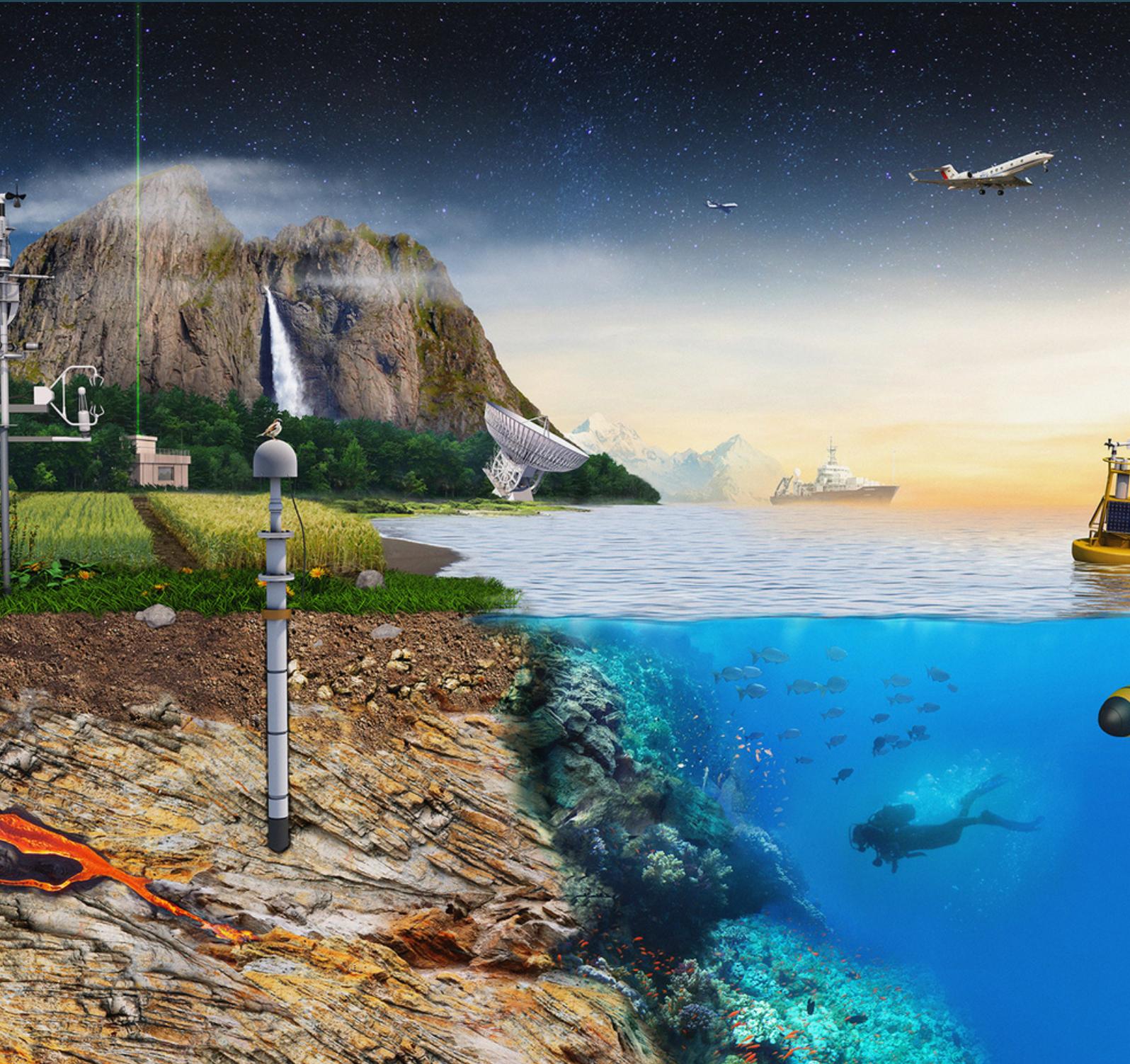




# ENVRI-FAIR

**18 MONTHS OF ACCOMPLISHMENTS**

Overview of the key results achieved in the first period of the ENVRI-FAIR project



PROJECT  
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824068

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[www.envri-fair.eu](http://www.envri-fair.eu)

# Background

PROJECT OVERVIEW, GOALS & OBJECTIVES



## OUR BACKGROUND & VISION

European environmental research infrastructures are the key providers of high-quality data, research products and services from key components of the Earth system - Atmosphere, Marine, Solid Earth, and Biodiversity / Terrestrial Ecosystems.

