



Pilot project fiche:

THE DANUBE REFERENCE DATA AND SERVICE INFRASTRUCTURE (DRDSI)

1. RATIONALE AND OBJECTIVES

The EU Strategy for the Danube Region (EUSDR) relies on an integrated approach to encourage better policy development and the alignment of funding and resources through concrete actions and projects. Since the Danube countries share a common territory and face interrelated cross-border issues, the Strategy aims to propose common solutions to the challenges faced by these countries.

However, to propose such solutions, policy-makers need first to be able to access clear and comparable information and understand better the issues involved. Many stakeholders have been collecting data for several years at the regional, national and local levels but at the moment there is still no common access point for harmonised data covering a wide-range of scientific issues and encompassing the whole Danube Region. Now is the time to fill this gap taking advantage of the investment made by Member States to implement INSPIRE and recent progresses on ICT standardisation.

For this reason, the JRC with the support of scientific partners of the Danube countries launched this initiative to develop a Danube data and services infrastructure that will facilitate access to comparable and harmonised scientific data sets on various issues related to the Danube Region. Thanks to its cross-cutting nature, the Danube Reference Data and Services Infrastructure (DRDSI) will contribute to the holistic scientific approach needed to tackle the interrelated and interdependent challenges which the Danube Region is facing.

The DRDSI will contribute to all four vertical priorities of the 'Scientific Support to the Danube Strategy' encompassing data related to each priority:

- **Environment protection** (e.g. data on landscape and biodiversity, flood and droughts risks)
- **Navigability** (e.g. data on river morphology and flood risks)
- **Irrigation and agricultural development** (e.g. data on soils and crops)
- **Energy production** (e.g. data on available energy resources and energy potential)

The DRDSI may also contribute to the transversal priority concerning the development of **Smart Specialisation Strategies** for the Danube Region as it will provide easy access to some of the strategic evidence and intelligence needed to assess the strengths and weaknesses of a region in relation to the design of smart specialisation strategies (e.g. in the energy sector).

The DRDSI was proposed as one of the flagship actions of Priority Area 07 "*To develop the Knowledge Society (research, education and ICT)*" of the EUSDR and is mentioned in the Roadmap for the implementation of this Priority Area and in the implementation report of June 2012 prepared by the coordinators of this priority area.



Related priorities of the JRC Scientific Support to the Danube Strategy initiative:

Environment protection
Navigability
Irrigation and agricultural development
Energy production

Related priority areas of the EUSDR:

PA 1A - Mobility – Waterways (coordinated by Austria and Romania)
PA 02 - Energy (coordinated by Hungary and the Czech Republic)
PA 04 - Water Quality (coordinated by Hungary and Slovakia)
PA 05 - Environmental Risks (coordinated by Hungary and Romania)
PA 06 - Biodiversity, landscapes, quality of air and soils (coordinated by Bavaria and Croatia)
PA 07 - Knowledge society and ICT (coordinated by Slovakia and Serbia)

Policy context and related legislation:

EU reference documents:

[INSPIRE Directive \(2007/02/EC\) and related acts](#)
[PSI Directive \(2003/98/EC\) on the re-use of public sector information](#)
[Commission Decision \(2011/833/EU\) on the reuse of Commission documents](#)
[A Digital Agenda for Europe \(COM/2010/0245\)](#)

Other reference documents:

Roadmap of Priority Area 7 (Knowledge Society and ICT) of the EUSDR
[Implementation Report of Priority Area 7 \(Knowledge Society and ICT\) of the EUSDR](#)

2. PILOT PROJECT DESCRIPTION

The Danube Reference Data and Service Infrastructure (DRDSI) will offer a global view on various data sets covering a wide-range of areas (such as water and soil quality, population, landscapes...etc.) and will encompass the whole Danube Region. The DRSDI will provide access to, and exchange of, quality-documented data and services on large scale projects which will form the key elements of the EU Danube Strategy implementation plan.

The platform will be based on the existing 'Reference Data and Service Infrastructure' (RDSI) which is a JRC standards-based data and information infrastructure for scientists and policy makers. The RDSI supports its stakeholders in finding, accessing and exchanging quality-controlled data and services to develop traceable and trusted information and policies.

To implement the DRDSI pilot project, the JRC will adopt a twin-tracked approach by:

- compiling an inventory of all relevant data on the Danube Region available from existing JRC actions and projects, such as Danube Soil Information System, the European Forest Data Centre, the European Drought Observatory, the European Flood Alert System and the Joint Danube Surveys and making them more easily accessible.
- identifying the gaps and missing elements on key scientific issues related to the priorities of the JRC 'Scientific Support to the Danube Strategy' initiative, and mobilising a network of scientific partners in the Danube Countries to broaden the available data range.

Implementation phases:

The development of the DRDSI will follow a stepwise approach focusing both on short-term delivery and evolutionary principles:

- In the **first phase**, a Danube data repository will be established based on existing data at the JRC. For this purpose, the JRC will compile and document all relevant data on the Danube Region available from existing JRC actions. Data from other relevant EU sources such as EUROSTAT (e.g. population) could also be considered. Additional external data sources (as appropriate) will be considered to address emerging short-term priorities.
- In the **second phase**, the DRSDI will be further implemented and populated with additional external data sources (as appropriate). For this purpose, the gaps and missing elements on key scientific issues will be identified. The JRC will then mobilise a network of scientific partners in the Danube Countries in order to define new projects aiming to gather the relevant data.
- In the **third phase**, the DRSDI will be upgraded to support other priority applications defined and implemented by the JRC and/or its scientific partners. This means that the next generation DRSDI maybe includes specific functionalities to support modelling and scenario analysis. Additionally the DRSDI could be consolidated and its content extended to new areas and emerging priorities.

