Sharing and disseminating environmental information

National roundtable in the Republic of Moldova

May 2019

This project is funded by the European Union and is implemented by the European Environment Agency

Project background information and organisation

Sharing environmental information through national e-governance and open data frameworks based on SEIS principles should be further underpinned with clearly developed visions and comprehensive road maps for this specific area.

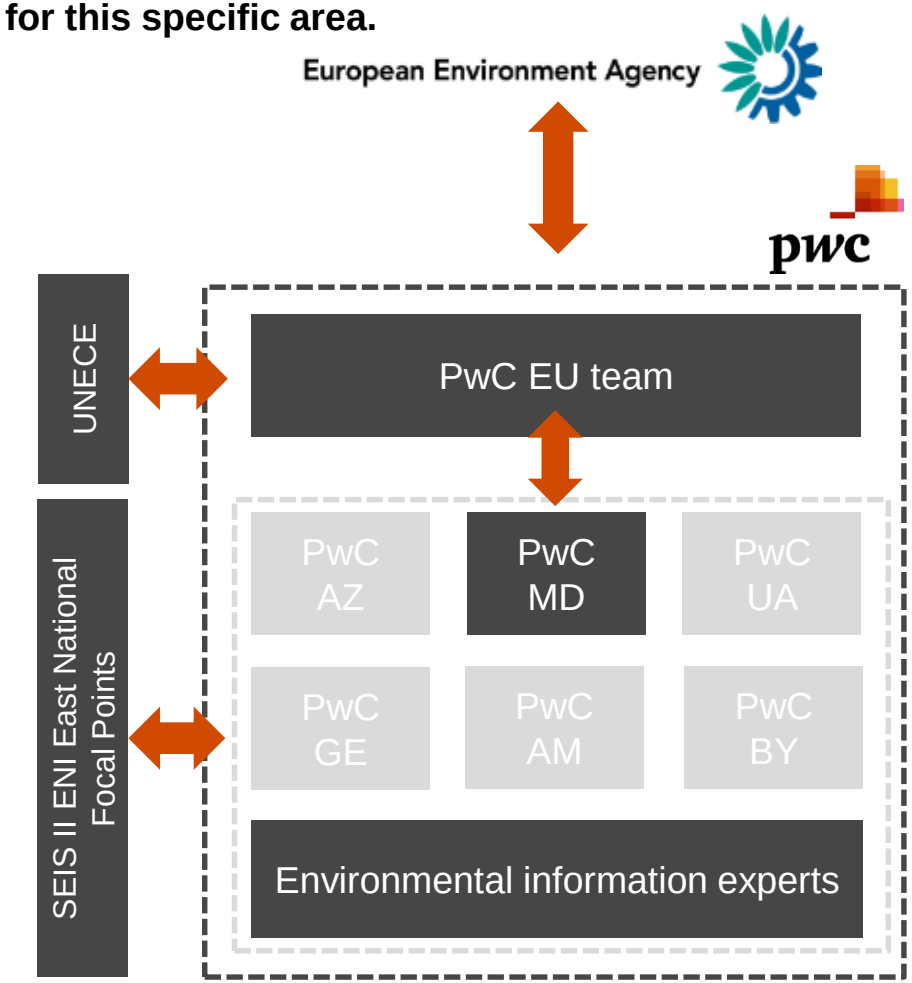
EaP countries have undertaken several international obligations and commitments to collect, update, share and disseminate environmental information as set out in:

- Article 5 of the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) and decision VI/1 of the Meeting of the Parties to the Aarhus Convention on promoting effective access to information.
- The Protocol on Pollutant Release and Transfer Registers (Protocol on PRTRs).
- The Batumi Declaration “Greener, cleaner, smarter!” adopted by Ministers of the UNECE region calling to have SEIS in place in support to regular assessment in countries of UNECE region by 2021.
- The Declaration on cooperation on Environment and Climate Change in Eastern Partnership (Luxemburg 2016).
- The 2030 Agenda for Sustainable Development.

Key objectives of project:

- Support governmental policies and actions in environment and related areas, the transition towards green economy, innovations, compliance with various reporting obligations as well as the implementation of various sustainable development goals (SDGs).
- Streamline efforts and reduce the reporting burden for the national bodies.
- Exchanging ideas, experiences and good practices between countries and institutions, seek advice and receive targeted assistance to make progress smoother and steadier.

Out of scope: environmental system architecture, detailed legal analysis, provision of framework/methodologies/APIs, detailed analysis of environmental monitoring systems and related organisations, financing mechanisms.



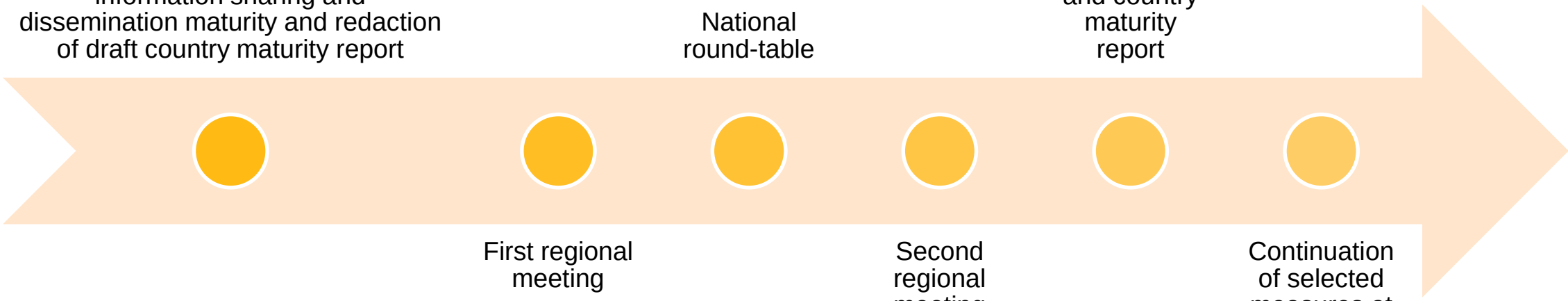
This project is funded by the European Union and is implemented by the European Environment Agency

Project steps

Country maturity report for environmental information sharing and dissemination

Proposition of concrete measures: roadmap

Good practices for fostering environmental information sharing and dissemination



European Environment Agency

This project is funded by the European Union and is implemented by the European Environment Agency

Approach and methodology for the draft maturity report

Dissemination and sharing of environmental information in EaP countries

Draft country maturity reports

Environmental information readiness	Technology enablers for environmental information sharing	Achieving a high level of maturity for environmental information management
• E-government • Open Data and environmental information legal and institutional framework • Environmental data flows • Progress so far	• Portals • Portal maturity for environmental data	• Main challenges • Roadmap

Analysis based on publicly available material

European Environment Agency

This project is funded by the European Union and is implemented by the European Environment Agency

Objective of the roundtable

The roundtable aim to identify concrete steps to advance in terms of legal, organisational, technical conditions to ensure that environmental information is integrated/aligned with national e-government and open data initiatives at country level and in line with SEIS principles.

A key objective in this process is to raise awareness on the benefits of sharing environmental information and knowledge at all levels. For the implementation of this component, close links need to be established, among others, with key international partners, such as UNECE WGEMA, Aarhus Convention/PRTR Protocol Secretariat, OSCE/Aarhus Centres, RECs, NGOs, etc. In this regard, the national roundtable audience consists of a mix of environment, e-government, open data, and international experts.

A finalised road-map/set of actions for improving the dissemination and sharing of environmental data through e-governance and open data initiatives.

Input to relevant processes impacting the further development of SEIS in the European Neighbourhood East region, the pan-European assessment processes based on SEIS or/and the Aarhus-related meetings such as the Aarhus Convention Task Force on Access to Information.

Final remarks on the country maturity report, to be gathered during the discussions.

