

Panel discussion

02.-05. May 2023

SDG and EO

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European Topic Center
Data integration and Digitalisation



A new Geoinformation Ecosystem and the digital transformation

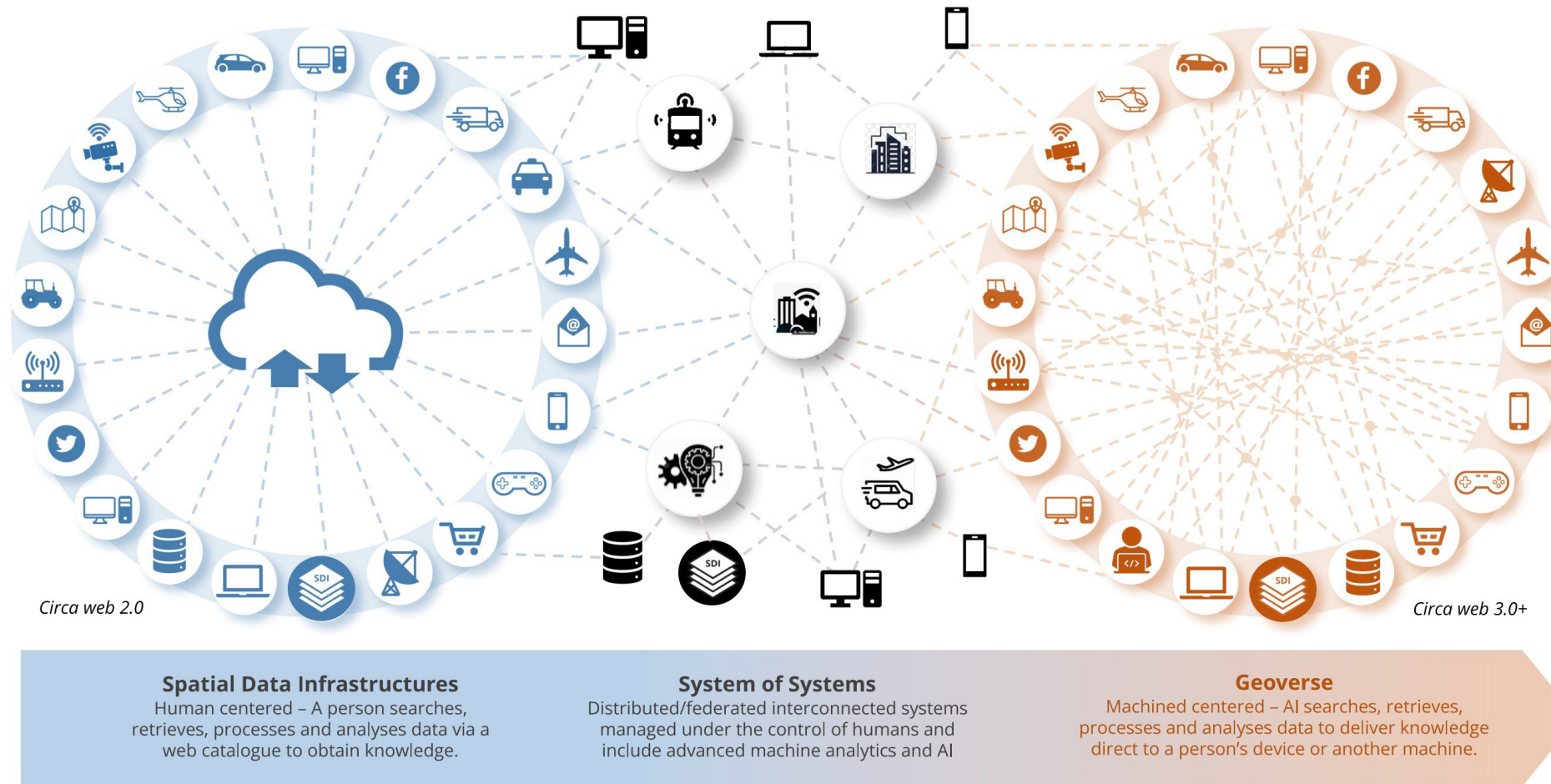


Figure 3. The future geospatial information ecosystem comprising SDIs, SoS and the Geoverse.

https://ggim.un.org/meetings/GGIM-committee/12th-Session/documents/Future_Geospatial_Information_Ecosystem_Discussion_Paper_July2022.pdf



Global Statistical Geospatial Framework

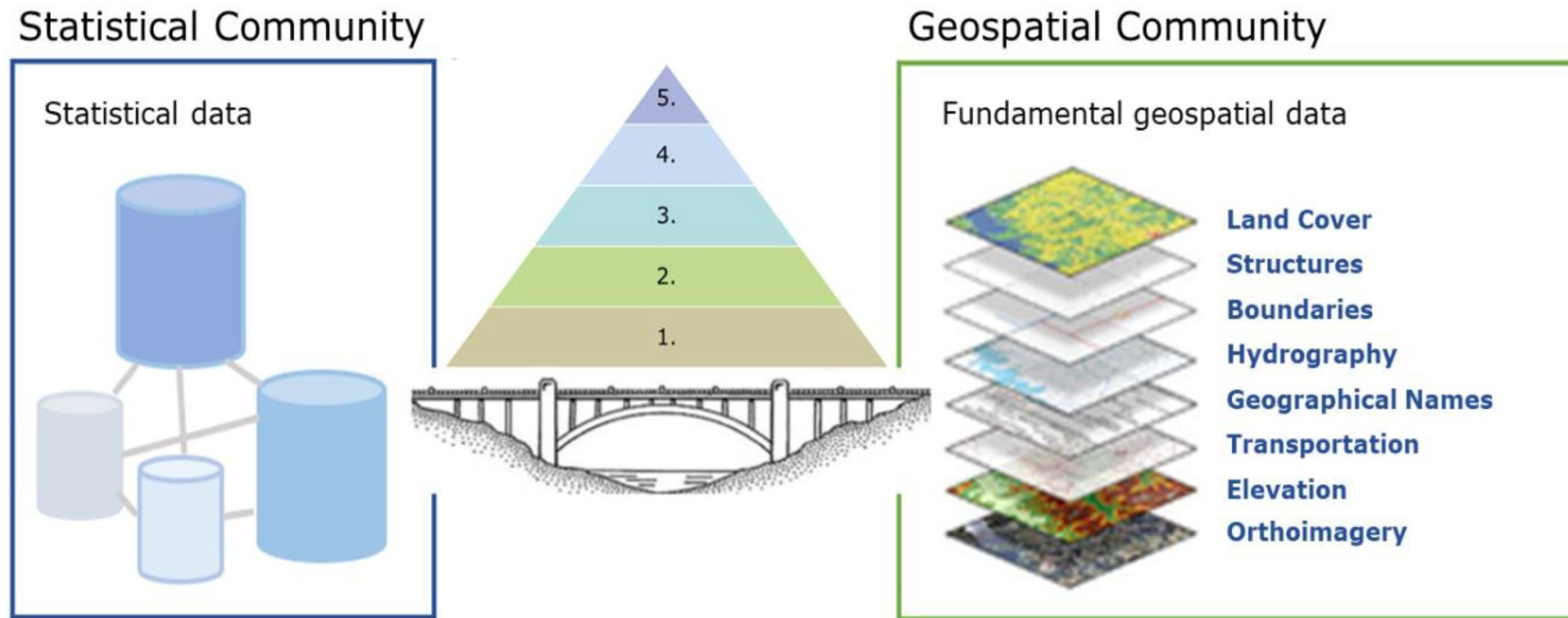


Figure 2. The GSGF aims to act as a bridge between the statistical and geospatial communities (derived from Brady, M., 2015).

