



Knowledge Inventory for hydrogeology research



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KINDRA project overview: a knowledge inventory for hydrogeology research

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Project partners



including:

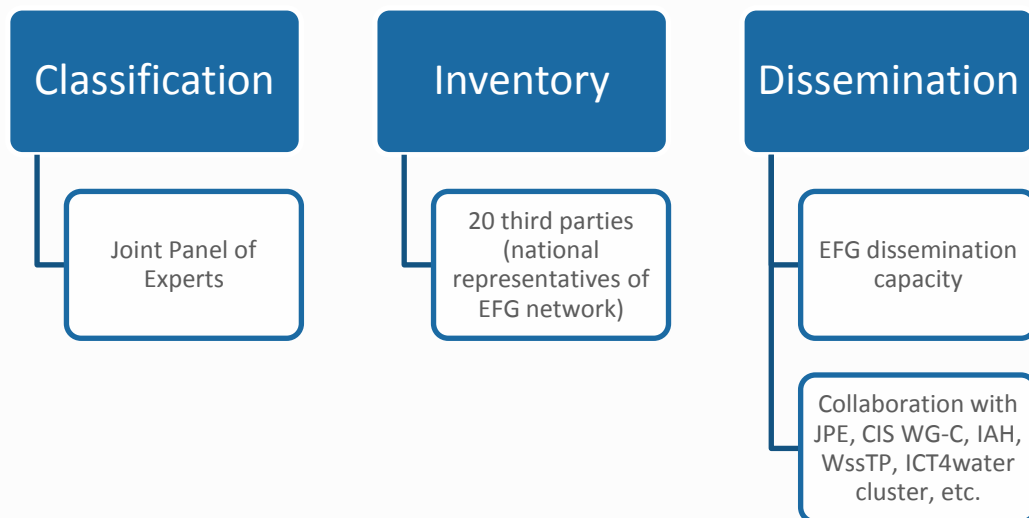
- A Joint Panel of Experts (10 members)
- 20 third parties (associations acting as national members of EFG network)

Vision of the project

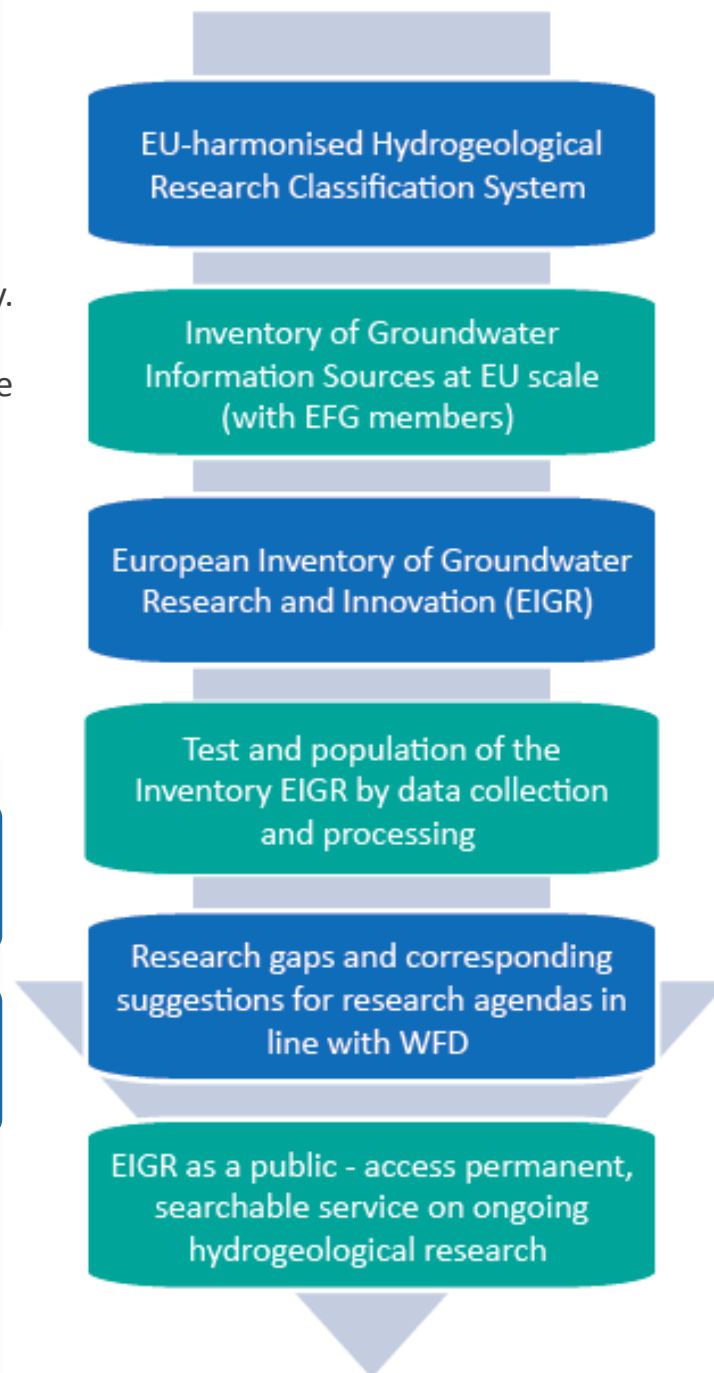
A project on groundwater research inventory and classification to make groundwater visible

Raising awareness on the importance of groundwater is our priority. KINDRA will work together/or in close collaboration with the technical and scientific community, stakeholder groups and with the general public.

