

# Beyond INSPIRE. Perspectives on the legal foundation of the European Green Deal Data Space



## HIGHLIGHTS

- This brief provides an initial reflection of the Joint Research Centre of the European Commission on the possible legal interventions that can facilitate the establishment of the common European Green Deal Data Space and modernise environmental data sharing practices in the EU beyond the implementation of the INSPIRE Directive.
- It is compiled to feed into the debate around the possible future(s) of environmental data sharing that is inclusive and well aligned with the initiatives of the 'A Europe Fit for the Digital Age' and 'A European Green Deal' 2019-2024 European Commission priorities.
- The views expressed here represent the perspective of the authors and are not to be considered as an official position of the European Commission.

## What is the problem?

Data about the environment are **needed** in support of a broad spectrum of use cases and applications, ultimately benefitting citizens, business and environmental policymaking. Multiple **obstacles** shall be overcome to effectively leverage available data, which are currently underused due to a complex set of intertwined reasons as described in [1]. Those include:

- Outdated provider-centric legal framework with a strong focus on the public sector as the main user and provider of the data;
- Complex technical requirements that are enforced without an easily and objectively quantifiable benefit;
- Different trends and infrastructures being used on the national level in parallel to the ones put in place for complying to the requirements on the EU level;
- Novel technological developments and inclusion of new actors in the data economy (such as data intermediaries) that are not fully utilised.

At the same time, **rapidly emerging technologies** [2] and **new legal instruments** that will have a strong impact on data sharing, in particular the [Data Act](#), [Data Governance Act](#)

(DGA), [Implementing Act on high-value datasets](#), all defined under the [European Strategy for Data](#), as well as the [Interoperable Europe Act](#), are being developed or already entered into force. Organised in a horizontal legal framework, those instruments provide multiple opportunities for the better utilisation of existing data. Those however would need to be tailored to the specificities of environmental data and the associated use cases.

With the objective to contribute to the debate around the possible future(s) of environmental data sharing in the EU, this policy brief prepared by the Joint Research Centre (JRC) of the European Commission provides an overview of several different **policy development pathways** characterised by a different level of ambition. Three overarching **principles** have guided the authors in conceptualising the different pathways:

- First, focus is put on the reuse of data that can bring societal, economic and environmental benefits and go beyond the current scope of the [INSPIRE](#) and the [Public Access to Environmental Information](#) Directives, which are both subject to a possible revision within the context of EC's [GreenData4All initiative](#);