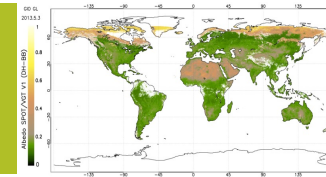
https://www.efgs.info/wp-content/uploads/2022/03/GSGF_Europe.pdf



Copernicus Land Monitoring Service portfolio



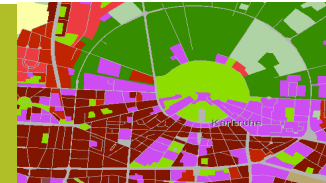
Systematic Biophysical Monitoring



Land Cover & Land Use mapping



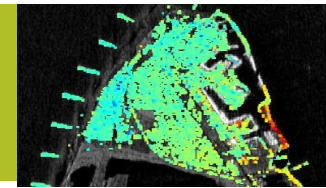
Thematic hotspot mapping



Reference data



Ground Motion Service



Source: European Environment Agency



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Earth observation and SDGs

This table indicates alignments of the Goals with specific types of Earth observations and geospatial information.

Figure 2



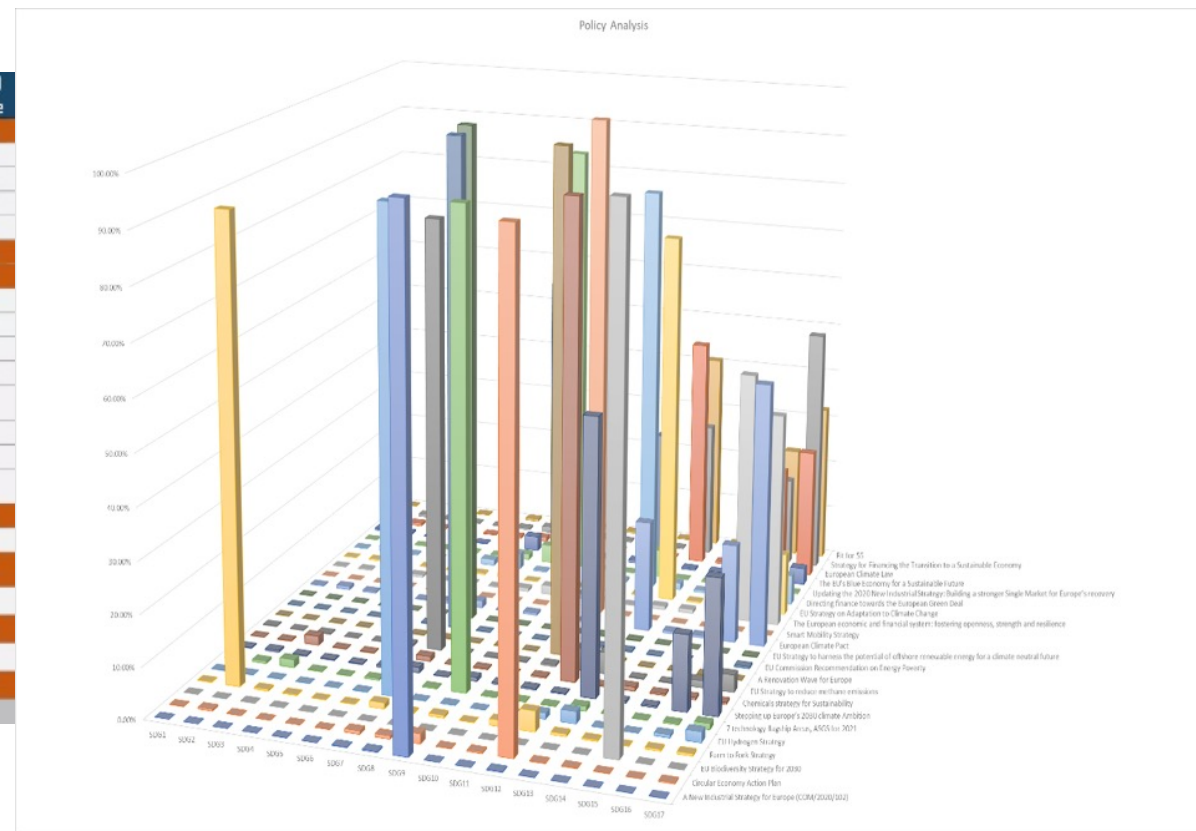
	Population distribution	Cities and infrastructure mapping	Elevation and topography	Land cover and use mapping	Oceanographic observations	Hydrological and water quality observations	Atmospheric and air quality monitoring	Biodiversity and ecosystem observations	Agricultural monitoring	Hazards, disasters and environmental impact monitoring
1 No poverty										
2 Zero hunger										
3 Good health and well-being										
4 Quality education										
5 Gender equality										
6 Clean water and sanitation										
7 Affordable and clean energy										
8 Decent work and economic growth										
9 Industry, innovation and infrastructure										
10 Reduced inequalities										
11 Sustainable cities and communities										
12 Responsible consumption and production										
13 Climate action										
14 Life below water										
15 Life on land										
16 Peace, justice and strong institutions										
17 Partnerships for the goals										



Similarities of the European Green Deal and SDGs

Connection of the European Green Deal to the 17 SDGs

	SDG 1	SDG 2	SDG 3	SDG 4	SDG 5	SDG 6	SDG 7	SDG 8	SDG 9	SDG 10	SDG 11	SDG 12	SDG 13	SDG 14	SDG 15	SDG 16	SDG 17	Total Score	
A New Industrial Strategy for Europe	1	2	1	2	0	0	3	2	3	0	1	2	2	1	2	2	2	2	26
Circular Economy Action Plan	0	2	1	0	0	2	2	2	3	2	0	3	2	2	2	2	0	0	23
EU Biodiversity Strategy for 2030	0	2	2	1	1	0	2	2	1	1	0	2	2	2	3	3	0	2	24
Farm to Fork Strategy	2	3	2	0	0	0	2	2	1	2	0	3	2	2	2	0	1	24	
EU Hydrogen Strategy	1	0	0	2	0	0	3	2	3	1	2	2	3	0	0	2	1	22	
7 technology flagship Areas, ASGS for 2021	0	0	2	1	1	0	2	3	3	3	3	2	2	0	1	2	1	26	
Stepping up Europe's 2030 climate Ambition	0	0	2	1	0	0	3	2	3	3	2	3	3	1	2	0	0	25	
Chemicals strategy for Sustainability	0	1	3	0	0	0	1	0	3	0	1	2	3	3	3	1	0	21	
EU Strategy to reduce methane emissions	1	3	1	1	0	0	2	1	2	0	1	2	1	1	1	1	1	19	
A Renovation Wave for Europe	1	0	0	1	0	0	3	1	2	0	3	2	3	1	1	1	1	20	
EU Commission Recommendation on Energy Poverty	3	0	0	0	0	0	2	2	0	3	1	1	2	0	0	0	0	14	
EU Strategy to harness the potential of offshore renewable energy for a climate neutral future	0	0	0	1	0	0	3	2	3	0	2	1	3	2	0	2	2	21	
European Climate Pact	0	2	1	2	1	0	0	1	2	1	2	2	3	2	2	0	0	21	
Smart Mobility Strategy	0	1	2	0	0	0	3	0	3	2	2	2	3	2	0	0	1	21	
The European economic and financial system: fostering openness, strength and resilience	0	0	1	0	0	0	2	2	2	1	0	1	1	0	1	3	3	17	
EU Strategy on Adaptation to Climate Change	2	2	2	1	1	3	2	3	3	2	3	1	3	2	2	2	2	36	
Directing finance towards the European Green Deal	0	0	0	0	0	0	0	2	0	2	0	2	3	1	1	0	0	11	
Updating the 2020 New Industrial Strategy: Building a stronger Single Market for Europe's recovery	1	2	1	2	0	0	3	2	3	0	1	2	2	1	2	2	2	26	
The EU's Blue Economy for a Sustainable Future	0	2	0	1	1	2	2	1	1	0	2	2	2	3	0	0	1	20	
European Climate Law	0	2	2	0	0	2	2	2	2	2	0	2	3	2	2	0	2	25	
Strategy for Financing the Transition to a Sustainable Economy	0	0	0	0	0	1	1	3	3	3	1	1	2	1	2	3	2	23	
Fit for 55	0	0	1	1	0	1	3	2	3	3	3	3	3	0	2	0	2	27	
Total Score	12	24	24	17	5	11	46	39	49	31	30	43	53	30	31	21	26		