A set of measures for continuing the implementation of the Aarhus Convention, Protocol on PRTRs (as applicable), SEIS principles and other international commitments

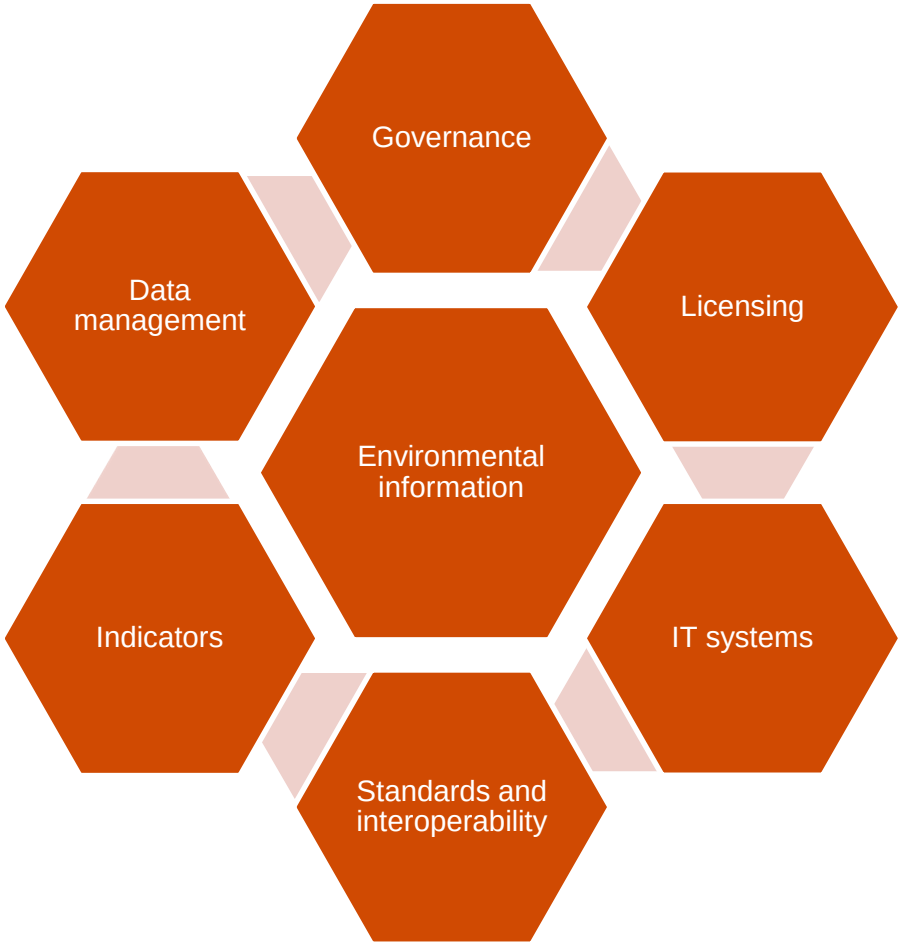
European Environment Agency

This project is funded by the European Union and is implemented by the European Environment Agency

Main outcome from the regional meeting in Kiev

The regional meeting in Kiev provided a lot of insights regarding the achieved and ongoing initiatives in the EaP countries. For the Republic of Moldova, it was made clear that real progress is being made in the area of e-government, and that organisational changes are ongoing regarding the environment. In general, the following points were identified:

- Governance: set up the right governance model and embed stakeholders from Open Data, e-government, health, statistics and the environment.
- Necessity to provide a single web-access point for environmental information.
- Necessity to develop/adopt metadata standards for environmental information.
- Necessity for licensing norms for Open Data and dissemination of environmental information.
- Importance of interoperability between information systems for exchanging environmental information.
- Data governance: necessity to define environmental data quality from a monitoring and publication perspective, necessity to manage confidentiality and data privacy, and managing consistency of data published on various platforms.
- Necessity to defined the granularity of environmental data published according to clear rules.
- Importance of considering user feedback and ad hoc request for information.
- Lack of ”story” to support environmental indicators (assessments).



Good practices for sharing and disseminating environmental information

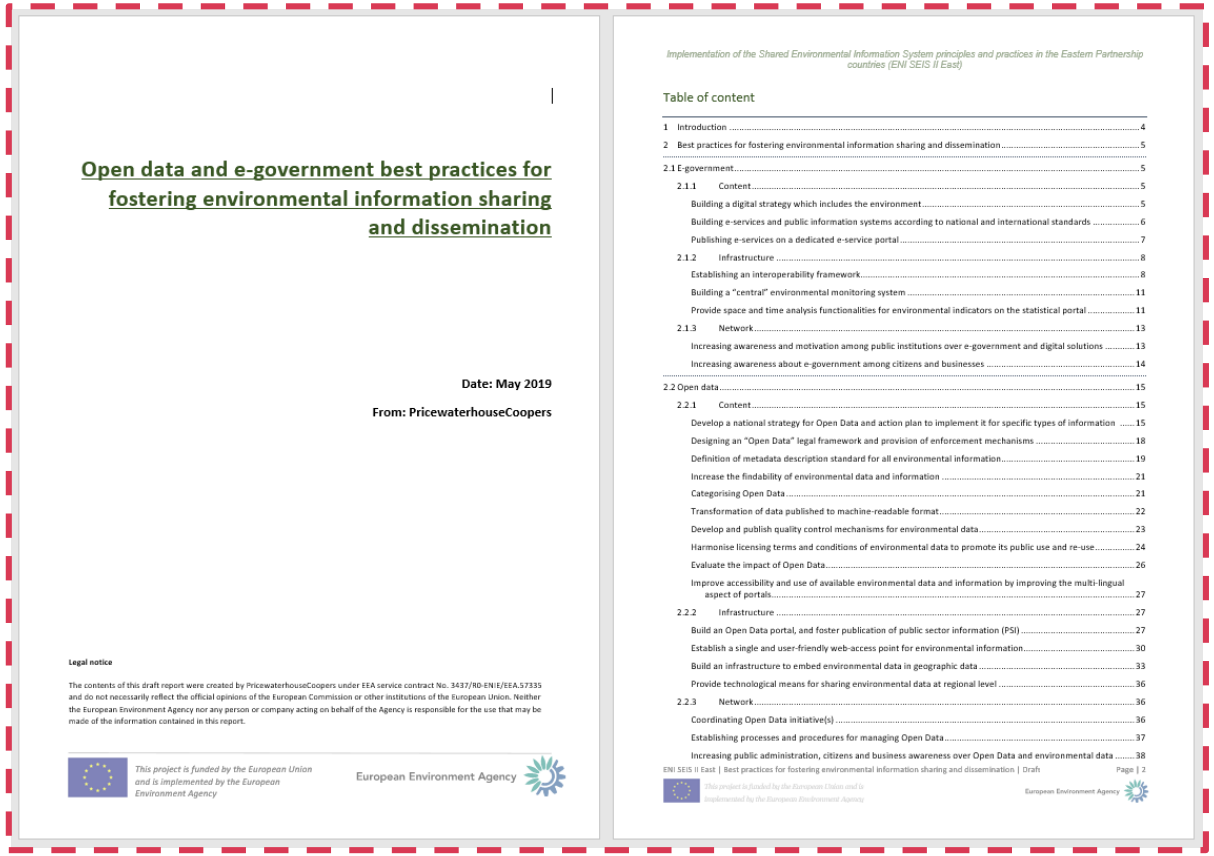
How to read the good practices document?

3.2 Environmental implementation roadmap

This section presents key areas[136] of development for the Republic of Moldova. It is to be noted that these initiatives should be undertaken taking into account regional and international collaboration. In particular, initiatives which were undertaken in other countries could be leveraged. In addition, the development of national standards would benefit if developed regionally and/or aligned to international standards. This especially is true for the design of information systems, metadata standards, portals and interoperability standards.

3.2.1 Content

Measure	Priority	Description
Revision of legal framework to promote accessibility and re-use of non-sensitive public sector information (PSI) online	High	Review of the legal framework for data governance related to environmental monitoring, decision-making and control, natural resources, ecosystems and pollution inventories and environmental assessments, in accordance with the Aarhus Convention, the Protocol on PRTRs (as appropriate). This can include: • improving environmental information system(s) by defining themes, sources (lists, registers, databases, funds, etc.), formats, metadata and interoperability requirements in accordance with the Aarhus Convention, Protocol on PRTRs, ECE environmental indicators and other international commitments and the e-government/open data framework • improving procedures for environmental data collection in electronic forms • improving procedures for environmental data update, quality assurance, reporting, online dissemination and other means of dissemination • proving public participation in the design, use and update of the environmental information system(s) of the and taking on citizens science and citizens engagement initiatives • division of responsibilities of the public authorities at all levels and across the sectors to ensure their clear roles and coordination • reviewing the application of the exceptions in disclosure of environmental information and establishing a clear and predictable legal framework to ensure the legitimate application of these exceptions and the disclosure of information on emissions in accordance with the Convention



Open data and e-government best practices for fostering environmental information sharing and dissemination

Date: May 2019

From: PricewaterhouseCoopers

Legal notice

The contents of this draft report were created by PricewaterhouseCoopers under EEA service contract No. 3437/R0-EN/E/EEA.57335 and do not necessarily reflect the official opinions of the European Commission or other institutions of the European Union. Neither the European Environment Agency nor any person or company acting on behalf of the Agency is responsible for the use that may be made of the information contained in this report.

