Sharing and dissemination of environmental information

Country maturity report: Belarus

June 2020

Prepared by PricewaterhouseCoopers under contract with the European Environment Agency

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

European Environment Agency

Legal notice

This report was produced by PricewaterhouseCoopers as part of the project for developing a roadmap and identify feasible and practical means for integrating environmental information in national e-governance/open data processes and platforms. This action is done in the context of the EU-funded ENI SEIS II East project 2016-2020. The report was built in 2018 and updated throughout 2019, including a review in March 2019 after the first regional meeting in Kiev, and the second review after the roundtable in June 2019. The report has been reviewed by public authorities in Belarus in December 2019.

This report contains information obtained or derived from a variety of publicly available sources described within the report in more detail and does not intend to be a comprehensive analysis of environmental information, open data and e-government in the country but a collection of the main elements shaping the national environmental information landscape.

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

European Environment Agency

Contents

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

European Environment Agency

List of figures

List of tables

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

European Environment Agency

List of abbreviations

Abbreviations	Definition
Belstat	National Statistical Committee of the Republic of Belarus
BELHYDROMET	Republican Centre for Hydrometeorology, Control of Radioactive Contamination and Environmental Monitoring 'BELHYDROMET'
CC	Creative Commons
DPSIR chain	Driving force, Pressure, State, Impact, and Response chain
EaP	Eastern Partnership
EEA	European Environment Agency
EGDI	E-Government Development Index
ENI	European Neighbourhood Instrument
EPI	Environmental Performance Index
EU	European Union
GIS	Geographical Information System
HCI	Human Capital Index
ICT	Information and Communication Technologies
ITU	International Telecommunication Union
MEA	Multilateral Environmental Agreement
MIAC	Main Information and Analytical Centre
MNREP	Ministry of Natural Resources and Environmental Protection
NAIS	Nationwide Automated Information System
NEMS	National Environmental Monitoring System of the Republic of Belarus
NGO	Non-governmental Organisation
NFP	National Focal Points
ODIN	Open Data Inventory
OSI	Online Service Index
PRTR	Pollutant Release and Transfer Registers
SDG	Sustainable Development Goals
SEIS	Shared Environment Information System
TII	Telecommunication Infrastructure Index

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

European Environment Agency

Abbreviations	Definition
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change

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

European Environment Agency

1 Methodological approach and policy context

The methodology followed to prepare the present report is based on the 2018 and 2019 European Union reports on open data maturity in Europe, with some adjustments made to accommodate the specific situation of Eastern Partnership countries as well as the focus on environmental information.

This report was produced by PricewaterhouseCoopers as part of the European Environment Agency (EEA) service contract No. 3437/R0-ENIE/EEA.57335 for developing a roadmap and identify feasible and practical means for integrating environmental information in national e-governance/open data processes and platforms. This action is done in the context of the EU-funded ENI SEIS II East project 2016-2020, which targets Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova and, Ukraine – the Eastern Partnership countries (EaP).

In all countries of the Eastern Partnership, e-governance and open data initiatives are recognised as mainstream for making data and information easily accessible to the policymakers, public and other stakeholders. Sharing environmental information through national e-governance and open data frameworks based on the Shared Environmental Information System (SEIS) principles[1] has seen an important development in recent years. Nonetheless, it could be further underpinned with a clearly developed vision and comprehensive roadmap for this specific area. The benefits of sharing, disseminating and promoting the use and reuse of environmental information can support the governmental policies and actions in environment and related areas, the transition towards a green economy, innovation compliance with various reporting obligations as well as support to the implementation of various Sustainable Development Goals (SDGs). Furthermore, it can streamline efforts and reduce the reporting burden for the national authorities by working together in a more structured and connected way.

The present project aims to facilitate such exchanges and helping the EaP countries advance in developing an open data policy for the environment. The project is strongly embedded in the context of several international commitments and strategic documents related to the collection, update, sharing, dissemination and use of environmental information as follows:

- 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[2];
- Protocol on Pollutant Release and Transfer Registers (Protocol on PRTRs)[3];
- Batumi Declaration 'Greener, cleaner, smarter!'[4] adopted by the ministers of the environment of the UNECE region calling to have SEIS in place in support to regular assessment in countries of UNECE region by 2021;

[1] https://www.eea.europa.eu/about-us/what/shared-environmental-information-system-1/shared-environmental-information-system
[2] https://www.unece.org/env/pp/treatytext.html
[3] https://www.unece.org/env/pp/prtr/docs/prtrtext.html
[4] https://www.unece.org/fileadmin/DAM/env/documents/2016/ece/ece.batumi.conf.2016.2.add.1.e.pdf