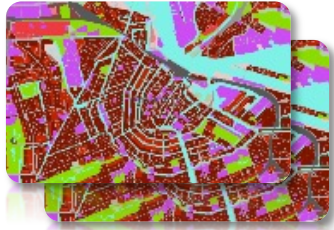
Graphical representation of the similarity scores calculated by the Deep Learning model

<https://egd-report.unsdsn.org/european-green-deal-policies-and-sustainability/>



Priority area monitoring

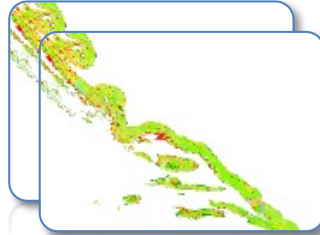
Urban Atlas
2006-12-18



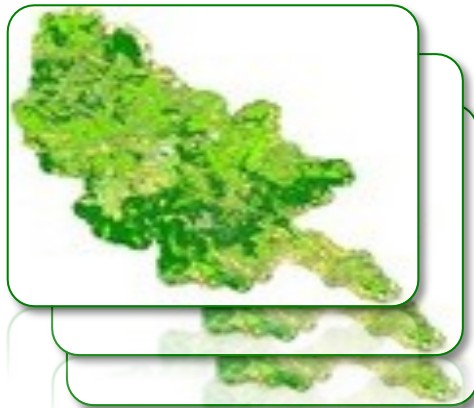
Riparian Zones
2012-18



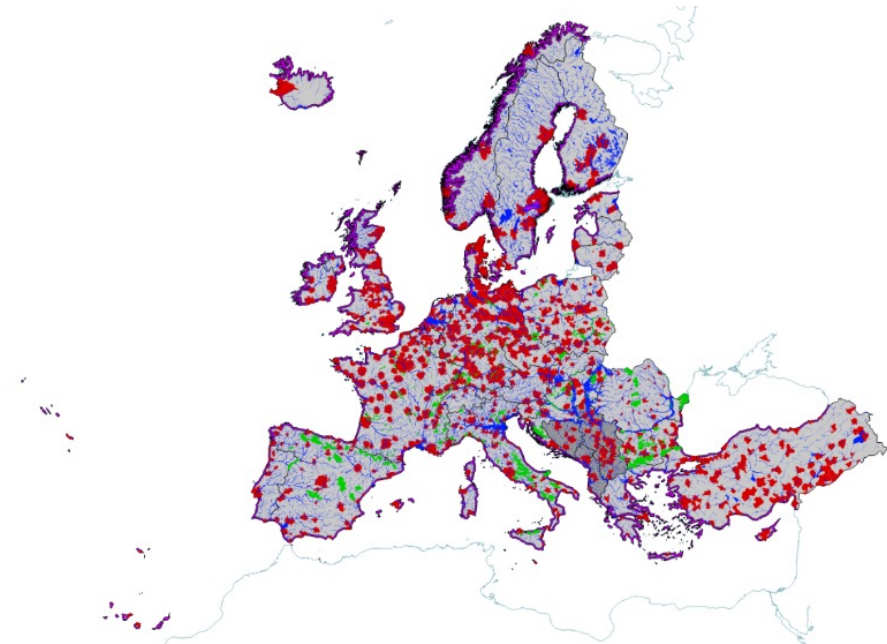
Coastal Zones
2012-18



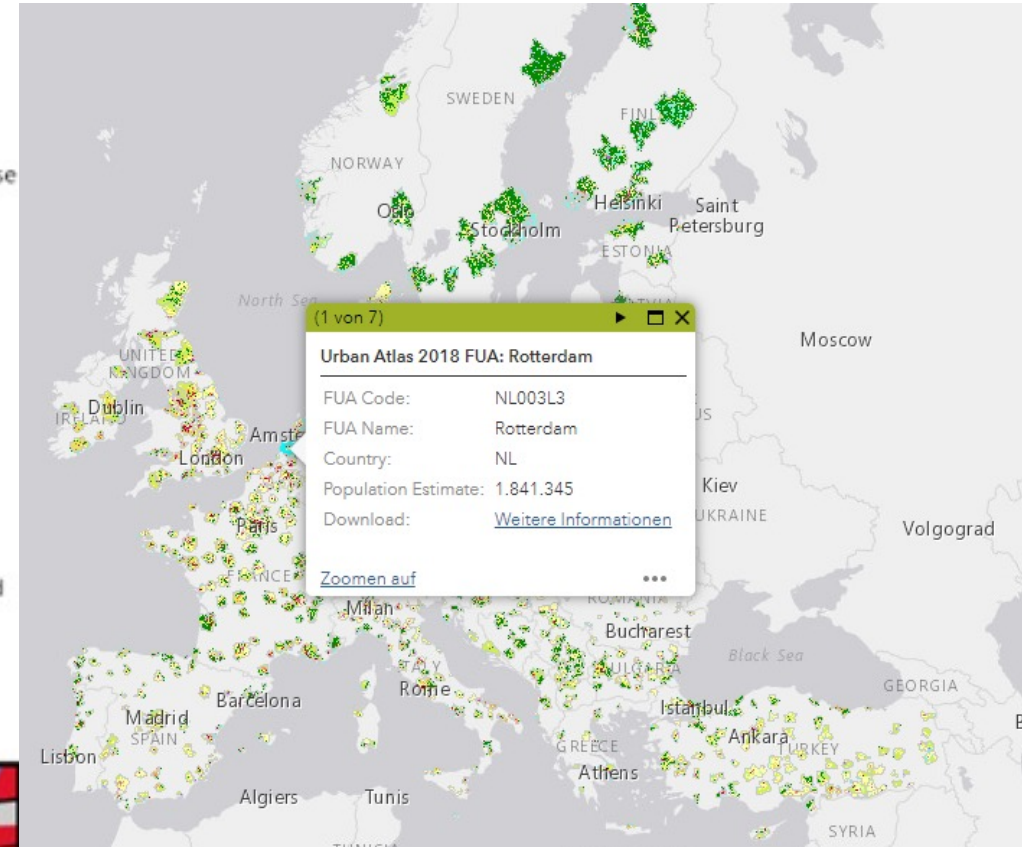
N2K
2006-12-18



- Vector based VHR LC/LU mapping of priority areas
- MMU 0.5 ha
- Tailored nomenclature
- 6/3 year cycles: status and change mapping