This project is funded by the European Union and is implemented by the European Environment Agency

European Environment Agency

Implementation of the Shared Environmental Information System principles and practices in the Eastern Partnership countries (ENI SEIS II East)

Table of content

1 Introduction 4
2 Best practices for fostering environmental information sharing and dissemination 5
2.1 E-government 5
2.1.1 Content 5
Building a digital strategy which includes the environment 5
Building e-services and public information systems according to national and international standards 6
Publishing e-services on a dedicated e-service portal 7
2.1.2 Infrastructure 8
Establishing an interoperability framework 8
Building a "central" environmental monitoring system 11
Provide space and time analysis functionalities for environmental indicators on the statistical portal 11
2.1.3 Network 13
Increasing awareness and motivation among public institutions over e-government and digital solutions 13
Increasing awareness about e-government among citizens and businesses 14
2.2 Open data 15
2.2.1 Content 15
Develop a national strategy for Open Data and action plan to implement it for specific types of information 15
Designing an "Open Data" legal framework and provision of enforcement mechanisms 18
Definition of metadata description standard for all environmental information 19
Increase the findability of environmental data and information 21
Categorising Open Data 21
Transformation of data published to machine-readable format 22
Develop and publish quality control mechanisms for environmental data 23
Harmonise licensing terms and conditions of environmental data to promote its public use and re-use 24
Evaluate the impact of Open Data 26
Improve accessibility and use of available environmental data and information by improving the multi-lingual aspect of portals 27
2.2.2 Infrastructure 27
Build an Open Data portal, and foster publication of public sector information (PSI) 27
Establish a single and user-friendly web-access point for environmental information 30
Build an infrastructure to embed environmental data in geographic data 33
Provide technological means for sharing environmental data at regional level 36
2.2.3 Network 36
Coordinating Open Data initiative(s) 36
Establishing processes and procedures for managing Open Data 37
Increasing public administration, citizens and business awareness over Open Data and environmental data 38

European Environment Agency

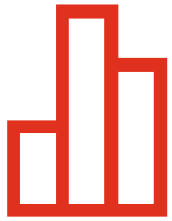
This project is funded by the European Union and is implemented by the European Environment Agency

Good practices

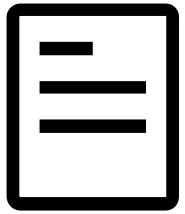
Environmental information sharing and dissemination

Good practices: Content

Provide mechanisms for enforcing dissemination of environmental information



Define metadata standards for dissemination of environmental information

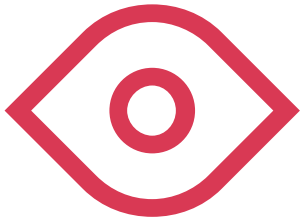


Define licences for re-use of data published

Evaluate the impact of environmental data published (economic, social, political and environmental)

Publish environmental data and reports frequently

Disseminate environmental data in machine-readable format



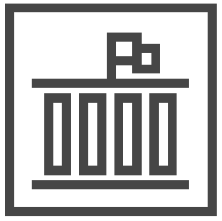
Perform regular “awareness campaign”

Provide multilingual support & user friendly portals

Environmental information sharing and dissemination

Good practices: infrastructure

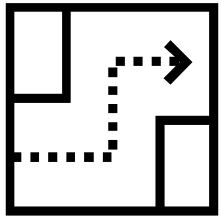
Ensure responsibilities for monitoring are clearly defined and provision of tools and methods for environmental monitoring



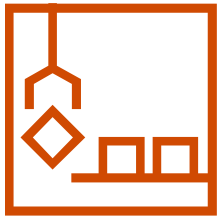
Integrate environmental sharing interoperability in e-government strategy

Align publication of information across platforms (i.e. environmental portals, Open Data portal)

Limit the amount of portals but keep specificities (e.g. Open Data, Geoportal and Eco-portal)

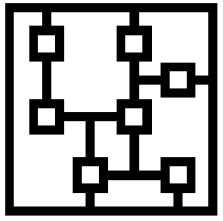


Adopt a simple governance model



Build interoperability standards (i.e. organisational and technical, provision of building blocks)

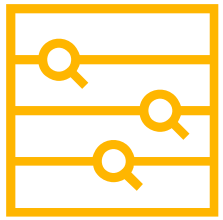
Leverage on e-government and technology (e.g. M-Cloud, M-Sign, M-Connect, etc.)



Leverage on geoportal and publish environmental data on it

Portals for environmental information dissemination

Good practices: cooperation

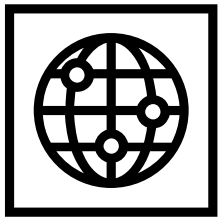


Build user-friendly portals

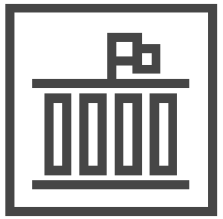
Provide automatic multilingual support (as appropriate, taking into consideration confidentiality)

Build user community and gather their feedback

Provide an advanced statistical system for data visualisation



Leverage on international and regional experience (e.g. Joinup platform in the EU)



Continuously develop skills and ensure availability of resources

European Environment Agency

This project is funded by the European Union and is implemented by the European Environment Agency

Examples of implementation of good practices

Example of good practices

Defining metadata for environmental information, as for Open Data

Poor metadata

Title	Air quality monitoring report – Chișinău
Description	This report provides the last monthly results of the air quality monitoring in Chișinău.
Time coverage	February 2019
Space coverage	Chișinău, Republic of Moldova
Distribution	Report in pdf: http://reportinpdf.pdf Report in Word format: http://reportinword.docx Data in Excel: http://excelrawdata.xlsx Alternative link: http:/xyz.md/airqualitymarch2019.pdf
Publisher	Environment Agency
Contact person	Mr. XYZ
Contact email	xyz@abc.md
Contact person phone number	+xxxxxxx
Theme	Air
Data dataset released	03.03.2019
Language	Romanian, Russian, English
Keyword	Air quality, air monitoring, February 2019

Example of good practices

Categorisation of datasets, and highlighting environmental information

Add a section to request data

Share environmental applications
Better integrate geoportals with the open data portal