Who can help us?



All technical content and results will be finally adapted into outreach materials that will help the general public to understand the *relevance of groundwater in daily life*.

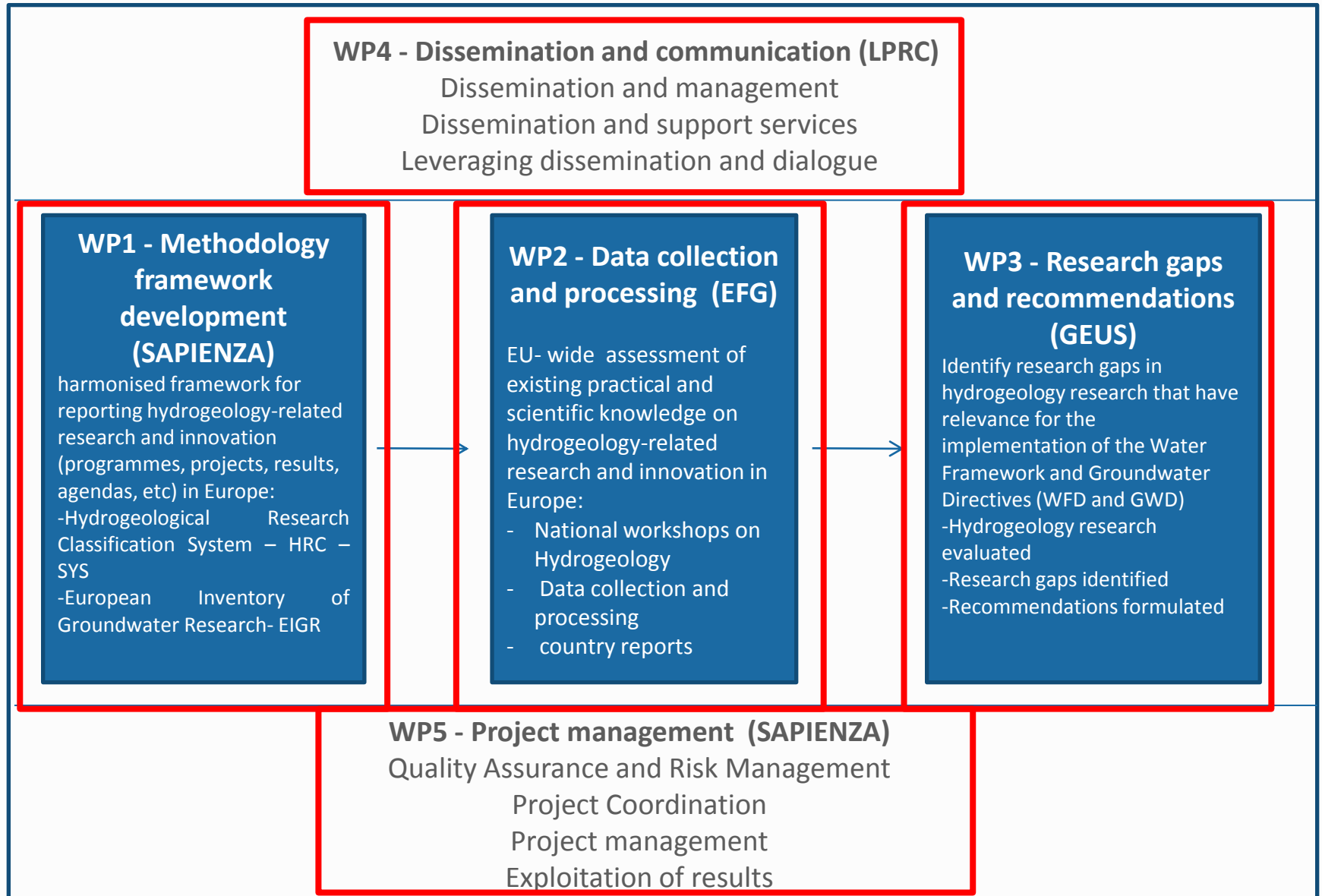


Aims of the project (2015-2017)

To create an inventory of GW knowledge-base and then use the inventory to identify critical research challenges, in line with the implementation of the WFD and new innovation areas within integrated water resources management based on the latest research.