Local Climate Zones for European cities based on Urban Atlas

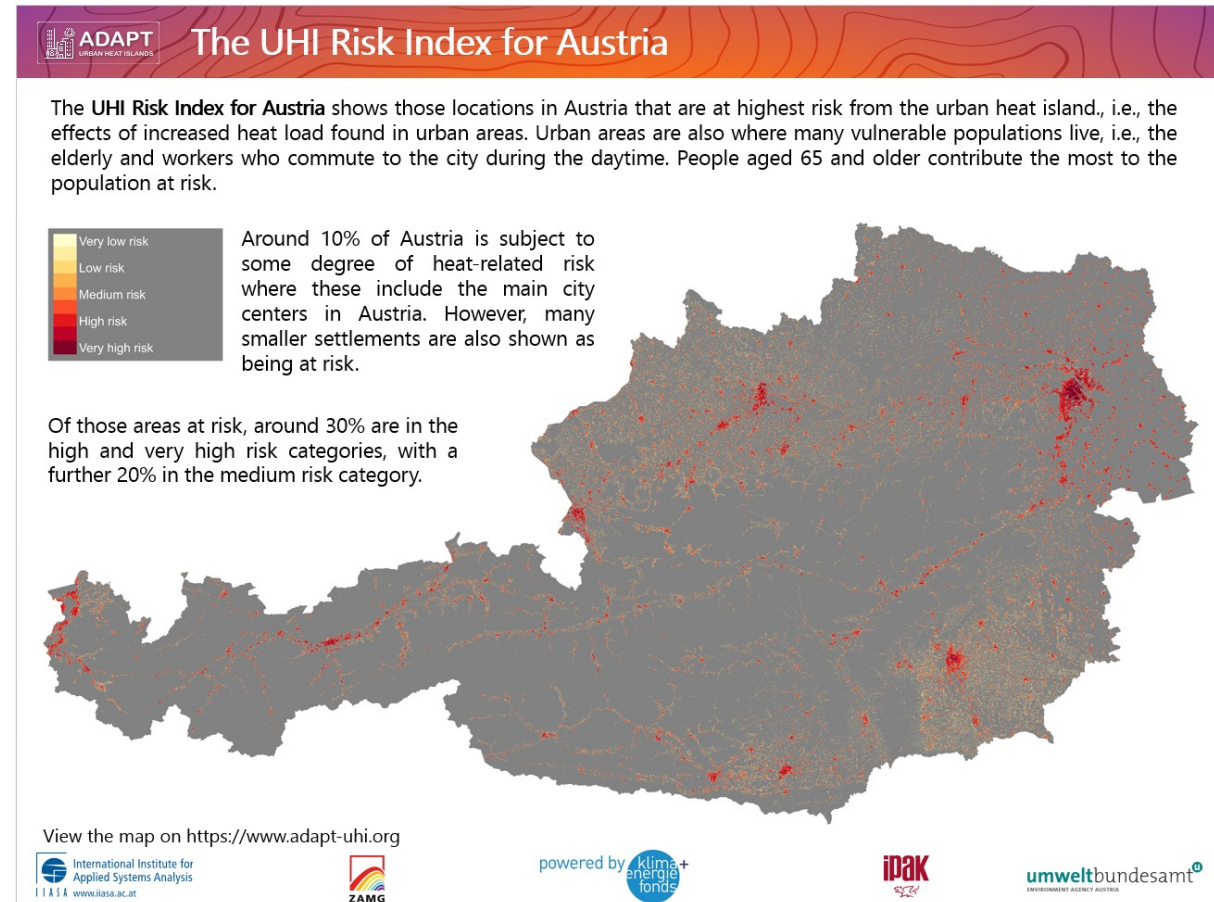
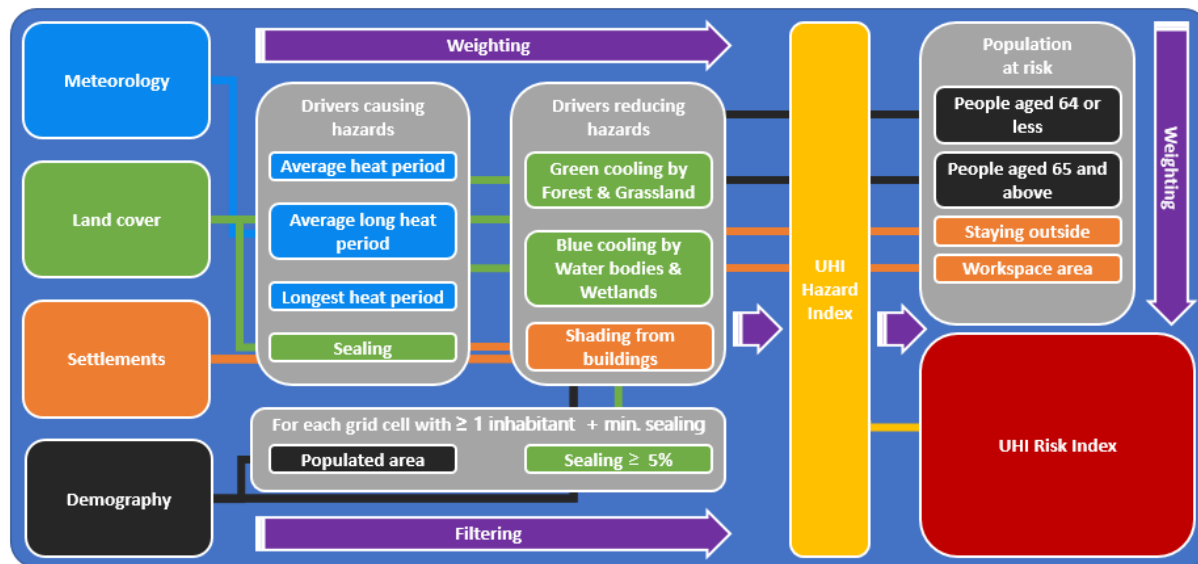