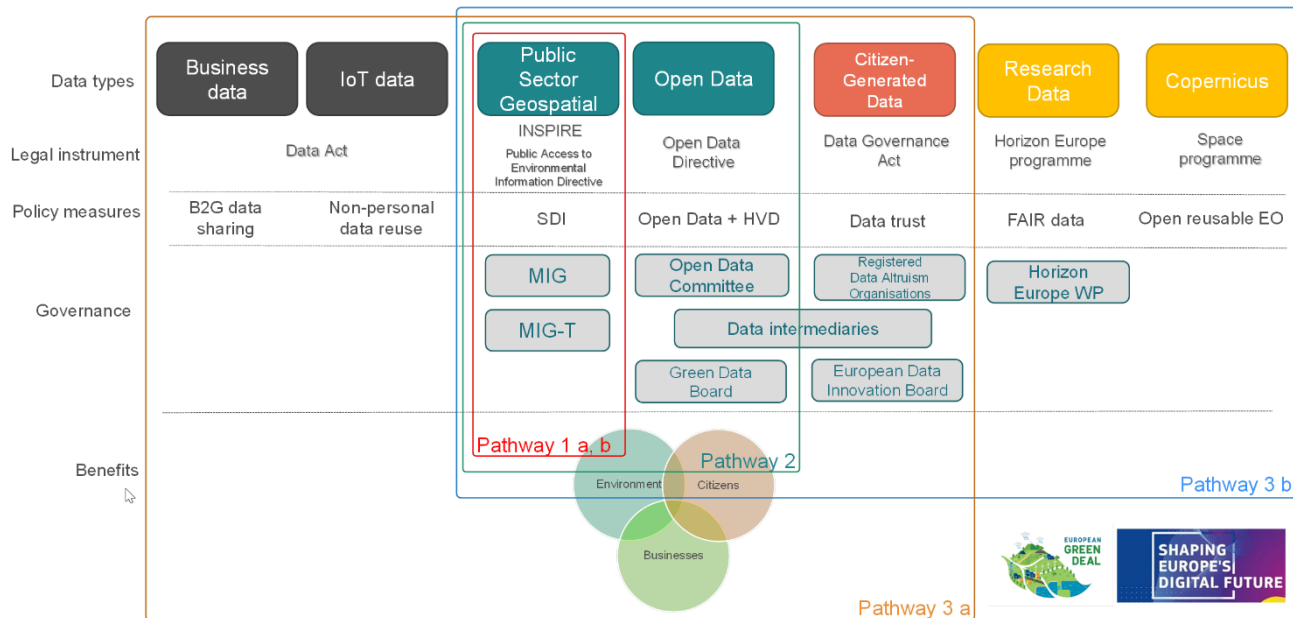


Figure 1. Policy pathways for establishment of the European Green Deal Data Space. Initial reflection. Source: Author's own elaboration.

- Second, the legal framework to be developed on the EU level should effectively contribute to establishing and sustaining an ecosystem of actors, including users, providers, standardisation bodies, private actors and academia, around data-driven innovation [1];
- Third, the legal instrument(s) to be developed should align existing and new (digital and green) legal frameworks in a future-proof manner.

The benefits remain limited to the public sector for the needs of environmental policies. New technical approaches are adopted and endorsed as [INSPIRE Good Practices](#).

### Advantages

- The approaches for governance and maintenance of the infrastructure are already well established and can be operated with a relatively low effort.
- The community of public sector data providers is familiar with the requirements and procedures.

### Disadvantages

- Many opportunities are missed due to the one-sided, provider-centric perspective on data.
- Legal certainty has to be provided for implementations (e.g. through INSPIRE Good Practices) differing from the default.
- Data are shared without clear evidence on their use.
- Technical framework remains rigid and hardcoded in legislation.
- The need to align with the horizontal legislation on data sharing remains.
- A gradual decrease in INSPIRE community involvement is expected.

### Provisions (incl. roles and responsibilities)

- Same governance structure as the existing MIG and MIG-T expert groups.
- Possibility for introduction of an industry and/or standardisation panel for INSPIRE.
- Continue to operate the infrastructure as before.

## Policy pathways

According to those principles, several **policy development pathways** are identified (Figure 1) that have a different level of ambition and align, to a various extent, environmental data sharing to the provisions of the horizontal legal instruments defined under the European Strategy for Data. They differ in data scope, have their own advantages and disadvantages, and specific governance mechanisms, and would therefore require a different intervention logic.

### Pathway 1a: As-is

This is the **baseline scenario** where the existing legal framework, consisting of the INSPIRE and Public Access to Environmental Information Directives, is kept without any modifications. The data scope remains limited to the public sector, and the governance stays with the INSPIRE Maintenance and Implementation Group (MIG), formed by EU Member States experts, and its technical sub-group (MIG-T).

## Pathway 1b: Simplified INSPIRE

This is a scenario very similar to the baseline. The legal framework still remains centred around the INSPIRE and the Public Access to Environmental Information Directives. However, **implementing provisions** for data harmonisation, network services and metadata **are simplified**, made standard-agnostic and fully implementable with out-of-the-box technology.

### Advantages

- Many existing obstacles to data sharing are removed by the adoption of simpler solutions.
- More data can be made available and become easier to reuse.
- The approaches for governance and maintenance of the infrastructure are well established and can be operated with a relatively low effort.
- New investments by Member States are incentivised though the adoption of simplified and implementable technical approaches.

### Disadvantages

- Many opportunities are missed due to the one-sided, provider-centric perspective on data.
- No legal certainty is provided in the alignment with horizontal data-sharing policies.
- Data are shared without clear evidence on their use.
- The legal framework (INSPIRE Implementing Rules) has to be changed, which requires a lengthy process without a long-term vision in mind.
- The need to align with the horizontal legislation on data sharing remains to be solved.
- Investments made by Member States in implementing INSPIRE 'as-is' should be safeguarded.
- Backwards compatibility with existing implementations might become a challenge.

### Provisions (incl. roles and responsibilities)

- Same governance structure as the existing MIG and MIG-T expert groups.
- Possible addition of an industry and/or standardisation panel for INSPIRE.
- Establishment of simplification sub-groups within the context of the INSPIRE work programme(s).
- Backwards compatibility with existing implementation should be ensured for simplified approaches that are to be developed.
- Legal scrutiny of the new simplified approaches should be reinforced and conducted by the Commission.