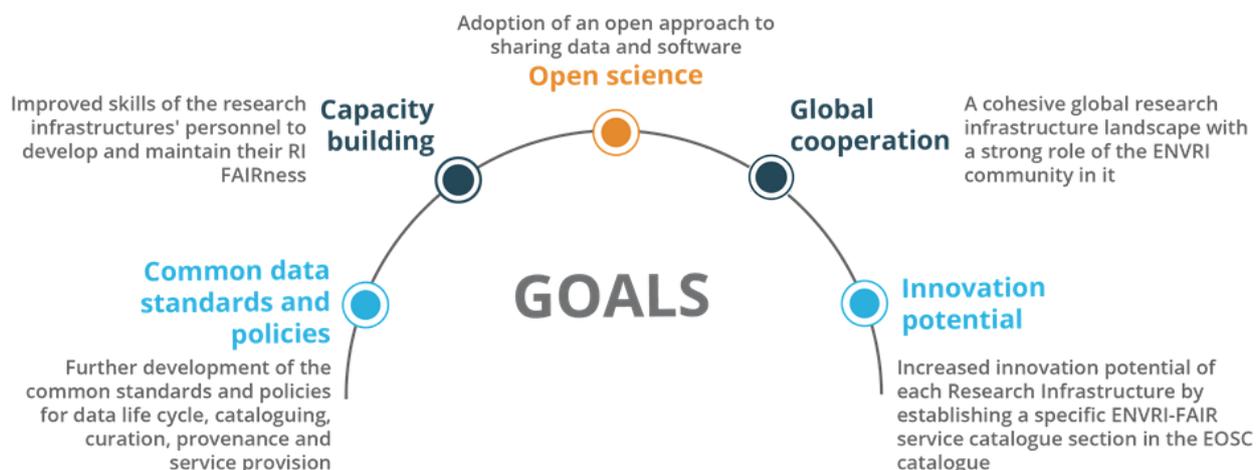
Understanding the Earth is not possible without interdisciplinary science. We need a holistic approach where environmental data and services produced by the different research infrastructures are harmonized and easy to use for scientists from any field of environmental research. These scientists, in turn, deliver new insights about the current state of our planet.

Such integration efforts are organized within the ENVRI community, a common forum for research infrastructure collaboration and co-creation. ENVRI community is currently supported by EU funded project ENVRI-FAIR.

"ENVRI-FAIR means a step forward towards the integrated understanding of the planet Earth. We are not able to solve environmental challenges without such capacity and knowledge."

# Background

## PROJECT OVERVIEW, GOALS & OBJECTIVES



Primary goals of the ENVRI-FAIR project

### FAIR SERVICES

People involved in the project work hard to make the data and services provided by ENVRI research infrastructures easily findable, accessible, interoperable and reusable (FAIR) and, therefore, available to a wide variety of user communities. They are also making sure our data and services are well connected to the emerging service ecosystem of the European Open Science Cloud (EOSC).

"We work on the development of ENVRI-hub to offer smooth access to FAIR environmental data to everyone.

Once our data are fully interoperable, scientists will no longer be limited by the boundaries of one specific discipline. They will be able to study complex phenomena across the science fields, enabling a holistic understanding of our planet."