Adapt UHI

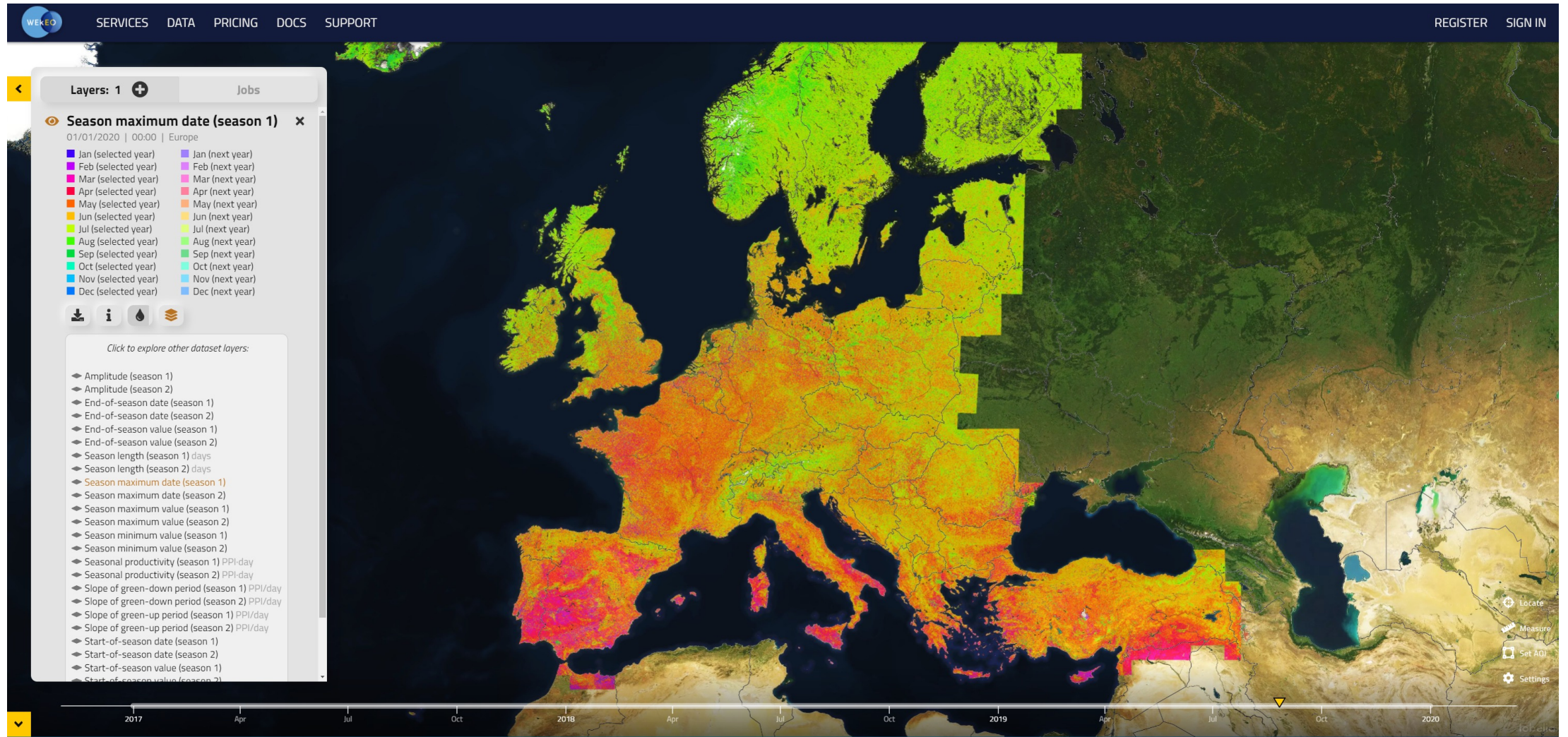
Urban Quality Climate Mapping

Key aspects:

- basic input data like meteorology, land cover, settlements, demography
- weighted by drivers causing and reducing additional hazard
- population at risk: people > 64 yrs, people employed at workplaces, estimated duration that people stay outside in the heat.



The CLMS HR-VPP product on WEkEO

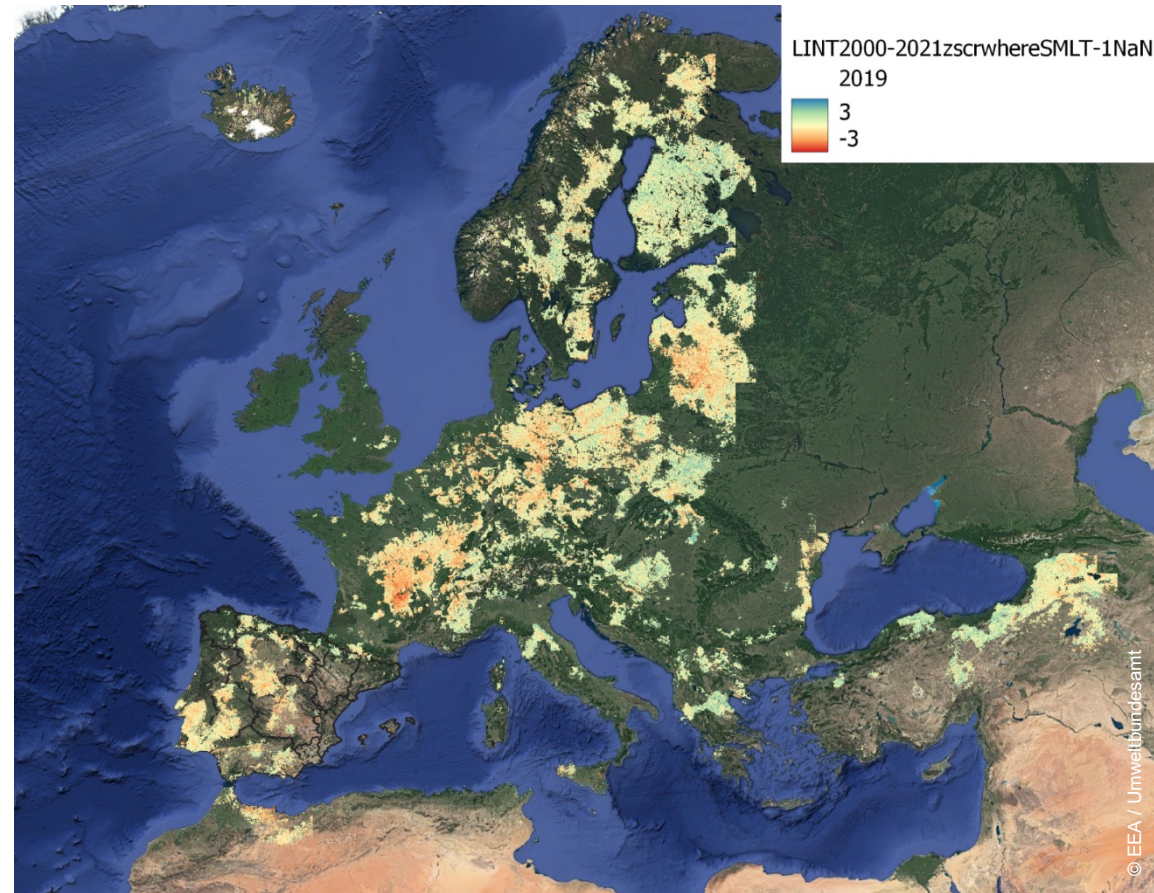


Source: <https://www.wekeo.eu/>



Drought monitoring

- Coverage: EEA member states
- 10m x 10m spatial resolution
- Based on soil moisture and vegetation dynamic (HR-VPP dataset)
- Annual and monthly drought indicators, e.g. difference of total annual productivity from the long-term average
- Updated annually
- Results are e.g. shown in EEA's drought dashboard