- ✓ Create a uniform EU-harmonised categorisation approach / terminology for reporting groundwater research (a Hydrogeological Research Classification System – HRC-SYS).
- ✓ Carry out EU-wide assessment of existing practical and scientific knowledge (using the developed HRC-SYS) focusing on EU, national, regional, international and EU-third party scientific activities
- ✓ Create a European Inventory of Groundwater Research and Innovation (EIGR). This register will be supported by a web-service that will be searchable by selected key-words and will support users with query functions for statistics, diagrams, and others concise data elaboration.
- ✓ Use the data in the register and the developed analytical tools (qualitative/quantitative) to assess the performance of key ongoing EU, national, regional, international and EU-third party hydrogeological scientific and innovation activities and results.
- ✓ Compare the results with existing recommendations and position papers, outcomes of past Projects workshops, recommendations by the EIP on Water /WssTP
- ✓ Define research gaps and corresponding suggestions for research agendas in line with WFD
- ✓ Deploy the Register as a public-access service, to be used as a permanent, searchable service on ongoing hydrogeological research and innovation

Project structure and where we are



WP4 - Dissemination synergies and strategies

- ✓ Our network is available for interacting with other groups, for dissemination and common initiatives (joint workshops, shared non-technical documents, etc.)
- ✓ EC requires coordination among all Water4a projects (WIDEST, WaterInnEU, FREEWAT and BlueSCities); and with 10 previous « water » FP7 projects federated in the ICT4water cluster
- ✓ We are interested to have contacts with stakeholders, EIP water action groups, JRC water, water JPI, scientific associations (IAH, EGU), water networks (as WssTP and others), SMEs, etc.
- ✓ Knowing the results of past and on-going project on groundwater is necessary for us to build a successful project
- ✓ We are looking for information to help us to build and populate our inventory: archives, monitoring databases, guidance and best practice documents, etc.
- ✓ We are performing a preliminary inventory of information sources (by EFG members) and a stakeholder analysis by a survey to provide a continuous assessment monitoring of end-user interest
- ✓ We activated accounts on main social media networks
- ✓ The EFG and IAH communities are reached by their newsletters



WP1 – Classification (HRC-SYS): keywords selection

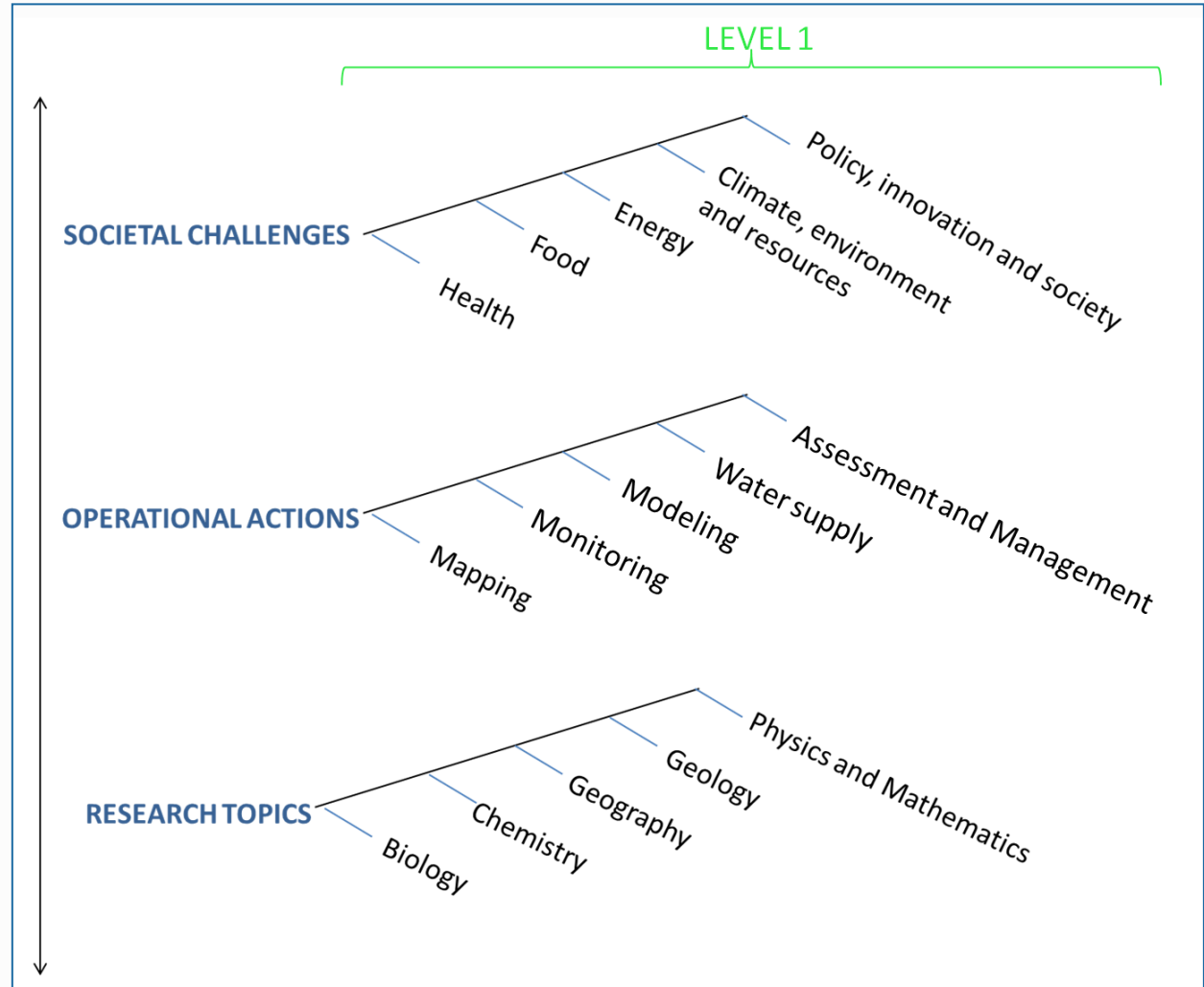
For developing the common terminology on which to base the EIGR through the HRC-SYS, keywords characterizing research on groundwater have been identified following two approaches: (1) from the most important ***EU directives and documents***, i.e. the ***WFD, GWD and The Blueprint to Safeguard Europe's Water Resources***, and (2) from ***groundwater related scientific literature***, which has been fundamental for identifying relationships and intersections between topics, themes and activities.