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

European Environment Agency

- Declaration on Cooperation on Environment and Climate Change in Eastern Partnership[5] (Luxembourg 2016);
- The 2030 Agenda for Sustainable Development[6];
- Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions 'The European Green Deal', adopted on 11 December 2019[7];
- Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'A European Strategy for Data' adopted on 19 February 2020[8];
- Joint Communication to the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'Eastern Partnership policy beyond 2020' Communication[9] adopted on 18 March 2020;

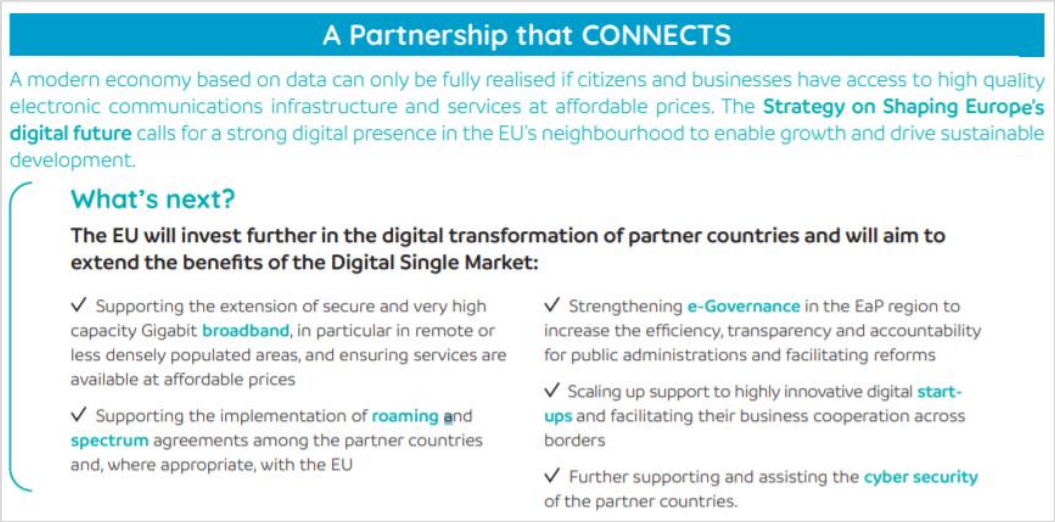


Figure 1. One of the five objectives of Eastern Partnership policy initiative (2020, Factsheet: The Eastern Partnership beyond 2020: Reinforcing Resilience – a partnership that delivers for all[10])

- UN Secretary-General's Roadmap for Digital Cooperation, June 2020[11];
- Eastern Partnership leaders' video conference, 18 June 2020[12].

[5]https://ec.europa.eu/environment/international_issues/pdf/declaration_on_cooperation_eastern_partnership.pdf
[6] https://sustainabledevelopment.un.org/post2015/transformingourworld
[7] https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf
[8] https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1593073685620&uri=CELEX%3A52020DC0066
[9] https://eeas.europa.eu/sites/eeas/files/1_en_act_part1_v6.pdf
[10] https://eeas.europa.eu/sites/eeas/files/eap_joint_communication_factsheet_18.03.en_.pdf
[11] https://www.un.org/en/content/digital-cooperation-roadmap/
[12] https://www.consilium.europa.eu/en/meetings/international-summit/2020/06/18/

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

European Environment Agency

SEIS is also an integral part of the Good Environmental Governance flagship initiative of the EU. EEA is currently supporting this process in both the European Neighbourhood countries[13] East[14] and South[15] in the context of dedicated projects currently running until 2020.

As part of this project, a 'Country maturity report on sharing and dissemination of environmental information' has been prepared for each of the six EaP country. Each individual report reflects on the national e-government and Open Data maturity level. Furthermore, each report identifies synergies for fostering environmental information sharing and dissemination to support the implementation, among others, of the SEIS principles, of the UNECE Aarhus Convention and its Protocol on PRTRs.

As such, the project is aiming to 1) gradually expand the open data maturity approach to the European Neighbourhood East countries and to the specific topic of environment, 2) assess the EaP countries' status of development in e-governance and open data for the environment, and 3) develop with and for each EaP country a roadmap for fostering the process and gradually align it to similar developments taking place in the European Union and other more advanced countries.

The report highlights the main challenges in the country in this area. Its primary goal is to serve as a tool to initiate the discussion about the strategic development and potential initiatives at the national level, bringing stakeholders from e-government, Open Data and the environment together. The report can serve both as a tool for further implementation and as a possible replicable prototype for other countries.

The SEIS approach consists of three pillars: Content, Infrastructure and Cooperation[16], and this approach was followed for structuring the report and for gathering the necessary information. The report also leverages the work done in the European Union for measuring the maturity level of open data in the Member States. Consequently, the report adopts a similar structure as the 'Open Data Maturity in Europe 2019'[17] published on the European Open Data Portal but adapted to the specificity of EaP countries and focusing on the connection between e-government, open data and environmental information. As such, the report is built around three major blocks, namely 1) the assessment of environmental information readiness; 2) the assessment of technological enablers; and 3) the key challenges and their translation into a proposed roadmap. The structure of the report is similar for all EaP countries. This approach makes the analysis comparable across EaP countries and serves as a baseline for developing and exchanging initiatives across the region.