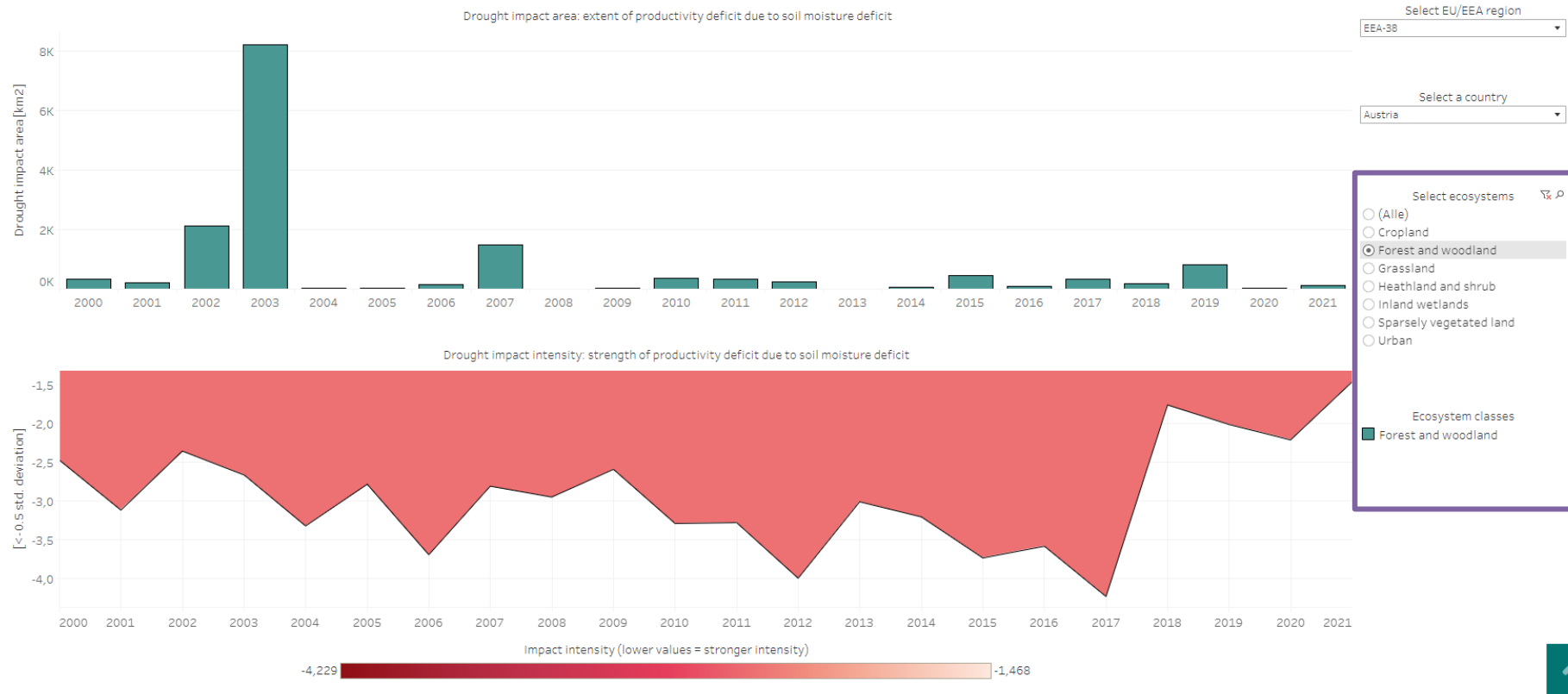


Deviations of total annual productivity from the long-term mean (year 2019) (-3...extreme deficit, 3...extreme surplus). Shown for all pixels where a soil moisture deficit was observed (*preliminary result*).



EEA Drought dashboard

- Summarized per year, country and land cover class



Source: <https://www.eea.europa.eu/data-and-maps/data/data-viewers/drought-impact-on-ecosystems-in>

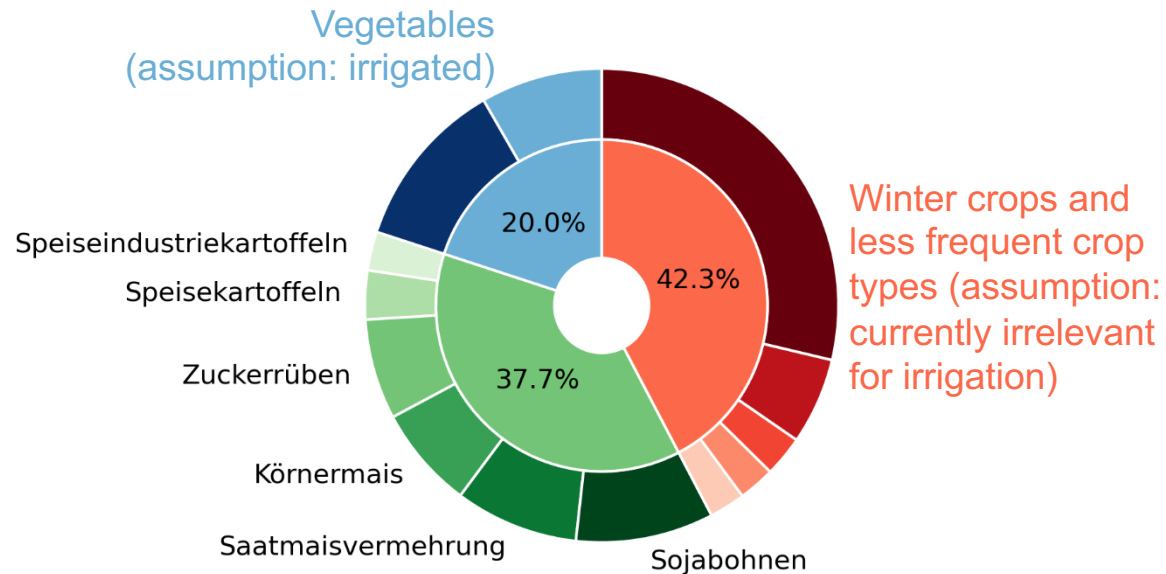


Plot-scale irrigation detection using Sentinel-1 and

- Study region: Marchfeld, Austria (main crop production area)
- Combination of S1 backscatter (VV, VH) and S2 indices (NDVI, NDWI)
- Two threshold-based approaches for distinguishing irrigated and non-irrigated fields
 - Reference: in-situ observations, information disclosed by farmers
- 77% accuracy

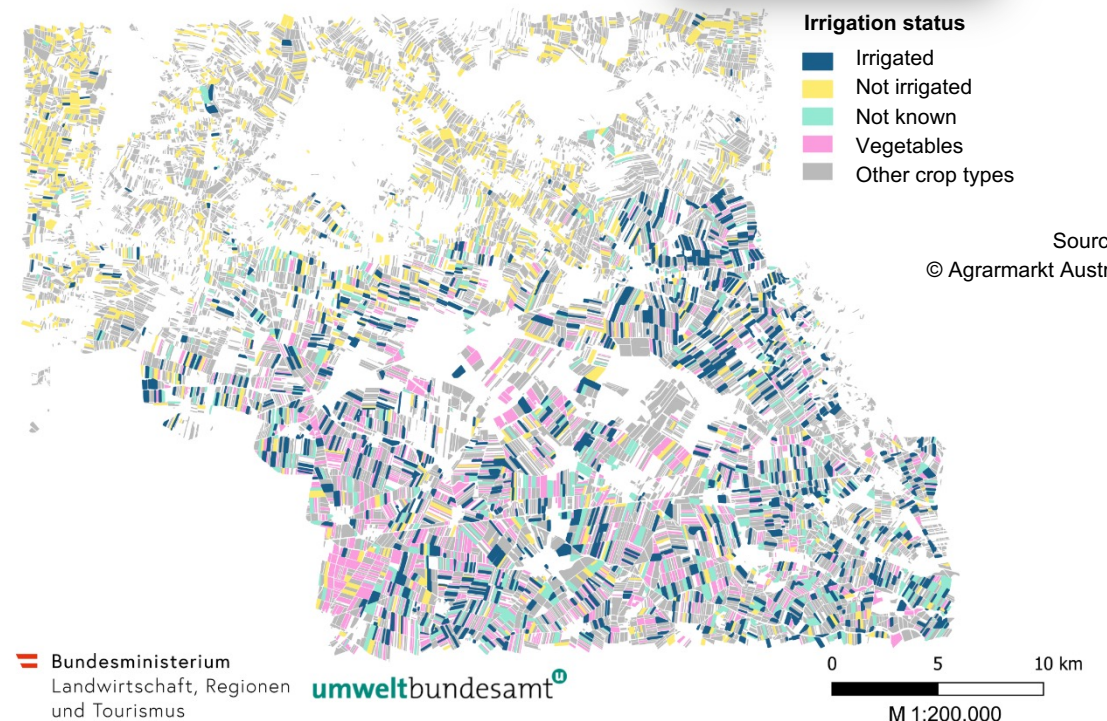


AREAL project, 2021-2022. Ministry of agriculture & Umweltbundesamt. Follow-up project has started