### ENVRI-HUB

ENVRI-FAIR will deliver an open access platform for interdisciplinary environmental research data utilizing the EOSC, called the ENVRI-hub. The hub forms the interface to the EOSC and will be realized as the services across ENVRI research infrastructures become progressively more integrated.



# Summary

## AN OVERVIEW OF THE MOST IMPORTANT ACCOMPLISHMENTS

### **FAIRNESS ASSESSMENT**

In the first phase of the project, the research infrastructures of the four subdomains of the Earth system assessed the FAIRness of their implemented data management and curation systems. They performed a gap analysis for each research infrastructure individually and the ENVRI cluster as a whole.

The gap analysis and resulting implementation plans form a robust basis for the further conduction of the project. The FAIRness assessment methodology was also considered in FAIRness assessment methodology work at Research Data Alliance and other FAIR activities.

### **FAIR POLICIES**

Another critical step in the direction of common policies and standards was the establishment of the FAIR Policy Working

Group, which guides the development of current understanding and adoption of the FAIR principles and provides recommendations for their implementation at the research infrastructure, subdomain, cluster and ENVRI community levels.

### **FAIRNESS TRAINING**

The improvement of personnel skills to develop and maintain the FAIR infrastructures is handled through extensive FAIRness training activities. The methodology developed during the inventory and gap analysis of FAIRness training materials is another essential product of our project. It will have an impact far beyond since FAIRness training is one of the most active areas in FAIRification.

This capacity-building effort targets also non-ENVRI community researchers and other end-users.



# Summary

## AN OVERVIEW OF THE MOST IMPORTANT ACCOMPLISHMENTS

### CLUSTER COOPERATION

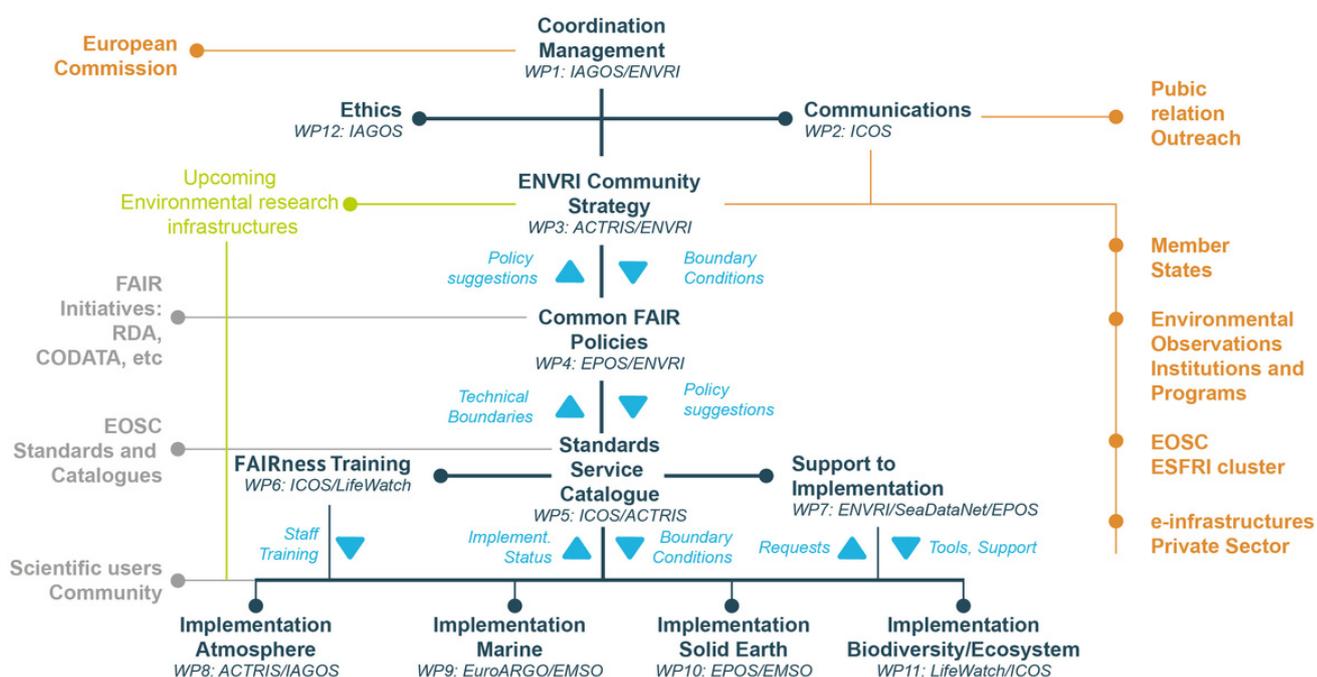
Stimulated by EOSC activities, and in particular by the participation of the coordinators of the five ESFRI cluster projects in the EOSC-hub Strategy Board, a close and highly efficient collaboration among the five ESFRI clusters developed. This can be considered an unforeseen but highly important contribution towards cohesion and alignment of work between the ESFRI clusters and EOSC.