To assess the importance and pertinence of the keywords, these have been ranked by performing searches via the Web of Science, Scopus and Google Scholar search engines.

WP1 – Classification (HRC-SYS): hierarchy and categories

The complete merged list of keywords consisting of about 200 terms has been organized in a **tree hierarchy**, identifying **three main categories**: Societal Challenges (SC), Operational Actions (OA) and Research Topics (RT).

In each of these three categories, **5 overarching groups** have been defined for easy overview of main research areas, representing level 1. All identified keywords have been categorized into one of these overarching group in up to three levels where appropriate.



WP1 – Classification (HRC-SYS): CUBE & related 2D diagrams

The classification system previews the interaction among the three main categories through a **3D approach**, where along each axis the 5 overarching groups are indicated.

This also results in a **2D representation** for each of the Societal Challenges, where Operational Actions and Research Topics intersect in a 5x5 matrix.

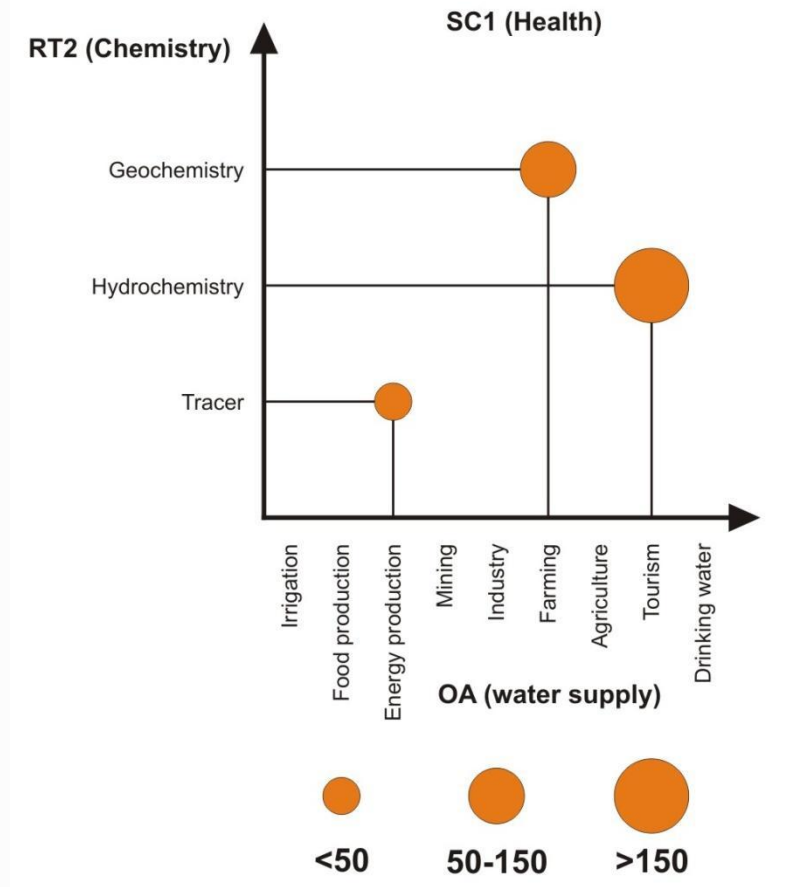
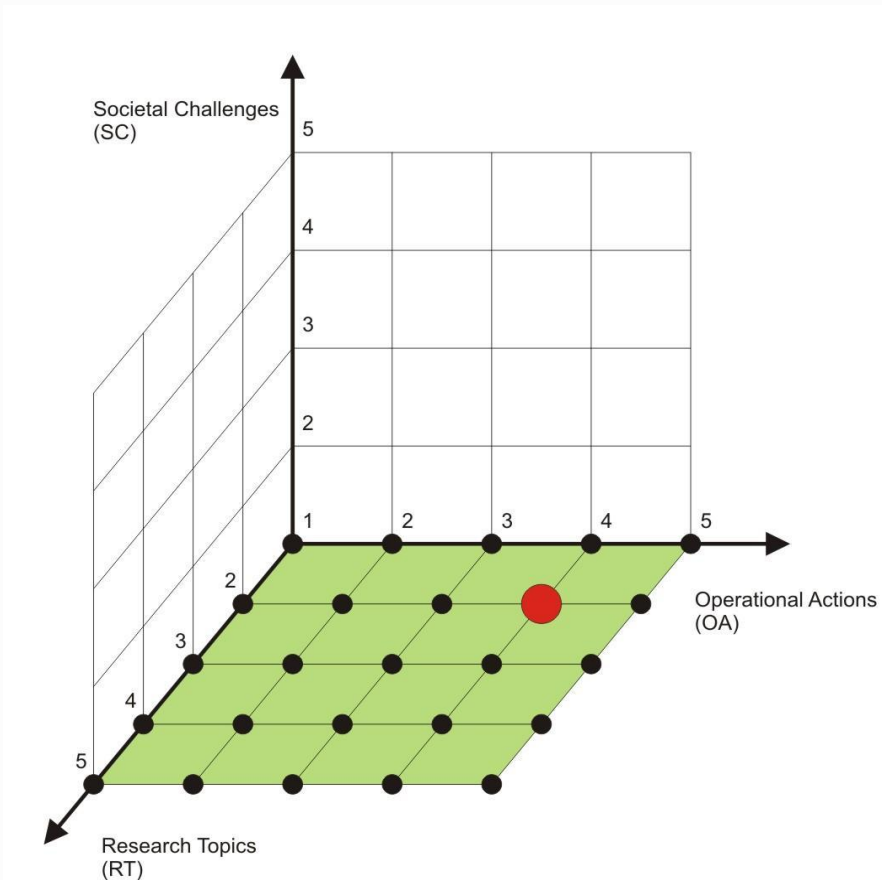