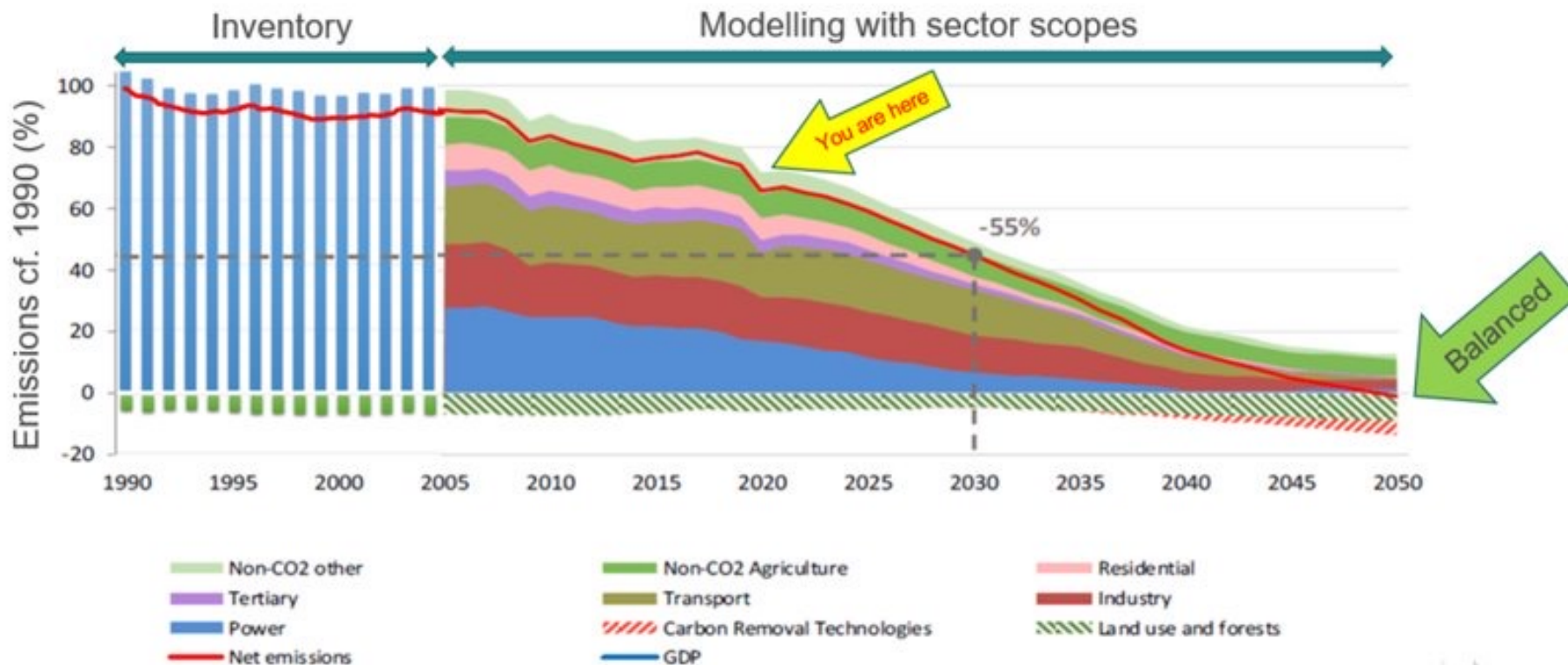
Frequent crop types, relevant for irrigation

Area distribution of frequent crop types in study region. Source: INVEKOS, Umweltbundesamt



Irrigation map of the study region

EU climate law and Fit for 55 package



Fit for 55 package as a set of proposals to revise and update EU legislation to be in line with the 2030 ambition to:

- reduce net GHG emissions by at least 55% by 2030, compared to 1990
- be the first climate neutral continent by 2050

Includes strengthening the contribution of the land use, land-use change and forestry (LULUCF) sector with a revised LULUCF regulation



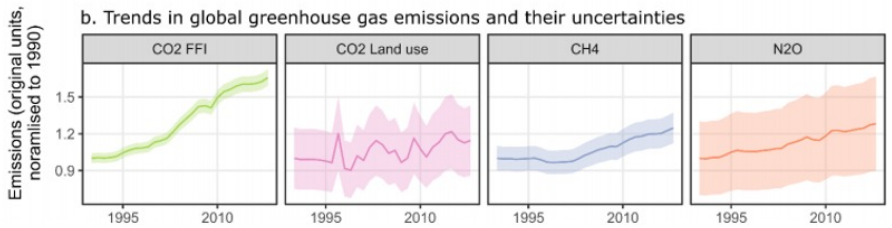
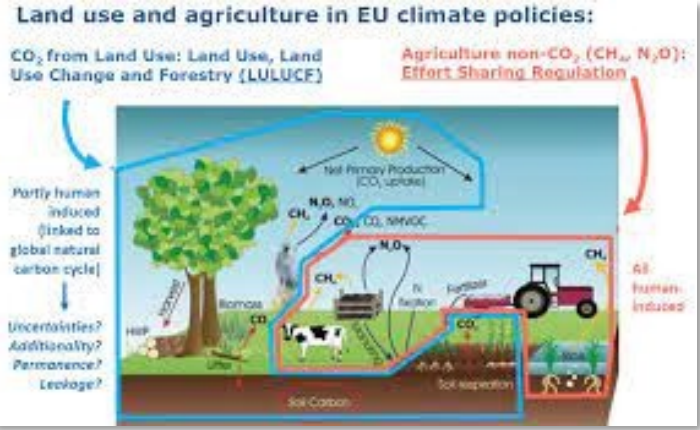
Source:



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Monitoring, Reporting and Verification of GHG emissions and removals



Agriculture, Forestry and Land Use (AFOLU) management choices and practices



Copernicus Atmospheric Monitoring Service (and other projects)

GHG emission verification using in-situ and satellite-based data

Copernicus Land Monitoring Service (and other projects)

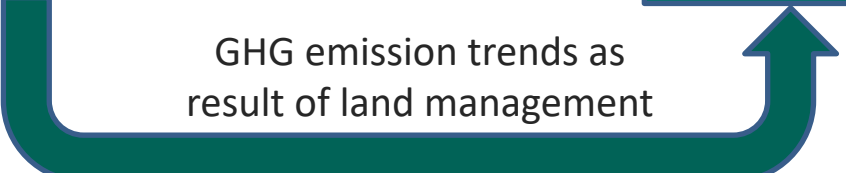
land use and land use change data (input to MS, MRV process)

Other geospatial datasets

Data on carbon pools and their stock changes (input to MS, MRV process)

EU inventory QA/QC program

Quality control and review of MS GHG inventory (EEA, JRC, Eurostat)