Driven by these activities, the role of the ESFRI clusters in EOSC is growing continuously in relevance.

### CONCLUSION

ENVRI-FAIR succeeded in its first 18 months and prepared a solid ground for the development and implementation of tools and methods required to enhance FAIRness of digital assets at research infrastructure, as well as subdomain and cluster level.

ENVRI-FAIR has also assumed a relevant role at the EOSC level, concerning the further development of the EOSC portal design and content.



Work package structure of ENVRI-FAIR

# Concrete results

## AN OVERVIEW OF THE MOST IMPORTANT ACCOMPLISHMENTS

### LANDSCAPE ANALYSIS

As already mentioned, the start-up phase of ENVRI-FAIR focused on assessing the actual state of the participating research infrastructures with respect to all aspects of FAIRness, and the subsequent development of FAIRness implementation plans for the subdomains considering the different levels of FAIR maturity amongst the research infrastructures.

In the horizontal work packages (see the WP structure above), the current status was identified and evaluated by creating a landscape and gap analysis of the concerned subject (WP4 Policy Landscape, WP5 Technology Landscape, WP6 Knowledge and Training Materials, WP7 ENVRI-FAIR Knowledge Base). We initialized the build-up of a cluster-level knowledge base to share technical practices, identify common data and service requirements and design patterns, and facilitate search and analysis of existing solutions for interoperability challenges shared among environmental research infrastructures.

In the four subdomain work packages (WP8 to WP11), FAIRness strengths and weaknesses of each research infrastructure were evaluated using a standardized survey approach based on the GO FAIR Convergence Matrix. The

process was inspired by the FAIRification process adopted by GO FAIR and was applied following the specific needs of the ENVRI cluster and those of the other domains of the ESFRI roadmap.



### DELIVERABLE D5.1

**Read the requirement analysis, technology review and gap analysis of environmental research infrastructures, one of the major outcomes of this reporting period.**

Based on the requirement analysis, each subdomain developed strategies and approaches addressing identified weaknesses and later provided coordinated FAIRness implementation plans. The individual plans were checked for coherence and consistency amongst the subdomains, and subsequently, a cluster-level FAIR implementation plan was developed. Furthermore, for each subdomain, reference material was collected for both data licence and data policy used by the contributing research infrastructures. Starting from the present state on data licence and data policy use, recommendations for licence use on data and metadata and respective policies will be developed and implemented.

# Concrete results

## AN OVERVIEW OF THE MOST IMPORTANT ACCOMPLISHMENTS

### TASK FORCES

We established six task forces, serving as tools to coordinate and harmonize the necessary solutions among the subdomains and research infrastructures to improve the FAIRness status - at all levels and for all involved ENVRI. These task forces tackle the

- ENVRI Catalogue of Services,
- ENVRI AAI Implementation,
- PIDs, Identification, Types and Registries,
- Triple Stores and Data Storage Certification,
- Licenses, Citation and Usage Tracking,
- and ENVRI-hub architecture.