In this regard, all country reports are complemented by the Good Practice Report which supports the implementation of the proposed roadmaps offering possible solutions and alternatives based on the example of other countries and international organisations.

[13] https://euneighbours.eu/en
[14] EU Neighbours East: Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova, and Ukraine
[15] EU Neighbours South: Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, and Tunisia
[16] https://eni-seis.eionet.europa.eu/east/governance/what-is-seis
[17] The report structure was prepared according to Open Data Maturity in Europe 2018 and updated according to Open Data Maturity in Europe 2019
https://www.europeandataportal.eu/en/dashboard#2019

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

European Environment Agency

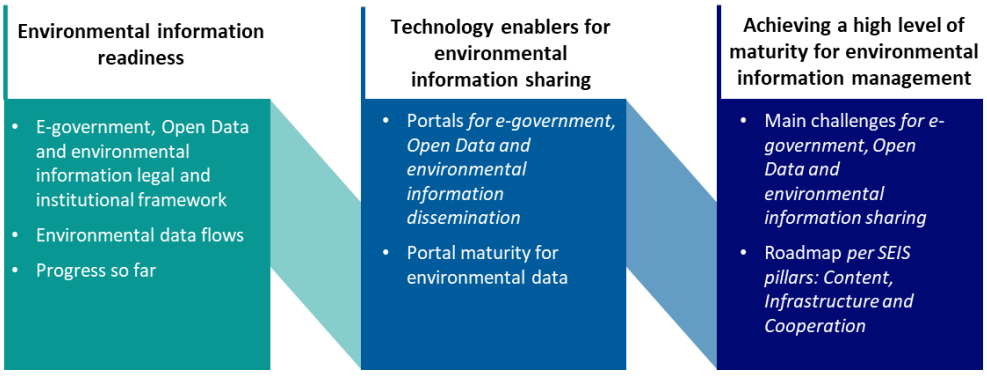


Figure 2. The country maturity report structure

Each report was prepared in close cooperation with EEA project team, the National Focal Points (NFPs) and national assistants of the ENI SEIS project, the Aarhus Convention and the Protocol on PRTRs National Focal Points and the UNECE secretariat for these conventions respectively. Furthermore, a broad consultation with national experts across a wide range of topics was ensured, ranging from environment, statistics, sectoral policies up to e-government and IT infrastructure.

The following sources of information were analysed for preparing the report, namely:

- Legislation:
  - Legal acts related to public information;
  - Legal acts related to open data;
  - Legal acts related to e-government;
  - Legal acts related to environmental information.
- Environmental reporting:
  - Aarhus Convention national implementation reports[18];
  - Protocol on PRTRs national implementation reports where available;
  - UNECE Environmental Performance Review where available;
  - EU Analytical Report 7: Open Data in the European Union Neighbourhood[19];
  - UNECE Progress in the production and sharing of core environmental indicators[20];
  - Interim report on the Implementation of the Action Plan for Introduction of Open Government Partnership Initiative;
  - EEA – Belarus country report under ENPI-SEIS I project[21];
  - County factsheets on the state of SEIS implementation in 2018[22];
  - World Bank Country Environmental Analysis, where available;

[18] 2017 National implementation reports by Parties : https://www.unece.org/env/pp/reports_trc_implementation_2017.html

[19] European Open Data Portal, Analytical Report 7, Open Data in the European Union Neighbourhood, June 2017, by Capgemeni, funded by the European Commission. https://www.europeandataportal.eu/sites/default/files/edp_analytical_report_n7.pdf

[20] http://www.unece.org/environmental-policy/environmental-monitoring-and-assessment/areas-of-work/shared-environmental-information-system.html

[21] ENPI-SEIS East Region Synthesis Report, European Environment Agency, 2010-2014 https://www.eea.europa.eu/publications/enpi-seis-east-region-synthesis-report

[22] http://www.unece.org/environmental-policy/environmental-monitoring-and-assessment/areas-of-work/shared-environmental-information-system.html

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

European Environment Agency

  - Country presentations made during the 4th ENI SEIS II East Project Steering Committee Meeting[23], 12 November 2019;
  - Other country-specific reports.
- Portals:
  - EU Open Data Portal and national open data portals;
  - E-government services portal;
  - Environmental portals;
  - Statistical office website.
- Other sources:
  - Country-specific reports or/and analysis prepared by national and international bodies.