Table 2.1 *The overarching groups, for an easy overview of the main research dimensions:*

Societal Challenges	Operational Actions	Research Topics
<ol style="list-style-type: none"> 1. Health 2. Food 3. Energy 4. Climate, environment and resources 5. Policy, innovation and society 	<ol style="list-style-type: none"> 1. Mapping 2. Monitoring 3. Modelling 4. Water supply 5. Assessment and Management 	<ol style="list-style-type: none"> 1. Biology 2. Chemistry 3. Geography 4. Geology 5. Physics and Mathematics

3D conceptual illustration of main categories of groundwater research classification and scientific output

Societal challenges

Policy & innovation

Climate & environ.

Energy

food

health

Mapping

monitoring

modelling

Water supply

Operational actions

Biology

Chemistry

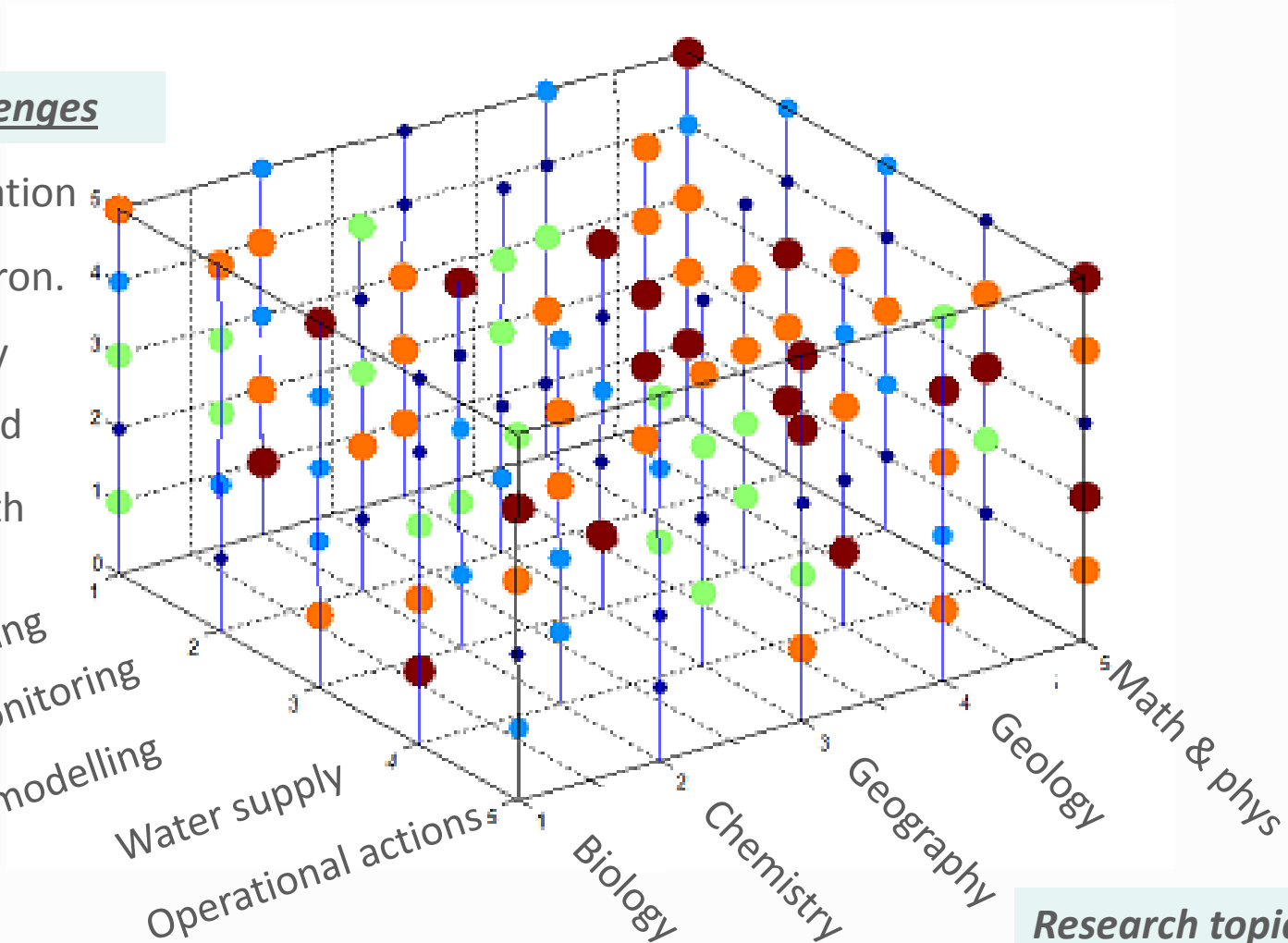
Geography

Geology

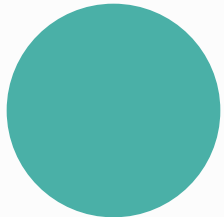
Math & phys

Research topics

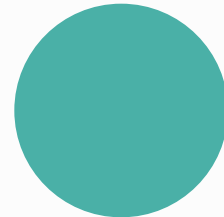
Operational actions



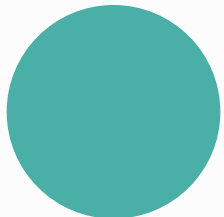
Resource types for population of the EIGR



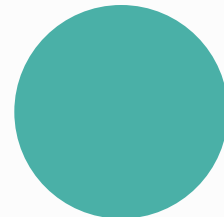
**Research and applied
research projects (e.g. EU
and Interreg projects)**



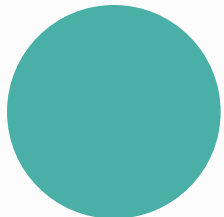
**Technical reports and
guidances**



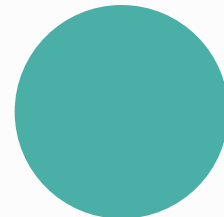
**Surveys including relevant
data and maps**