The establishment of task forces will ensure the coherent evolution of the four subdomains.

### FAIR TRAINING ACTIVITIES

FAIR training activities are among the areas producing high visibility for ENVRI-FAIR. The results and methodology of the gap analysis of FAIR training materials have been received with interest, not the least by training specialists of the other ESFRI cluster projects. The [ENVRI Training Resource Catalogue](#); see also [Zenodo](#)) attracted much interest of EOSC and RDA working groups, and the

ENVRI adoption of the IEEE LOM standard was chosen as a use case of the RDA Interest Group "Education and Training on Handling of Research Data". Training materials are produced and made available at the [training platform](#).



[WWW.ENVRI.EU](http://WWW.ENVRI.EU)

**ENVRI Training platform, ENVRI wiki and other resources are all accesible from the ENVRI community platform**

### EOSC RELATED ACTIVITIES

ENVRI-FAIR colleagues contributed significantly to the EOSC-hub Strategy Board, EOSC Working Groups, EOSC-related projects like EOSC Enhance, EOSC Secretariat, GO FAIR and FAIRsFAIR, and to the establishment of the group of ESFRI cluster projects coordinators. This group published [cluster position papers](#) on expectations and planned contributions to the EOSC, developed a common view of the ESFRI clusters on the EOSC, and helped clarify the role of ESFRI RI cluster projects in the EOSC ecosystem.

# Concrete results

## AN OVERVIEW OF THE MOST IMPORTANT ACCOMPLISHMENTS



### CLUSTER POSITION PAPERS

Read the position papers on expectations and planned contributions to the EOSC

In particular, the ESFRI research infrastructures organised in five thematic clusters have evolved into key players when it comes to the provision of data and services to their research communities and integrating them into the use of the emerging EOSC infrastructure. Although the five ESFRI RI cluster projects span a broad range of scientific fields, the expectations, needs

and offers from the clusters' point of view towards the EOSC are very similar. They have therefore developed a common view on the EOSC (see the illustration below).

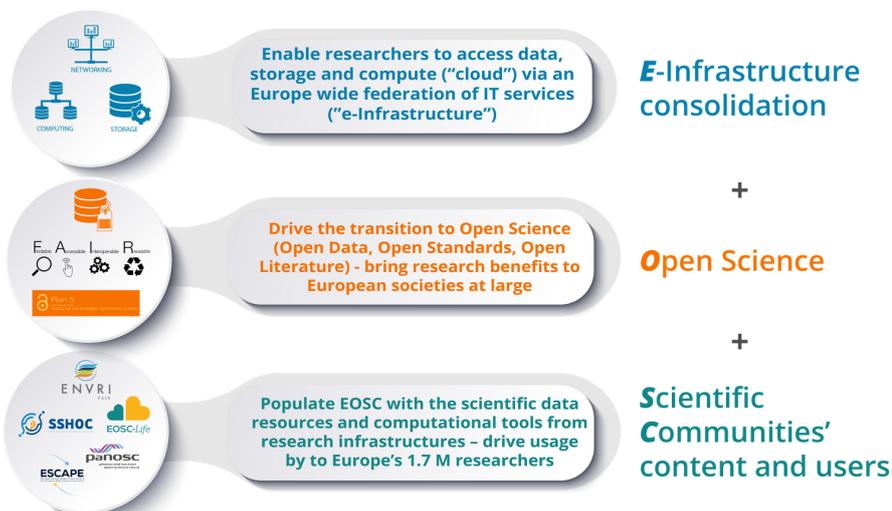
### STAKEHOLDER ENGAGEMENT

Increasing the potential for innovation of each research infrastructure was approached at multiple levels. The development and implementation of the ENVRI-FAIR Communications Strategy built the foundation for all outreach activities, including communications towards and with the private partners.