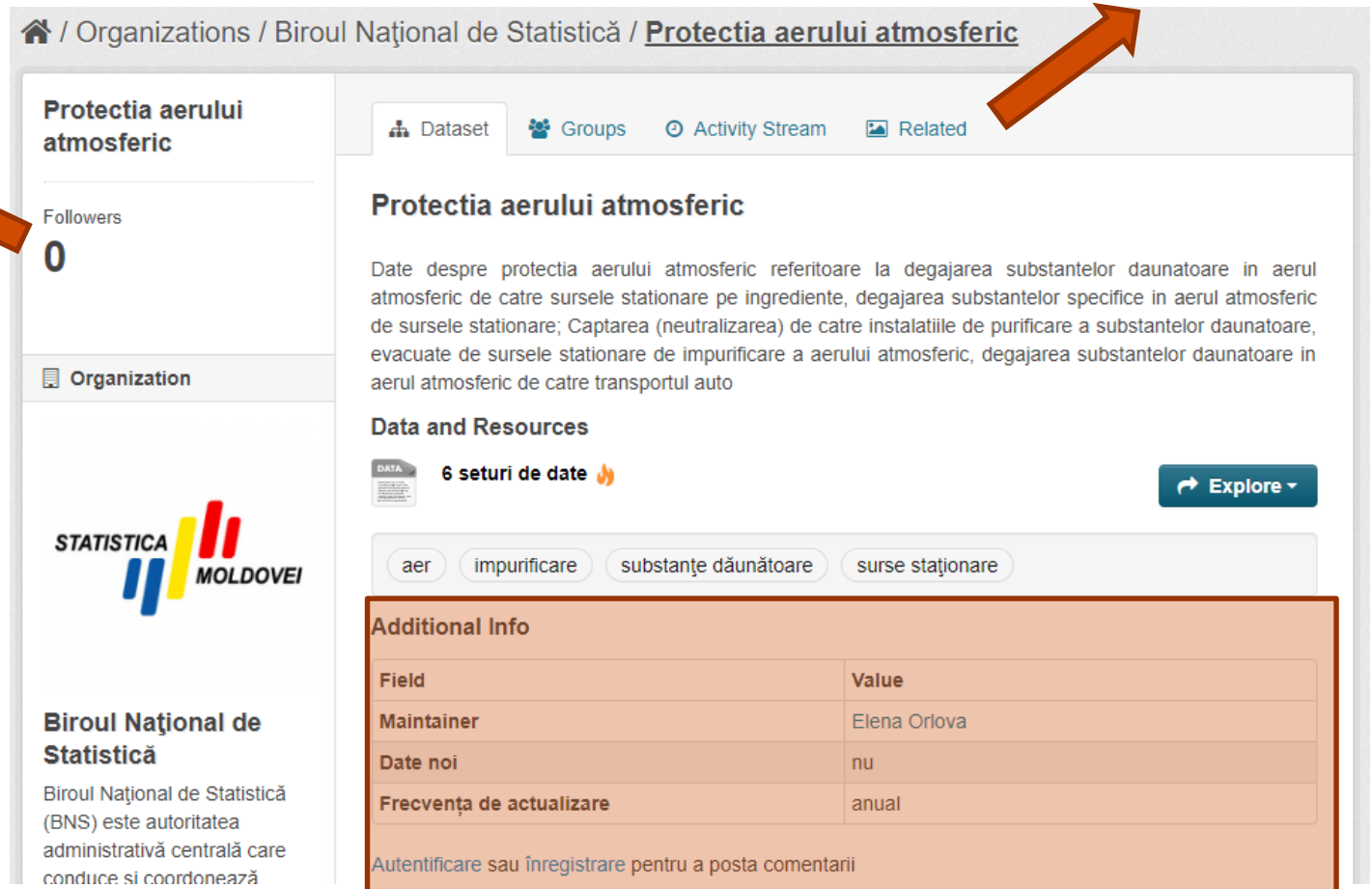
Add a category “environment” that is easily accessible and categorise all datasets. It is important to measure the quality of datasets through the metadata provided.
Poor metadata = poor dataset

Example of good practices

Publishing high quality datasets and fostering re-use

No related data?

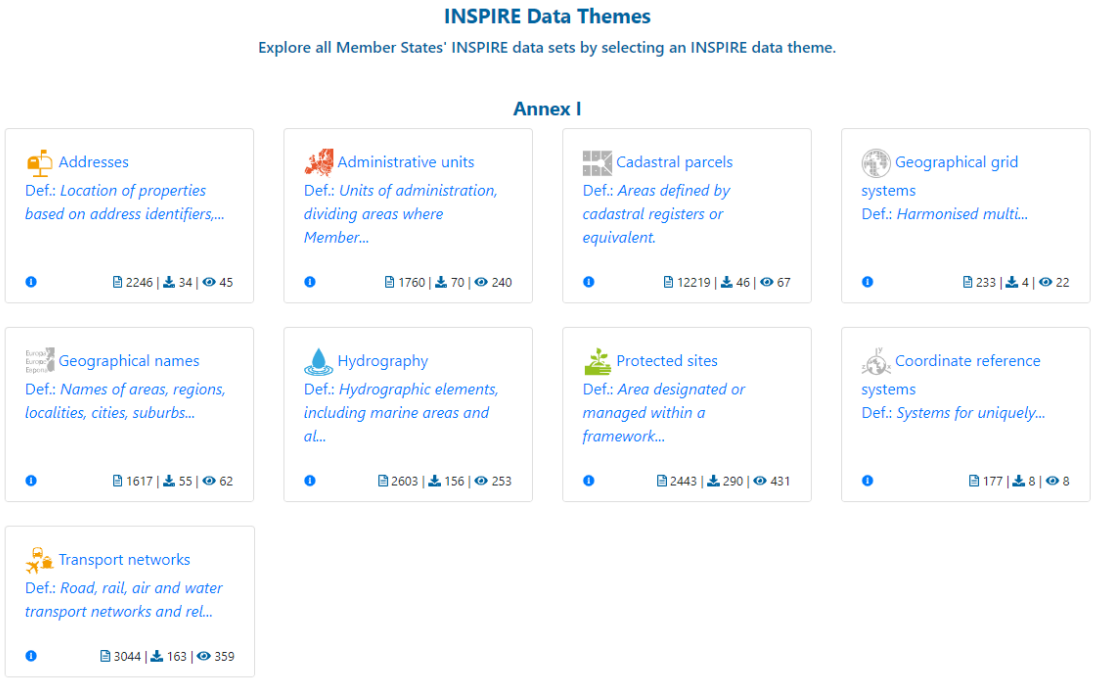
Raise awareness
0 followers, but how many downloads?



Poor metadata

Example of good practices

Access to geospatial information

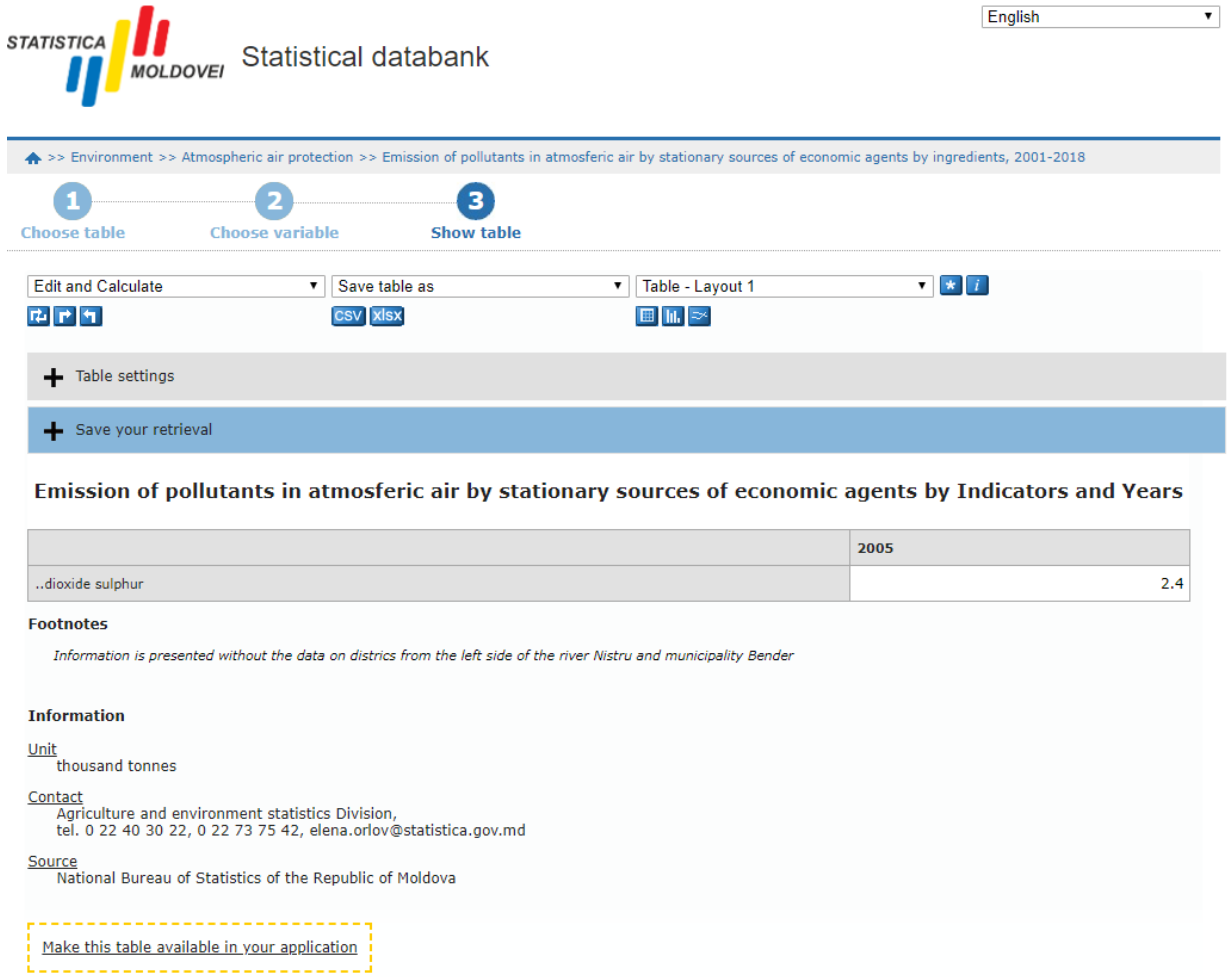


European Environment Agency

This project is funded by the European Union and is implemented by the European Environment Agency

Example of good practices

Providing a story with indicators (1/2)



When is it a good number? When is it a bad one?