Books and book chapters



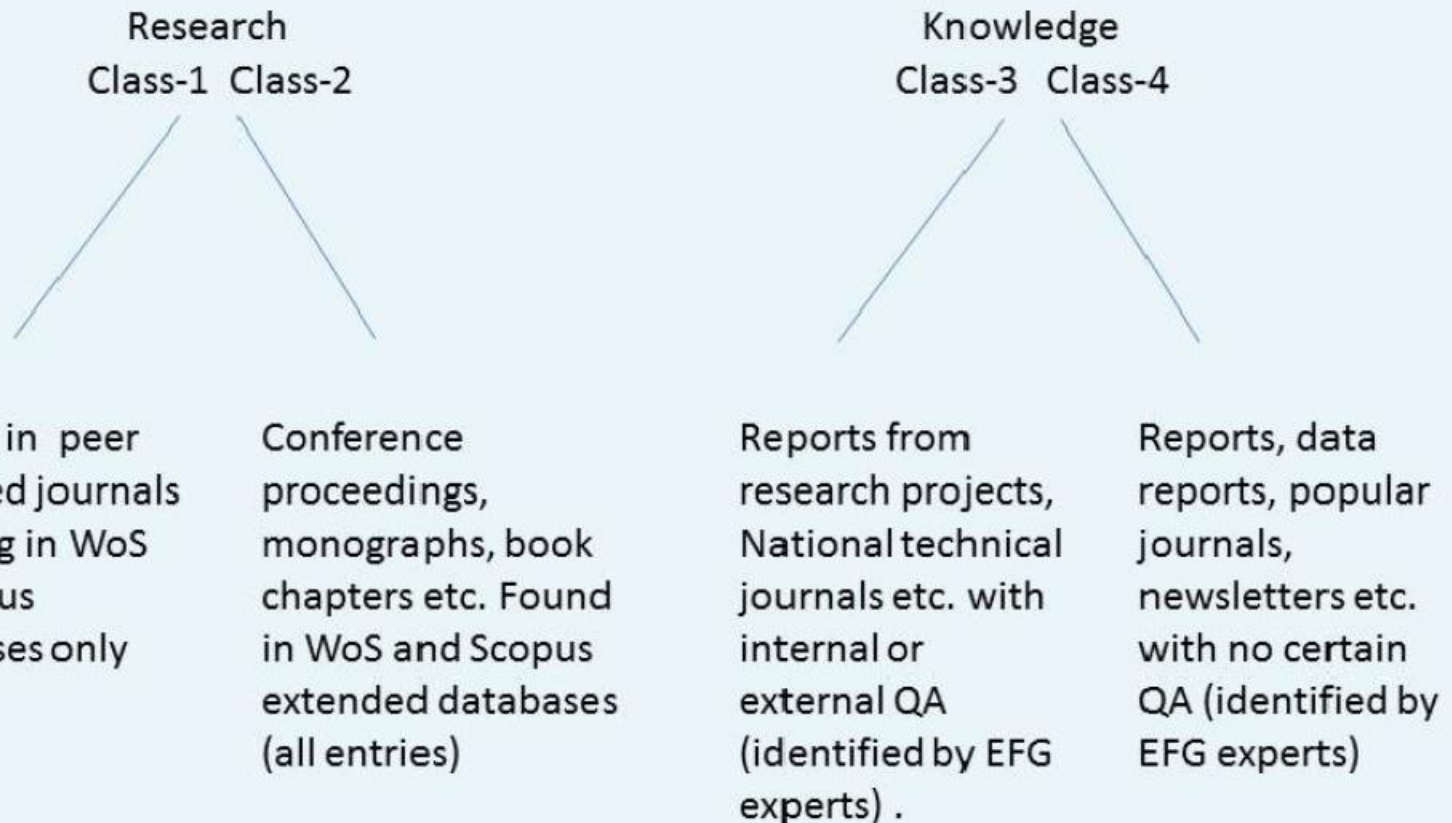
**Consulting reports for
ministries and other
authorities**



Monographs etc., etc.,

Classification of ‘research’ and ‘knowledge’ based on the degree of Quality Assurance

Definition of research and knowledge classes 1 to 4.



European Inventory of groundwater research (EIGR)

The proposed main procedure for populating the EIGR can be resumed as follows:

- I) - classify research and knowledge products (papers, reports, projects, maps etc.) into the five overarching categories of the Societal Challenges, Operational Actions and Research