There should be more info events and awareness raising on the unique selling propositions and the use cases of Copernicus. The EO applications could have a huge impact at local scale. It could be relevant to classify the Copernicus data by territory and to gather feedback from such potential local users. The EC could also present best practice and examples to tackle local situations
- Facilitate to introduce Copernicus in public administrations, tell how to use it, what products it can deliver and what the limits in resolution and errors are. Budget is needed for subcontracting such services, but basic expertise has to be in the administrations for e.g. managing procurement procedures. Support to build multidisciplinary group over various ministries who are experts in handling Copernicus data. Bring them together with industry representatives and with researchers from university, e.g. in workshops, to show what is currently technically possible

- A common base for Copernicus is missing and its incorporation in public offices' workflows, procedures and methodologies. For this training is needed on use and interpretation of data
- Important is the fusion of data, since not all information needed at public offices can be found in Copernicus data; they should be seen as suitable supplementary technology, not as a substitute, e.g. needed to increase resolution. This could be done in combination with e.g. UAS or HAPS.
- Copernicus is useful for building timelines (5-day recurrence time), detecting change and trends. Therefore, data should be more used in combination with forecast models and for continuously improving forecasts. Synergies between industry and public offices has to be increased and consolidated in order to be closer to service providers needed. Open own lab or group within some public offices, e.g. at EEA, which helps public offices how to extract certain indicators from Copernicus satellite data. Access or subcontracting to companies is not sufficient
- Copernicus is not mentioned very often in European policy papers like directives or regulations, only in LULUCF and CAP, it is explicitly mentioned, this could be improved
- Appeal potential end users: Most end users are not aware of the EO data potential. A marketing campaign underlining the savings induced by Copernicus applications based on concrete case studies would be relevant.
- Propose capacity-building solutions: End users are not EO experts and they are asking for capacity building initiatives. The EC could propose basic EO training based on massive open online courses or FAQs with user-friendly interfaces where questions could be asked
- Use Copernicus to gain data on remote areas of your region, when territory is difficult to access.
- Copernicus should be more used for monitoring purposes over as many as possible public administrative processes, especially in order to homogenise and harmonise data and measurements over regions, nations and all over the European Union.

### 5.1.3 Support for innovations

- Prompt innovation through hackathons and demonstrators: Today, the app to revolutionize the market has not been found, yet. Hackathons and demonstrators still have to be organized to lead to viable applications
- Balance the open data communication: The open data policy is key and enables to build disruptive products in viable business models, but it can also threaten some commercial services. In the current digital trend, end users are now expecting applications and services free. The wording of the institutional communication should take care on not creating confusion between open data and free enabled services
- Clarify and ease the administrative burden on H2020 calls: SMEs are losing time on the administrative part of the H2020 calls at the cost of the technical side. SMEs are confused by the large topics proposed. The EC should design calls that are more precise
- Convince investors of Copernicus-based products: Some SMEs in the EO market are only viable due to subsidies and public funds. Campaigns should be conducted to encourage business angels to jump in

- Coordinate innovative initiatives among European stakeholders: Cooperation between European stakeholders on innovative initiatives should be improved to remain competitive and to be able to face global IT firms
- Change the EO paradigm. End users are not interested in the origin of the information; they just consider EO data as part of a larger ensemble. In the current Big Data context, EC should consider the EO market through the information and communications technology prism.

This concludes the current list of first, rather general policy recommendations derived from the info events and workshops organised within the Working Packages WP3 and WP4 of CoRDiNet.

This delivery will be updated after more thematic workshops have been organised in the context of WP3 and WP4. Then this document will be supplemented by more sector specific recommendations referring to specific Copernicus services like on land, water or air/climate.