It is important for citizens, but also academicians, scientists, etc. to understand what a specific indicator hides. **It would be useful to have a link to the analysis of the indicator, for example.**

In addition, when exporting to Excel, it is important to provide the data to the user.

Example of good practices

Providing a story with indicators (2/2)

European Environment Agency

Search

A-Z Glossary

Topics | Countries | Data and maps | Indicators | Publications | Media | About us | The EEA is an agency of the European Union

Data and maps > Indicators > Chlorophyll in transitional, coastal ... > Chlorophyll in transitional, ...

Chlorophyll in transitional, coastal and marine waters

Indicator Assessment — **Prod-ID:** IND-18-en **Also known as:** CSI 023 , MAR 006 — Created 19 Oct 2018 — Published 11 Apr 2019 — Last modified 11 Apr 2019 — 15 min read

PDF

Topics: Water and marine environment

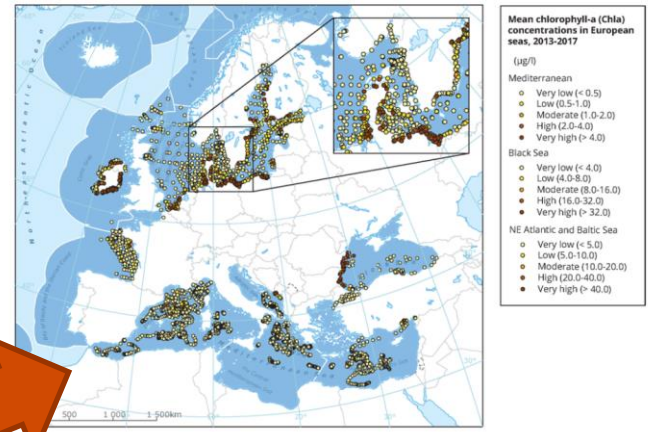
Key messages

- The trends in chlorophyll concentrations show improvements in the eutrophication status in some of Europe's seas, due to the successful implementation of nutrient management strategies.
- The highest chlorophyll concentrations are generally observed in transitional and coastal waters of the marine (sub)regions, in response to elevated nutrient concentrations in those waters.
- Decreasing chlorophyll concentrations were observed in the southwestern Baltic Sea and along the continental coast of the Greater North Sea (including Kattegat), showing the effects of measures to reduce nutrient inputs (OSPAR 2017, HELCOM 2018).
- For the other marine (sub)regions, only a few time series were available. In general, those time series did not show significant trends.

Map + graphs

Analysis

Fig. 3: Mean chlorophyll-a (Chla) concentrations in European seas, 2013-2017



Baltic Sea

Eutrophication is still a large-scale problem in the Baltic Sea, a fact acknowledged by most, if not all, of the bordering countries (EEA, 2019)

The highest measured summer chlorophyll-a concentrations in the 2013-2017 period were found in coastal and transitional waters along the German coast and in the Gulf of Gdansk. Low concentrations were predominantly observed in the open waters of the Baltic Sea (Figure 3).

Most of the stations (86 %) did not show a significant change in chlorophyll concentration in the period 1990-2017. Overall, statistically significant decreasing trends were evident in 9 % of the Baltic Sea stations (Figure 2), which were in the southwestern part of the Baltic Sea. Chlorophyll concentrations increased at 5 % of the stations, mainly in coastal waters of the Bothnian Bay and the Bothnian Sea, and at some stations in the Baltic Proper and the Gulf of Finland (Figure 1).

Greater North Sea

Eutrophication is a problem in parts of the Northeast Atlantic. River discharges are the main sources of elevated nutrient levels caused by human activities (EEA, 2019).

In the North Sea, the highest chlorophyll concentrations were found in coastal and transitional waters along the continental coast from Belgium to Denmark.

Decreasing trends were found in transitional, coastal and offshore waters of the Kattegat and at some stations along the continental North Sea coast.

Atlantic waters: Celtic Seas, Bay of Biscay and the Iberian coast

In the Celtic Seas, only data on chlorophyll concentrations were available for transitional and coastal waters of Ireland. The concentrations generally show a decreasing gradient from inshore to offshore. In 2 % of the cases, the time series showed an increasing trend, while in all other cases there was no significant trend.

In the Bay of Biscay and Iberian coast, oxygen concentrations along the French coast were low in general (<10 µg/l). There were few time series available, none of which showed a significant trend.

Mediterranean Sea

Mediterranean Sea is probably the regional seas with fewest eutrophication problem areas. This is partly related to the fact that the offshore parts of the Mediterranenan Sea are characterized by very low nutrient concentrations (EEA, 2019).

Data for the western Mediterranean Sea mainly cover offshore waters where concentrations are low. Data for the Adriatic Sea and the Ionian Sea show very low concentrations (<1 µg/l).

There were few time series available. Only 1 out of 12 available series showed a significant increasing trend.

Black Sea

More reductions in nutrient inputs are required to restore the Black Sea to being unaffected by eutrophication (EEA, 2019).