Topics, and identify appropriate keywords defined in the HRC-SYS classification under the overarching categories, for detailed classification into the HRC-SYS (CUBE);
- II) - by using the research and knowledge classification criteria place the resource in the correct place inside the four peer review / quality assurance classes in the EIGR;

NOTE!

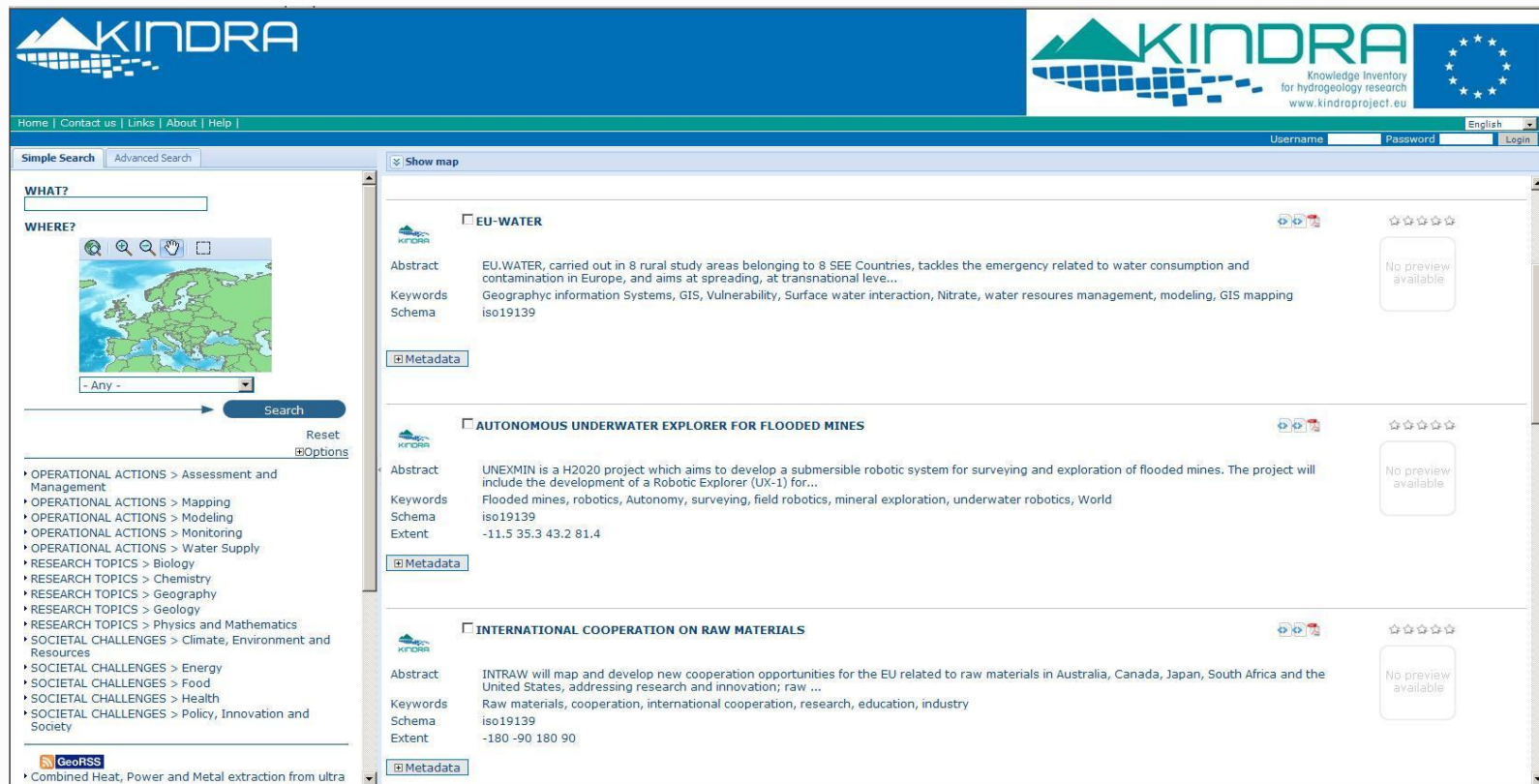
The actual data or publications **are not stored**, but rather the metadata describing the type of information (for instance, a paper/report /map/database), and if possible with a link to where the information can be retrieved.