A first dedicated effort towards the involvement of stakeholders and industry

was undertaken by the organization of a first national stakeholder meeting and series of meetings with international stakeholders. Because of COVID-19 travel and meeting restrictions, the stakeholder meetings are now planned as virtual meetings from September to November 2020.

### European Open Science Cloud =



# Concrete results

## AN OVERVIEW OF THE MOST IMPORTANT ACCOMPLISHMENTS

### INTERNATIONAL COLLABORATION

Beyond EOSC-related activities, ENVRI-FAIR members continue actively engage the other relevant FAIR related initiatives, this includes the AGU Enabling FAIR Data project, the existing and new RDA groups addressing aspects of FAIR, e.g. FAIR Maturity Model Working Group & Open Science Graphs for FAIR Data Interest Group. There is also ongoing engagement with other EU-funded FAIR projects including FAIRsFAIR, GOFAIR and FAIR4Health.

### SUSTAINABILITY

Last but not least, we want to make sure all our products and key results are used as broadly as possible and they are maintained for the future. Among other activities in the project, this is ensured by the work of BEERi (Board of European Environmental Research Infrastructures). Not only that BEERi works on the joint

ENVRI strategy and sustainable cooperation model, but it also brings together the directors of research infrastructures and projects that are not on the ESFRI roadmap. These research infrastructures are not part of the ENVRI-FAIR consortium, but can significantly benefit from the results developed by it. Open ENVRI community meetings are being organized to ensure the entire community is informed about the latest developments and results.

All the knowledge gathered in ENVRI-FAIR as well as the previous cluster projects is and will be accessible at ENVRI wiki and the training platform, making the results sustained and accessible for the entire community in the future.



**ENVRI COMMUNITY  
SPACE IN ZENODO**

**Besides ENVRI community platform, our resources can be also found in our ENVRI community collection in Zenodo**



# Concrete results

## AN OVERVIEW OF THE BIGGEST ACCOMPLISHMENTS

### CONCLUSION

ENVRI-FAIR succeeded in its first 18 months and prepared solid ground for the development and implementation of tools and methods required to enhance FAIRness of digital assets at research infrastructure, as well as at subdomain and cluster level. Implementation plans were developed and harmonised, and interoperability of subdomain solutions at cluster level was put in the focus of the

co-design strategy. The establishment of six task forces as tools to coordinate and harmonize the necessary solutions among the subdomains and research infrastructures turned out to be very successful for the further conduction of the project. ENVRI-FAIR has also assumed a relevant role at the EOSC level, concerning the further development of the EOSC portal design and content.