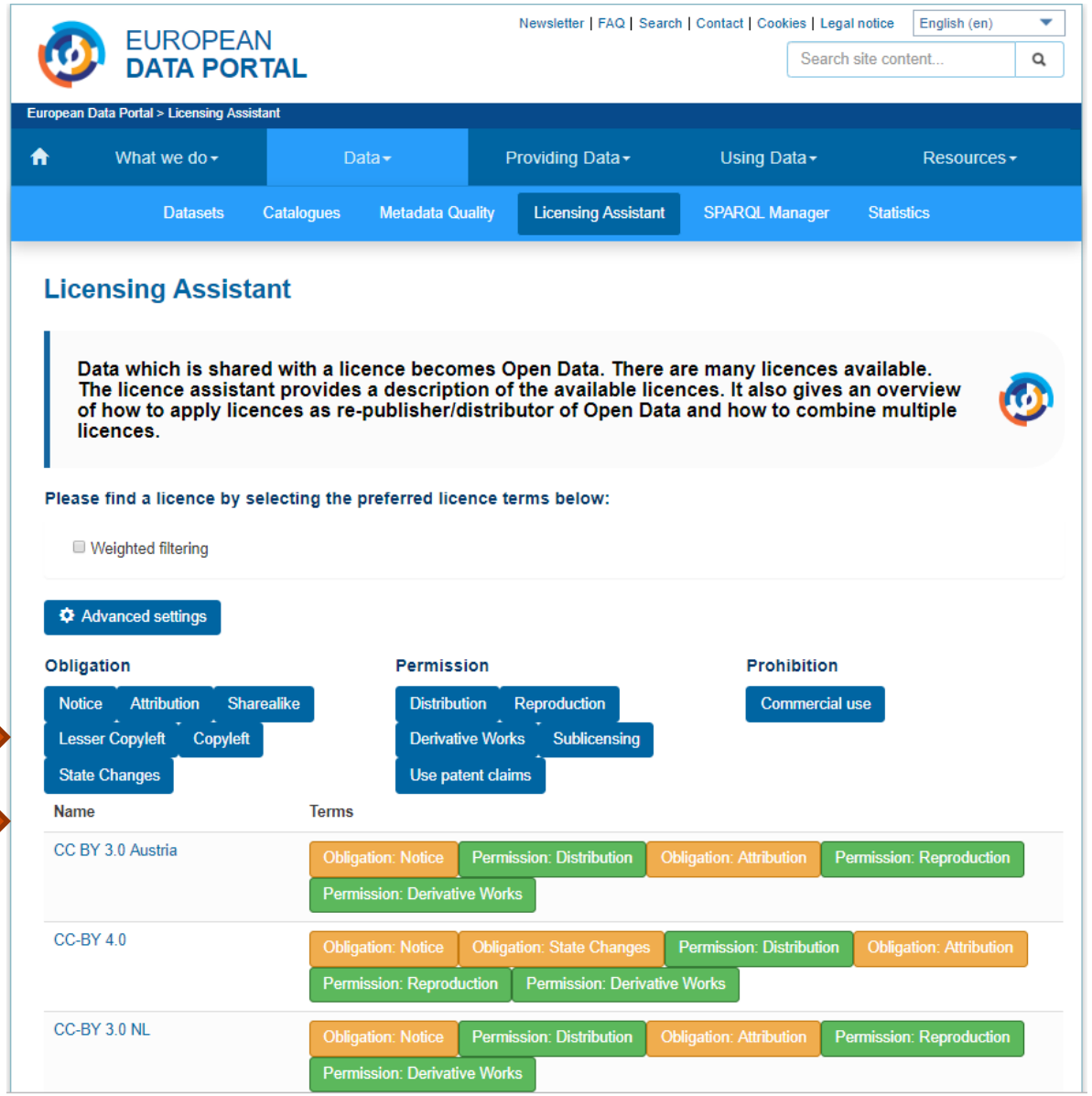
Example of good practice

Managing Open Data licences

Setting licences enables setting limits for re-using Open Data. It also enables commercial use of data – the Open Data portal can also be used to share commercial data on request.

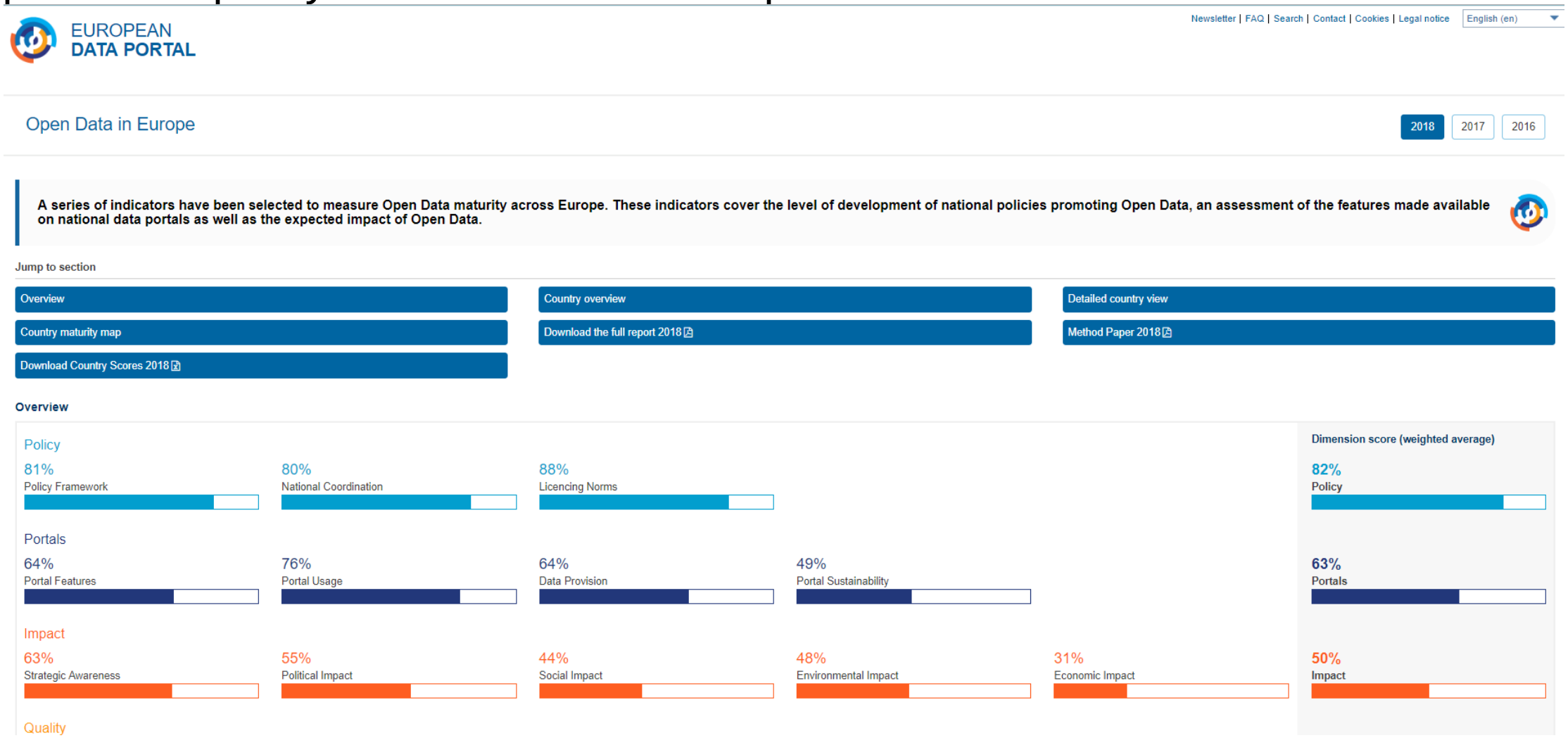
Filtering licences according to conditions

Licences



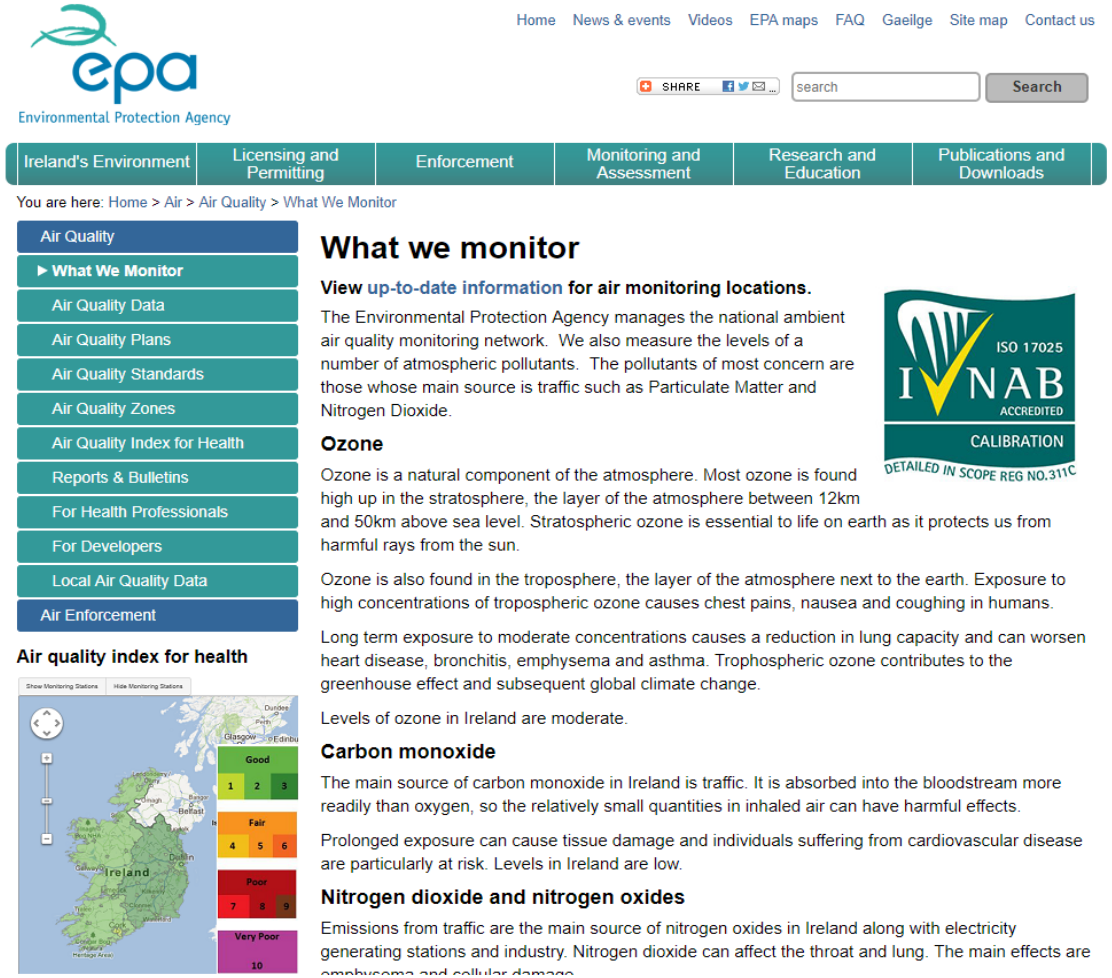
Example of good practice

Open Data quality measurement and impact assessment



Example of good practice

Establish a single access-point for sharing environmental information



https://www.epa.ie/air/quality/monitor/

The environment portal of Ireland contains information about:

- Licensing and permitting
- Enforcement – Law
- Monitoring & Assessment
- Research & Education
- Publications and Downloads

For each environment theme (air, water, etc.), a specific portal is available and provides access to data and analysis. The portal also provides access to real-time data.