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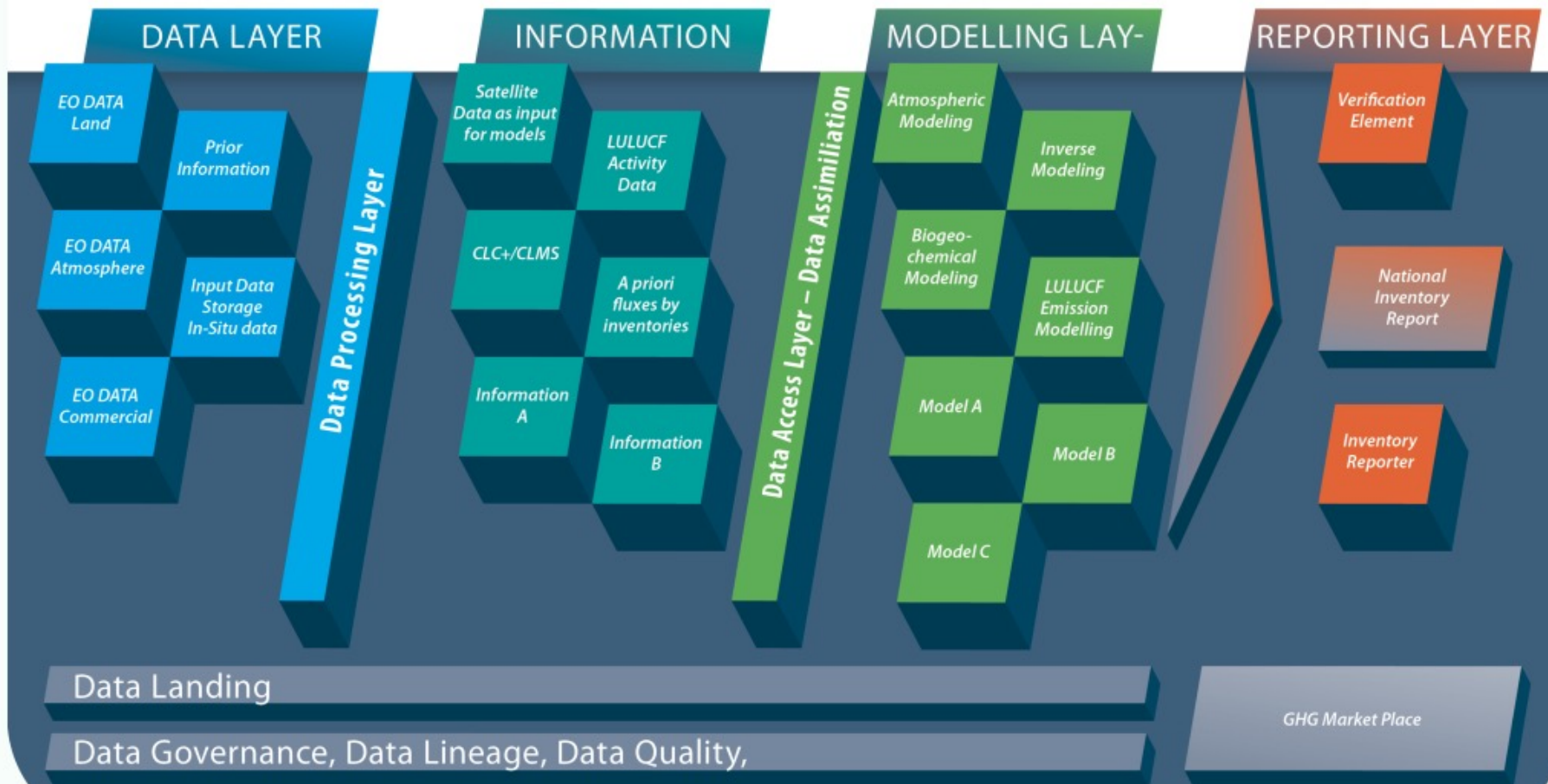


Austria`s exercise on GHG

GHG-KIT Overview



Keep it traceable. Prototyping an independent tool-kit system for GHG verification in Austria

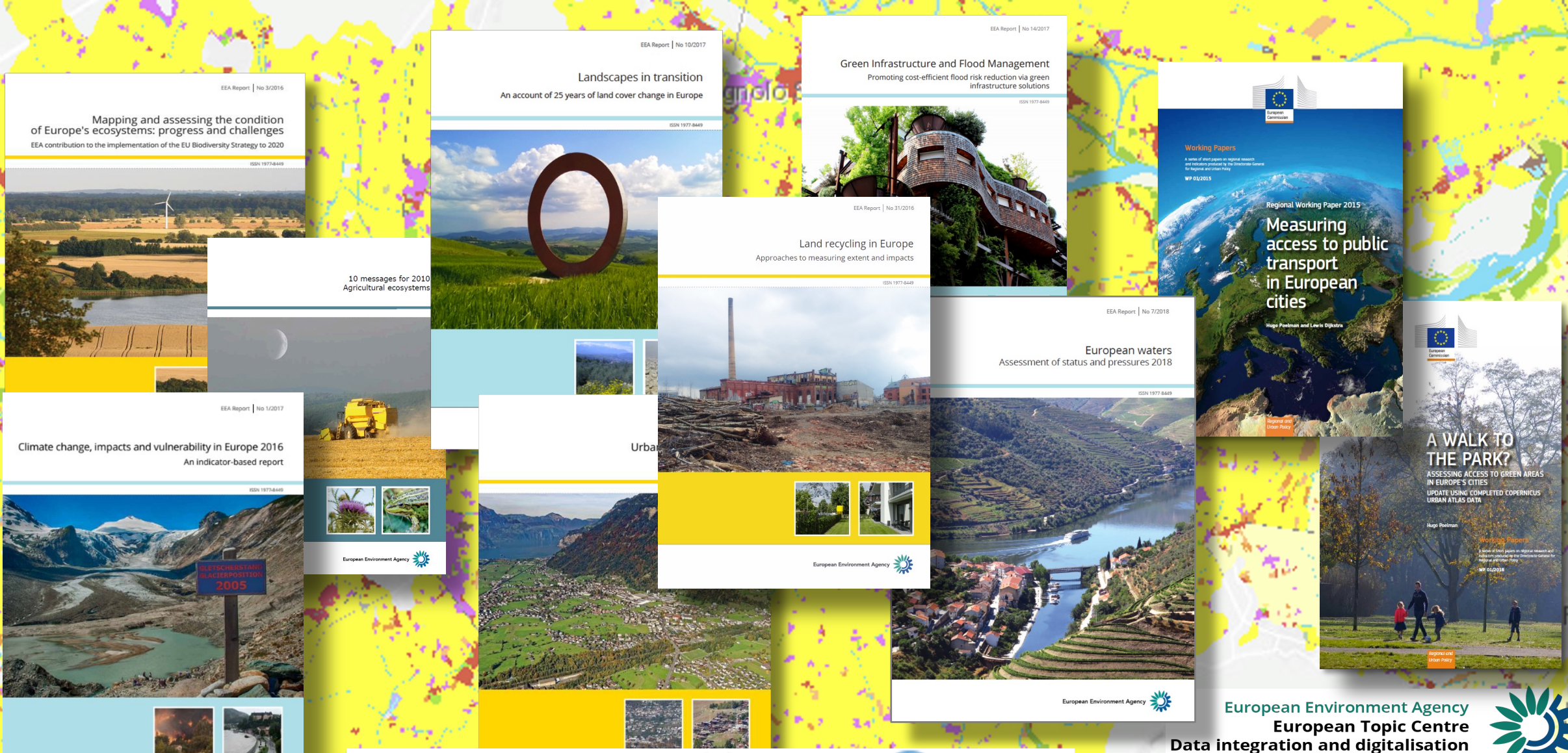


Source: <https://ghg-kit.at/>

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CLMS – supporting the monitoring of sustainable development



European Environment Agency
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Data integration and digitalisation



Source: European Environment Agency



Thank you for your attention

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