## Pathway 2: Public-sector data provision with a prominent role of Data Intermediaries

In this scenario, the data scope of the legal intervention is kept only to public sector data, and the links between INSPIRE and the [Open Data Directive](#) (including the provisions of the [Implementing Act on high-value datasets](#)) are further strengthened e.g. through:

1. The establishment of common governance structures between INSPIRE and the Open Data Committee, such as a new Green Data Advisory Board, or a sub-group of the European Data Innovation Board (EDIB) defined under the DGA.
2. ICT approaches and actions that contribute to the establishment of a more user-driven ecosystem are mainstreamed.
3. New user-driven key performance indicators replacing and relaxing the INSPIRE Monitoring & Reporting indicators are developed.

The scope is extended to also (i) include non-geospatial environmental data, and (ii) emphasise the third-party reuse (business, research) of the data, in addition to the currently existing focus on environmental policy. Regardless of the extended scope, the geospatial dimension remains central due to its powerful role for integrating data from multiple sources. Interoperability requirements, given the extended scope, are eased and the responsibility for the creation of common high-value datasets is shifted to recognised data intermediaries (e.g. Green Data Intermediaries) as defined by the DGA.

### Advantages

- The effort for harmonising data is shifted from individual data providers to data intermediaries, thus favouring a more user-driven data ecosystem.
- The emphasis on the INSPIRE Monitoring & Reporting indicators decreases, benefitting a set of KPIs that measure the utility of the data.
- An inclusive approach is fostered that brings together the INSPIRE and Open Data communities.
- Focus is placed on leveraging better and more relevant environmental data products prepared in a demand-driven manner.
- Business and research uses of environmental data are fostered.
- Innovation and new investments by Member States are incentivised through the cross-fertilisation between the INSPIRE and Open Data communities.

### Disadvantages

- A transitional period is needed for moving from the current to a completely new setup, including the possible dismissal of existing governance bodies and legislative framework (e.g. INSPIRE Monitoring and

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Reporting, Implementing Rules on the interoperability of spatial data and services).

- The potential overlap between the established governance bodies, the EDIB and the Interoperable Europe Board needs to be addressed.
- New organisational and technical challenges derive from the interaction between the INSPIRE and the Open Data communities.
- Investments made by Member States in implementing INSPIRE 'as-is' should be safeguarded.

### Provisions (incl. roles and responsibilities)

- Possible Commission Decision for establishing an Expert advisory group (e.g. Green Data Advisory Board) or a sub-group of the EDIB with a focus on public sector environmental data.
- Definition of responsibilities of the Green Data Intermediaries and their explicit role for utilising public sector data.
- Establishment of a register of specialisation and recognition of Green Data Intermediaries.

### Pathway 3a: Pathway 2 and environmental specialisation of the provisions of the Data Act and Data Governance Act

This scenario builds on the Data Act and Data Governance Act and tailors their provisions to the specific needs of the environmental acquis. It is incremental, i.e. includes all the provisions of Pathway 2, and extends the data scope **beyond public sector data** with the inclusion of:

- **Citizen-Generated Data (CGD)** shared on altruistic grounds and regulated by the DGA such as citizen science, collaborative citizen sensing, social media data and volunteered geographic information data.
- **Non-personal business data** to be regulated by the forthcoming Data Act, e.g. data from Internet of Things (IoT) sensors, road traffic, or data gathered by agricultural machinery.

This pathway brings together several prominent sources of data for the environment, effectively creating the backbone of the foreseen European Green Deal Data Space.

### Advantages

- Innovative data products and services can be developed by combining multiple new data sources together, benefitting from the increased frequency of update and better granularity of the data coming from citizens and businesses when compared to public sector data.
- A close alignment of the Green Deal legal instruments with the horizontal legal instruments defined under the European Strategy for Data is achieved.

- An inclusive approach is fostered, which allows citizens and businesses to participate in environmental data collection and utilisation practices.

### Disadvantages

- The need arises to establish a new complex governance structure that should bring together very different communities with different profiles and interests, e.g. Registered Data Altruism Organisations (RDAOs) and business associations.
- Reliance on a governance structure – the EDIB – that is (i) horizontal by nature, and (ii) still to be fully operationalised.
- Investments made by Member States in implementing INSPIRE 'as-is' are threatened.

### Provisions (incl. roles and responsibilities)

- A possible new Expert advisory group (e.g. Green Data Advisory Board) or a sub-group of an existing expert group with a focus on public, private and citizen-generated environmental data, with this possible role:
  - Definition and endorsement of specifications for the integration of new data sources in the data space, including data quality assurance measures;
  - Choice of interoperability standards for environmental data exchange.
- Mandate defining the responsibilities of Green Data Intermediaries and their role for combining public, private and business sector data.
- Establishment of a register of specialisation and recognition of Green Data Intermediaries.