This project is funded by the European Union and is implemented by the European Environment Agency

Sharing and dissemination of environmental information

Report highlights

pwc

E-government and Open Data

International rankings of EaP countries for e-government

E-Government Development Index

Year	EaP Avg.	EU Avg.	UA	BY	GE	AZ	AM	MD
2014	0,57	0,73	0,50	0,60	0,60	0,55	0,59	0.56
2016	0,60	0,76	0,61	0,66	0,61	0,63	0,52	0,6
2018	0,66	0,80	0,62	0,76	0,69	0,66	0,59	0,66

Key findings:

Strong development of e-services and e-government portal

Initiatives such as M-Cloud, M-Connect, M-Pass, M-Pay, M-Sign, M-Notify

Key challenges:

- Interoperability standards for exchange of information between information systems, especially between environmental, statistical, geospatial and health.
- Enhance multilingual support for public authorities websites (including metadata where applicable).
- Leverage on e-government initiatives for fostering environmental information monitoring, sharing and dissemination.
- Development of ICT skills in public institutions and raising awareness for implementing e-government solutions.

Good practice example

The European Interoperability Framework provides guidance on how to set up interoperable digital public services by offering recommendations on the improvement of governance of interoperability activities, establish cross-organisational relationships, streamline processes supporting end-to-end digital services, and ensuring that both existing and new legislation do not compromise interoperability efforts. The four layers of interoperability are: legal, organisational, semantic, and technical.

The EIF can be used to foster the Interoperability Framework Program in the Republic of Moldova.

E-government and Open Data

International rankings of EaP countries for Open Data

Open Data Inventory (ODIN)

	AM	AZ	BY	GE	MD	UA	Avg.
Overall	53	51	48	55	67	42	53
Coverage	51	59	58	53	54	47	53
Openness	56	43	40	57	80	37	52

Key challenges:

- Provision of standard metadata for datasets published (and if appropriate compatibility with the EU DCAT-AP).
- Enhance metadata quality and provision of multilingual metadata.
- Continue to provision of datasets in machine-readable format.
- Provision of well documented APIs and Open Data community.

Good practice example

Open Data portal in Ireland

Data.gov.ie is intended to provide easy access to datasets that are free to use, reuse, and redistribute. The portal is operated by the Government Reform Unit of the Department of Public Expenditure and Reform. The portal provides a good functionality to "suggest" data to be opened.

Good practice example

Open Data potential in Kyiv

The research is prepared by Kyiv School of Economics jointly with Open Data Institute within USAID/ UK aid Transparency and Accountability in Public Administration and Services program /TAPAS and with the support of the State Agency for eGovernance of Ukraine.

In Ukraine, they estimated that Open Data could contribute up to USD 1.4 billion to the Ukrainian economy by 2025, representing 0.92% of Ukrainian GDP, through a combination of direct and indirect benefits.

Environmental information availability

Main reports published

Type of Report	MD
National environmental reports	
Specialised reports - climate (national communications to UNFCCC)	
Specialised reports - air	
Specialised reports - water	
Specialised reports - biodiversity	
Specialised reports - waste	
Indicator-based reports	
National Statistical Yearbook	
National Statistical Yearbook on environment	
Report on sustainable development	

To be improved Available

Key challenges:

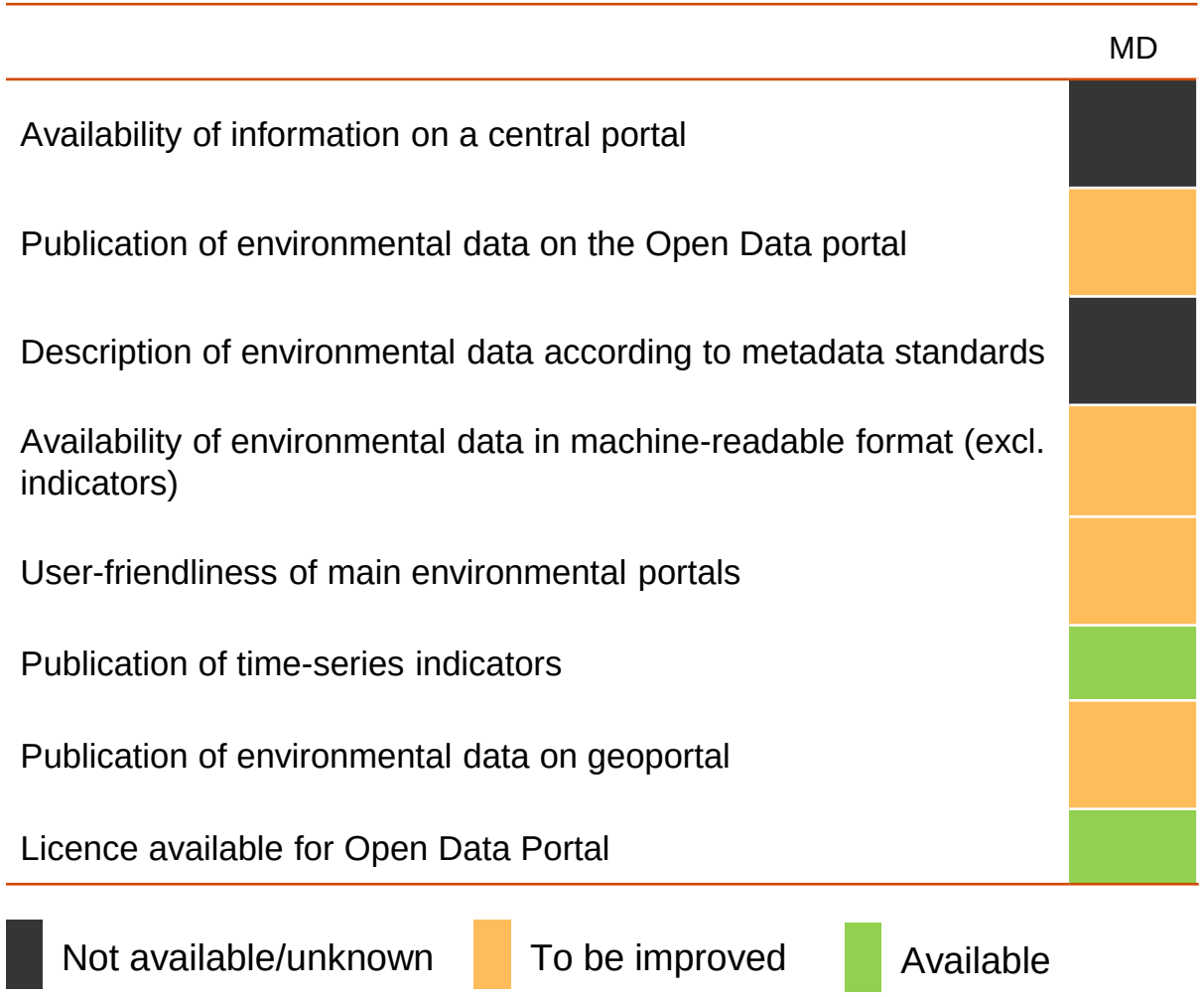
- Discoverability of environmental reporting.
- Timely availability of environmental data and reports, aiming at near-real time.
- Establish mechanisms to enforce publication of environmental information (as appropriate).
- Provision of machine-readable data with good metadata.
- Publication of quality control mechanisms and results.
- Availability of time series for environmental data.
- Continue development of environmental indicators.

Good practice example

The EEA indicators are the basis of the reports, which are produced by the EEA. The Core Set of Indicators (CSI) cover such thematic categories as climate change, energy, biodiversity and other. The main function of the indicators is to aid in the process of policy making by providing information on which environmental issues are demanding immediate attention and solutions and evaluate the progress made, since the current policies have been enabled. These indicators contain a lot of metadata, a history and an analysis.