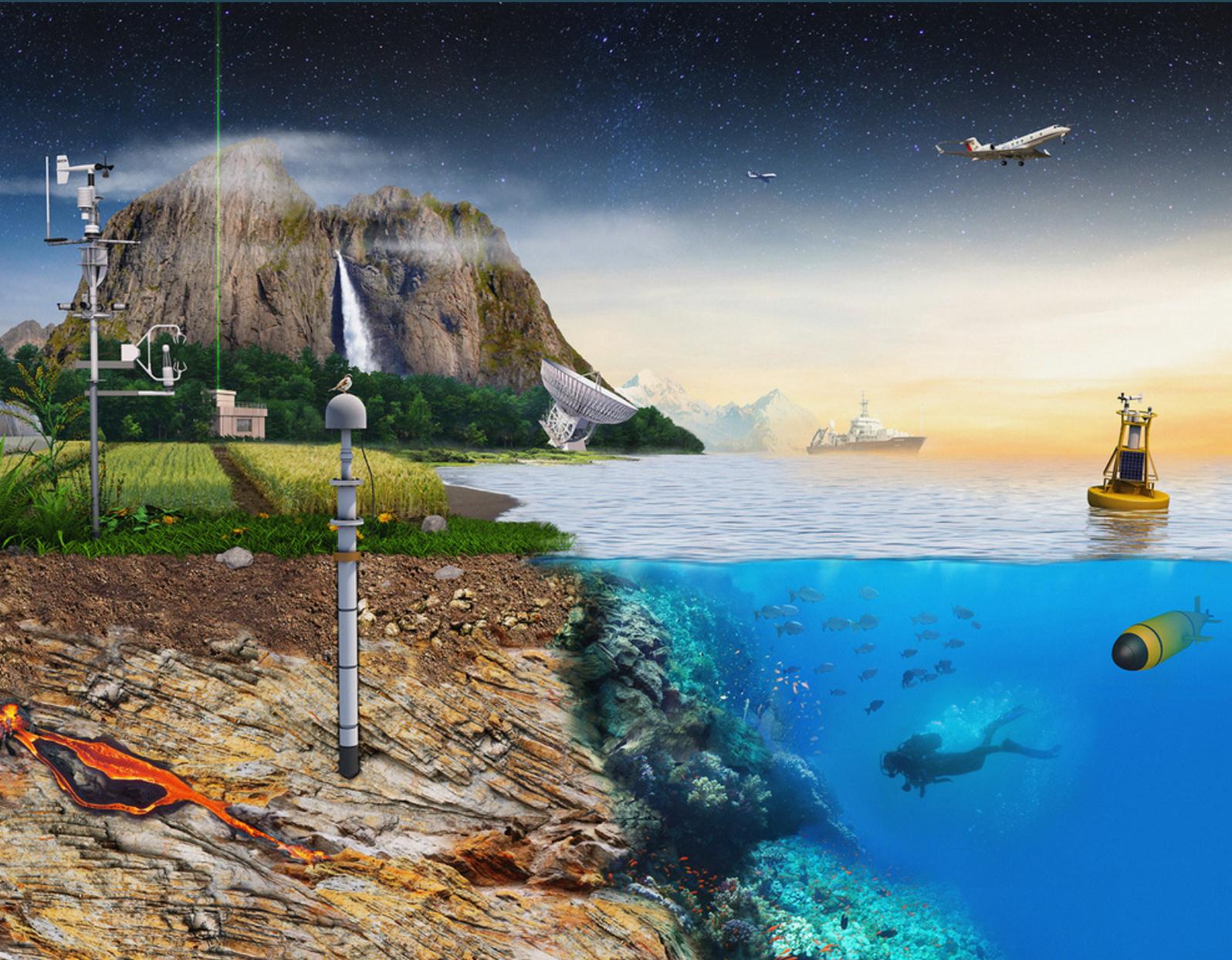
### KEY ENVRI-FAIR DELIVERABLES

- D2.1 Dissemination strategy for ENVRI-FAIR project ([PDF](#) | [Zenodo](#))
- D4.2 Policy landscape in the ENVRI domain ([PDF](#) | [Zenodo](#))
- D5.1 Requirement analysis, technology review and gap analysis of environmental research infrastructures ([PDF](#) | [Zenodo](#))
- D6.1 Inventory & gap analysis of FAIR training materials ([PDF](#) | [Zenodo](#))
- D8.1 Atmosphere subdomain FAIRness Assessment ([PDF](#) | [Zenodo](#))
- D8.3 Atmospheric subdomain implementation plan ([PDF](#) | [Zenodo](#))
- D9.1 Marine subdomain FAIRness roadmap ([PDF](#) | [Zenodo](#))
- D9.2 Marine subdomain implementation plan ([PDF](#) | [Zenodo](#))
- 10.1 Technical analysis and definition of implementation components for FAIR implementation of RIs in the Solid Earth subdomain ([PDF](#) | [Zenodo](#))
- D10.2 Roadmap for implementation of FAIR concepts ([PDF](#) | [Zenodo](#))
- D11.1 Biodiversity and ecosystem subdomain implementation short term plan ([PDF](#) | [Zenodo](#))



# ENVRI-FAIR

VISIT [WWW.ENVRI-FAIR.EU](http://WWW.ENVRI-FAIR.EU)  
FOR MORE INFORMATION



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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824068.