WP1 – Inventory (EIGR)

The scopes of the EIGR are the following:

- for insertion of information pertaining to groundwater research and other available knowledge by the National Experts of the European Federation of Geologists (EFG);
- for consultation during and after the project by people and organizations dealing with groundwater research, but also possibly by non experts;
- for analysing collected and stored information to identify trends, challenges and gaps in groundwater research, by the KINDRA partners.

The EIGR is intended to be a permanent resource, publicly available after the end of the KINDRA project.



The screenshot displays the KINDRA website interface. The header features the KINDRA logo and the text "Knowledge Inventory for hydrogeology research www.kindraproject.eu". Below the header is a navigation bar with links: Home | Contact us | Links | About | Help |. The main content area is divided into a left sidebar and a main panel. The sidebar contains a "Simple Search" section with a "WHAT?" input field and a "WHERE?" map of Europe. Below the map is a "Search" button and a "Reset" button. The main panel displays a list of projects under the heading "EU-WATER". Each project entry includes an abstract, keywords, schema, and extent. The projects listed are "EU-WATER", "AUTONOMOUS UNDERWATER EXPLORER FOR FLOODED MINES", and "INTERNATIONAL COOPERATION ON RAW MATERIALS". The "EU-WATER" project abstract states: "EU.WATER, carried out in 8 rural study areas belonging to 8 SEE Countries, tackles the emergency related to water consumption and contamination in Europe, and aims at spreading, at transnational level...". The "AUTONOMOUS UNDERWATER EXPLORER FOR FLOODED MINES" project abstract states: "UNEXMIN is a H2020 project which aims to develop a submersible robotic system for surveying and exploration of flooded mines. The project will include the development of a Robotic Explorer (UX-1) for...". The "INTERNATIONAL COOPERATION ON RAW MATERIALS" project abstract states: "INTRAW will map and develop new cooperation opportunities for the EU related to raw materials in Australia, Canada, Japan, South Africa and the United States, addressing research and innovation; raw ...". The sidebar also contains a "GeoRSS" section with a link to "Combined Heat, Power and Metal extraction from ultra".

What are the "added values" of KINDRA?

- i) KINDRA and its inventory are exclusively dedicated to "groundwater", differently from other databases
- ii) Combining research and knowledge it enables to merge academic and practitioner communities
- iii) A dedicated classification system has been created to classify your product, paper, project, report, database, etc.
- iv) Database analysis will be used for EU policy support
- v) It is intended BY and FROM geologists and "groundwater" people, to promote networking and enlarge our community
- vi) It will be a international access to national knowledge sources

Greek National Workshop

- i) Will be held as a parallel activity at the 14th International Conference of the Geological Society of Greece (Thessaloniki 25-27 of May 2016) www.ege2016.gr
- ii) A detailed overview regarding the project progression will be made
- iii) Presentation of the European Inventory of Groundwater Research and Innovation (EIGR) tool and detailed directions of its functions

Thank you very much for
your attention!!

<http://www.kindraproject.eu/>

<http://kindra.kindraproject.eu:8080/geonetwork/srv/eng/main.home>