Portals for environmental information dissemination

Main platforms maturity level



Key challenges in EaP countries:

- Define metadata standard for the publication of environmental data.
- Reduce spread of environmental reporting.
- Improve user-friendliness of environmental websites.
- Public datasets on the Open Data portal.
- Publish environmental data in time-series.

Good practice example

Ireland has developed Environmental Protection Agency portal, which provides information on various environmental dimensions: licensing, such as IE or IPC licensing and its enforcement, as well as environmental legislation, reports on various sectors, such as drinking water, urban waste water and landfills. In addition, new research and publications on the current state of the environment are available. Maps with air quality index, sewage treatment and others are accessible to the user. Also, the portal promotes news and events on various environmental topics.

This project is funded by the European Union and is implemented by the European Environment Agency

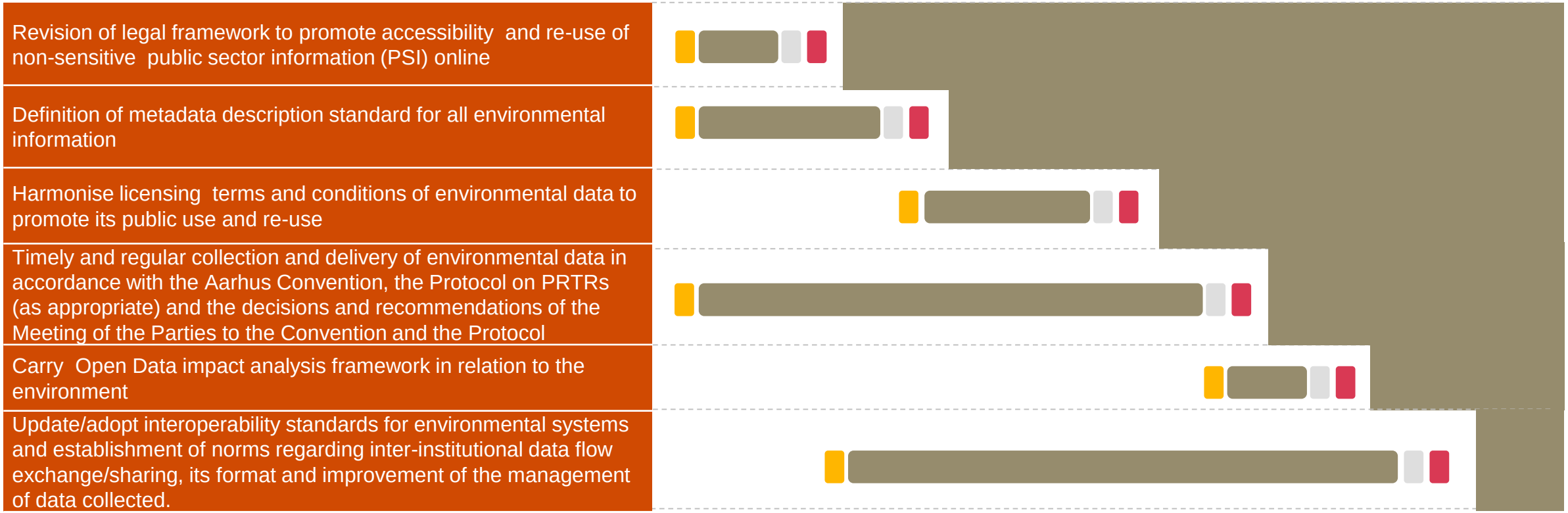
Sharing and disseminating of environmental information

Proposed actions for discussion

pwc

Common key initiatives
Content

Note: the timeline provided is purely indicative and should be discussed at a national level.



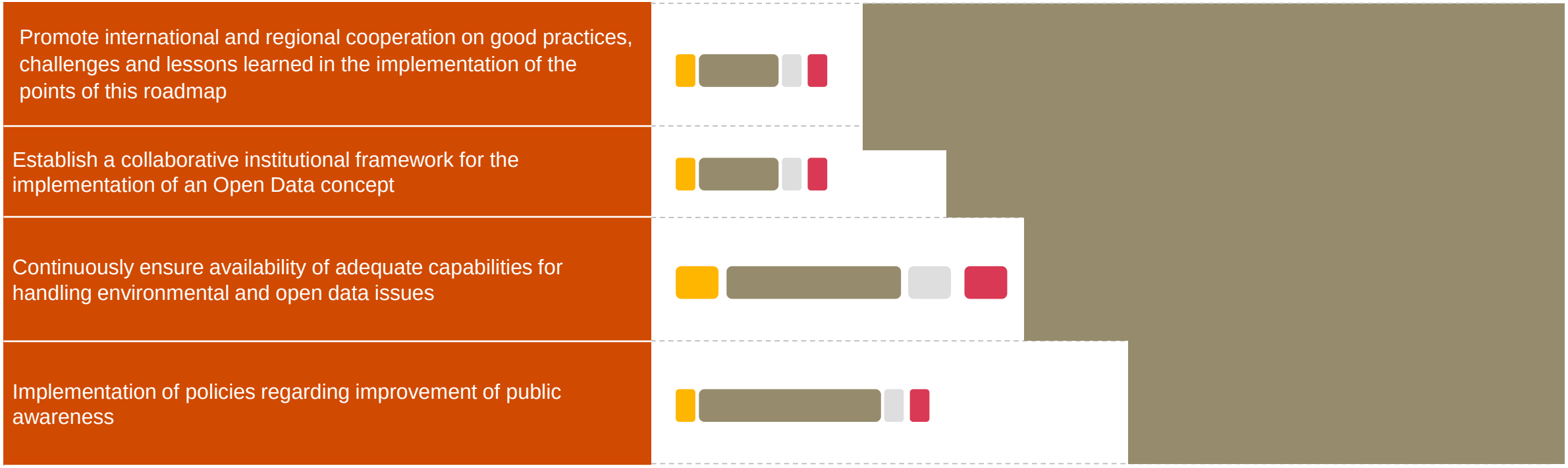
Common key initiatives
Infrastructure

Note: the timeline provided is purely indicative and should be discussed at a national level.

- Update/adopt interoperability standards for environmental systems and establishment of norms regarding inter-institutional data flow exchange/sharing, its format and improvement of the management of data collected.
- Build an electronic registry of public environmental information
- Enhance Interoperability of geospatial, statistical, health and environmental information systems
- Develop and/or continue to enhance an integrated system for environmental information management, including environmental information in accordance with the Aarhus Convention and the Protocol on PRTRs.
- Establish a single and user-friendly web-access point for environmental information
- Develop applications to engage citizens in environmental protection through technology, especially extending the scope of existing widely used one regarding meteo forecasts or citizens engagement tools
- Strengthening of technical capacity for environmental monitoring

Common key initiatives
Institutional Cooperation (Network)

Note: the timeline provided is purely indicative and should be discussed at a national level.



European Environment Agency

This project is funded by the European Union and is implemented by the European Environment Agency

Group discussion: content

The goal of these group discussions is to look at the initiatives proposed in the roadmap and to see how relevant they are at a national level, and how they could practically be implemented. Where possible, discuss how existing initiatives can be leveraged to address these points.

1. Reflect on the proposed national roadmap, and see how measures are relevant / applicable. Discuss potential responsibilities for the implementation of initiatives. (30 min discussion)

2. Present your initiatives to all participants (~5-10min per group)

Group discussion: infrastructure

The goal of these group discussions is to look at the initiatives proposed in the roadmap and to see how relevant they are at a national level, and how they could practically be implemented. Where possible, discuss how existing initiatives can be leveraged to address these points.

1. Reflect on the proposed national roadmap, and see how measures are relevant / applicable. Discuss potential responsibilities for the implementation of initiatives. (30 min discussion)

2. Present your initiatives to all participants (~5-10min per group)

Group discussion: cooperation

The goal of these group discussions is to look at the initiatives proposed in the roadmap and to see how relevant they are at a national level, and how they could practically be implemented. Where possible, discuss how existing initiatives can be leveraged to address these points.

1. Reflect on the proposed national roadmap, and see how measures are relevant / applicable. Discuss potential responsibilities for the implementation of initiatives. (30 min discussion)

2. Present your initiatives to all participants (~5-10min per group)

Thank you

pwc.com

© 2019 PwC. All rights reserved.