### Pathway 3b: Pathway 2 + alignment with Copernicus and Horizon programmes

This scenario builds on the legal provisions of: (i) the Data Governance Act and (ii) the Horizon Europe and [Copernicus](#) work programmes, tailoring the provisions of the former while embracing the data products generated by the latter to the needs of the broad spectrum of environmentally related use cases. It is incremental, includes all the provisions of Pathway 2, and extends the data scope **beyond public sector data** with the inclusion of:

- **Citizen-Generated Data (CGD)** shared on altruistic grounds and regulated by the DGA such as citizen science, collaborative citizen sensing, social media data and volunteered geographic information data.
- **Findable, Accessible, Interoperable, Reusable (FAIR)** research data made available by Horizon Europe projects.

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- **Earth Observation** (EO, in-situ and remotely-sensed) data produced by the different Copernicus services, including Sentinel missions data.

The pathway brings together a different set of prominent data sources for the environment and effectively creates the backbone of the foreseen European Green Deal Data Space.

### Advantages

- New data products and services are obtained through the combination of multiple data sources, benefitting from the increased frequency of update and better granularity of the data coming from citizens when compared to public sector data, and the harmonised and high-frequency data derived from Copernicus.
- The pathway leverages on the multiple datasets generated by Horizon Europe EU-funded projects, which are openly-licensed and FAIR by default.
- An inclusive approach is fostered, which allows citizens to participate in environmental data collection and utilisation practices.
- Cross-fertilisation is promoted between the [EuroGEO](#) (the European regional node of the [Group on Earth Observations](#)), INSPIRE and Copernicus communities.

### Disadvantages

- Alignment is still needed with the Data Act and non-personal business data, which are excluded from the scope.
- The need arises to establish a new complex governance structure that should bring together very different communities with different profiles and interests, e.g. RDAOs, Copernicus and EuroGEO.
- There is a partial dependence on a governance structure – the EDIB – that is (i) horizontal by nature, and (ii) still to be fully operationalised.
- Investments made by Member States in implementing INSPIRE ‘as-is’ are threatened.

### Provisions (incl. roles and responsibilities)

- A possible new Expert advisory group (e.g. Green Data Advisory Board) or a sub-group of an existing expert group with a focus on public, research, EO and citizen-generated environmental data, with this possible role:
  - Definition and endorsement of specifications for the integration of new data sources in the data space, including data quality assurance measures;
  - Adoption of interoperability standards for environmental data exchange.
- Mandate defining the responsibilities of Green Data Intermediaries and their role for combining public, private and business sector data.
- Establishment of a register of specialisation and recognition of Green Data Intermediaries.

### Pathway 4: Union of Pathways 3a + 3b

This scenario would join together the legal provisions and the data sources included in Pathways 3a and 3b, considering both the horizontal legal instruments (Data Act and Data Governance Act) and the full set of data sources linked to the environment, i.e. public sector data, private sector data, CGD, FAIR research data and EO data. This pathway might turn out to be overly complex and too ambitious.

## Conclusions

The different policy pathways presented in this brief represent an initial set of opinions that stem from the long-term commitment of the JRC in scientific support to environmental data sharing policies, in particular the work on the technical coordination of INSPIRE. They are conceptualised in order to feed into the ongoing debate on the future of **environmental data sharing legislation in the EU**, and in particular the foreseen common European Green Deal Data Space.

From the authors’ perspective, in any of the possible futures, INSPIRE (even with its limitations and specificities) provides a **very concrete foundation** for the common European Green Deal Data Space, both from a governance and a technical perspective. At the same time technological advancements, novel prominent data sources and new policy developments urge a comprehensive **modernisation** of the environmental data sharing framework that goes well beyond the INSPIRE provisions. The ultimate goal is the establishment of an **inclusive, trustworthy and user-centred ecosystem** that, acting within the boundaries of EU legislation, incorporating software components, technical guidelines and artefacts and leveraging networks of stakeholders and effective governance models, generates value for all actors in the data economy.

### REFERENCES

- [1] Kotsev, A., Minghini, M., Cetl, V., Penninga, F., Robbrecht, J., & Lutz, M., INSPIRE: A Public Sector Contribution to the European Green Deal Data Space, EUR 30832 EN, Publications Office of the European Union, 2021, doi:10.2760/062896.
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