A first version of the DRDSI with initial operating capability and limited content will be demonstrated in May 2013 whereas the first "hands on" access and use of the Danube Region data accessible through the operational version of the DRDSI by the Danube Region countries (priority area coordinators, involved policy officers, etc.) will be available after the first 12 months period.

Pilot project structure:

The project will comprise the following Work Packages, which correspond to the different sequential development stages of the DRDSI:

◆ DRDSI Design and Development

The existing Reference Data and Services Infrastructure (RDSI) infrastructure will be upgraded to cover specific DRDSI requirements (for example to ensure access to existing JRC or external data repositories). The first DRDSI release will be followed by an evaluation of its functionalities and user interface, resulting in the development of a second release integrating stakeholder's feedback and adding new sources of information and new functionalities.

The resulting system will be deployed and operated at the JRC. Based on the architecture and Quality of Service requirements an investment on the H/W and S/W environments may be necessary. The first release will include search and discovery functionality and viewing capabilities. The second release will add data access (and a preliminary version of data download) capability.

- 1st Release (prototype): February 2013 (for evaluation and feedback)
- 2nd Release (prototype): April 2013 (for use with initial operating capabilities)
- 1st Operational DRSDI: December 2013 (stressing test and deployment in the JRC operational environment)

◆ Inventory of JRC Data and setting-up the DRDSI Data Catalogue

This task involves an inventory of JRC data sources, their documentation with INSPIRE compliant metadata and the setting-up of an interoperable metadata Catalogue. The inventory includes a critical review of existing JRC data sources relevant for the Danube River Basin District (priority data will be identified by all relevant JRC Units). In case of multiple datasets for the same data theme (e.g. river network) close consultation with domain experts will help in identifying which data sets should be selected as reference for the DRDSI. Metadata for discovery and use of data (if not already available) will be created, for all data identified in the inventory, ensuring compliance with the INSPIRE Directive. JRC units should collaborate to

provide elements for the complete creation of metadata. The resulting metadata catalogue will be accessible using Discovery services compliant with the INSPIRE Directive.

- 1st Release (catalogue): April 2013 (priority JRC data only)
- 2nd Release (catalogue): December 2013 (all JRC data resulting from inventory)

◆ **DRDSI Data Access**

JRC data are typically available via online or offline structured or not-structured data repositories. When the inventory will be carried out it will be necessary also to assess online accessibility of the various JRC data sources. The following three cases shall be taken into consideration:

1. For data that are accessible online, the DRDSI will provide a direct link to access the data (interoperability arrangements may have to be established).
2. For data that are stored in off-line structured databases, it will be necessary to assess feasibility for providing direct access either from the data providers or hosted in the DRSDI.
3. For data that are not properly stored or are offline (e.g. CD ROM), such data will be hosted in the DRSDI.

In absence of a clear overview (coming from the planned inventory) it is not possible at this stage to define clear deadlines. In order to provide access to JRC data by April 2013 priority should be given to the first category. If data are to be made publicly available, existing licensing agreements should be considered (e.g. satellite data could be accessible only for scientific purpose and under the condition to sign a user licence).

◆ **Inventory of external sources and collaboration agreement**

This task involves an inventory of external data sources including the evaluation of their documentation (metadata) and data access availability (e.g. compliance with INSPIRE network services).

Relevant organisations (e.g. ICPDR) and projects (e.g. ENVIROGrids) have created important data repositories and some of them already provide online access (for viewing and/or download). The main goal of the DRDSI can only be achieved by combining JRC data and data available from external providers. Also data available at national, local or academic level should be considered. This activity aims to identify relevant data sources to be made accessible through the DRDSI by interoperability arrangements to be established (preference to be given to INSPIRE compliant services). This activity implies three sub-tasks:

- Inventory of relevant external data. Identification of relevant data sources to be made accessible through the DRDSI;
- Assessment of technical accessibility. Need to establish interoperability arrangements for on line data access (view and/or download). Preference will be given to INSPIRE compliant services;
- Collaboration agreements. A partnership should be established with contributing organisations to agree on data sharing. This could be based on formal or informal agreements.

This activity should start early to avoid duplication and to better exploit synergies with existing and new initiatives. To better coordinate with MS an Advisory Board should be established composed by appointed members of the Danube Region MSs. The Board should help in identifying relevant initiatives and establishing partnerships.

◆ **New Data ingestion and link with other Danube flagship clusters**

New data will become available through other flagship clusters developed in the framework of the Scientific Support to the Danube Strategy and through specific activities that will contribute directly to the DRSDI as exemplified below.

An exploratory project will be undertaken with Bulgaria and Romania concerning the use of Land Parcel data gathered over their Danube area as part of the IACS (Integrated Agricultural Control System) related to the management of the Common Agricultural Policy. The idea is to see how this detailed data can benefit the goals of the Danube strategy, with a focus upon irrigation and agricultural development. A first output is likely to be an update of land cover at 1:25,000 scale. This 'bottom up' approach, using data available at

field level for this particular segment of the Danube region, will complement the other data collection initiatives within the DRDSI, and if successful may later be expanded to other partners and areas of the region.

◆ **DRDSI evolution**

The DRDSI will be upgraded to support priority applications defined in other flagship clusters requiring additional functionalities to be implemented (e.g. to support modelling and scenario analysis).

3. OUTPUTS AND BENEFICIARIES

Product(s):

Danube Common Data Platform, accessible to decision-makers and other relevant stakeholders of the Danube Region

Potentially interested actors and/or beneficiaries of the research results:

EU institutions and bodies

National and regional governments of the Danube Region

Other stakeholders of the Danube Region

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