The challenges identified in each country, the related good practices, and the initiatives stemming from the roadmap were initially discussed during the regional event in Kyiv on 4-6 March 2019. Furthermore, the country maturity reports were updated based on the discussions and presentations made at the national events and were further discussed in the national roundtable in Minsk on 24 June 2019, with a focus on the roadmap (way forward). The roundtable gathered over 30 stakeholders from various sectors, including e-government, open data and environmental information providers and users (including NFPs from the ENI SEIS project and the Aarhus Convention, few representatives from non-governmental organisations and the Aarhus Centre of Belarus). Comments, presentations and conclusions from the national round table discussions were integrated into the national reports.

Figure 3. Photo from the first regional meeting in Kyiv – Credit: Nelli Baghdasaryan

The conclusions and recommendations from the roadmap were presented at the second regional UNECE-EEA workshop 'Open Data for the Environment' taking place in Geneva, on 2 October 2019, back-to-back with the Aarhus Convention Task Force on Access to Information.

[23] Presentations are available here: https://eni-seis.eionet.europa.eu/east/areas-of-work/communication/events/project-related-events/4th-eni-seis-ii-east-project-steering-committee-meeting

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

European Environment Agency

The draft version of the report was shared with the ENI countries, and the last consultation was organised in December 2019 before releasing the final version of the report.

All the materials, including the summary of the discussions taking place in the events organised in the context of the project, are available at the links below:

- Regional workshop on Open Data and e-Government for the Environment (Kiev, 4-6 March 2019);
- National roundtable on open data and e-government for the environment in Armenia (Yerevan, 10 September 2019);
- National roundtable on open data and e-government for the environment in Azerbaijan (Baku, 27 August 2019);
- National roundtable on open data and e-government for the environment in Belarus (Minsk, 24 June 2019);
- National roundtable on open data and e-government for the environment in Georgia (Tbilisi, 13 June 2019);
- National roundtable on open data and e-government for the environment in the Republic of Moldova (Chisinau, 23 May 2019);
- National roundtable on open data and e-government for the environment in Ukraine (Kiev, 26 September 2019);
- Joint UNECE-EEA Workshop on Open Data for the Environment (Geneva, 2 October 2019).

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

European Environment Agency

2 Executive summary

The methodology followed to prepare this report is based on the 2018 and 2019 European Union reports on open data maturity in Europe, with some adjustments made to accommodate the specific situation of Eastern Partnership countries as well as the focus on environmental information.

The report was prepared and updated between 2018 and 2020 as part of the EU-funded project - Implementation of the Shared Environmental Information System principles and practices in the Eastern Partnership countries (ENI SEIS II East) project. National input in preparation of the report was ensured through broad dialogue and consultation with various public authorities and other stakeholders in Belarus, in particular those related to the environment and statistics. In addition, experts across various policy domains, including IT and e-government, have been involved through participation in national and regional events. These activities allowed an exchange of views on the future of e-government and open data in the cross-cutting domain of the environment in Belarus. As a result, the document presents an overview of the national e-government framework, the maturity level of open data and dissemination of environmental information in Belarus. The analysis covered:

- a review of the policy framework to examine the directions and practical arrangements set out for environmental information dissemination using open data and e-government solutions;
- review of the legal framework to determine the existing legal requirements that define the areas of e-government, open data and environmental data and information dissemination;
- assessment of the technological solutions to determine the existing technical capabilities and improvements that need to be implemented in future.

Based on the above, the document proposes a roadmap that includes measures focused on the development of e-government and open data frameworks, which would greatly support the environmental domain. The road map is designed to be a living document throughout the implementation process and a benchmark to assess progress at various stages of development.

E-government

During the past five years in Belarus, the e-government policy framework was established, by setting out objectives up to 2022. The e-government strategic directions are defined by the Strategy for the Development of Informatisation for 2016-2022 and the State Programme for the Development of the Digital Economy and Information Society for 2016–2020. These documents set up an action plan and define measures to be implemented for improving infrastructure for e-government services.

The overall e-government development in Belarus is led and coordinated by the Ministry of Communication and Informatisation, which is responsible for progress in this area. Nevertheless, the e-government legal framework should be further developed by clearly identifying the responsibilities of all stakeholders at national and local levels as well as the procedures for coordination and monitoring of the e-government development.

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

European Environment Agency

Furthermore, it is highly recommended that Belarus establishes a legal interoperability framework and defines procedures and standards for the gradual exchange of data and information held by public authorities.

Since 2019 the National Automated Information System (NAIS)[24] has been used. It was designed to integrate national information resources, implement administrative procedures in electronic format and electronic services through the Unified Portal of E-Services. Currently, there is a wide range of thematic and sectorial national information systems which are integrated with NAIS, except for environment.[25] It is recommended to further develop NAIS and the Unified Portal of E-services and include the environmental domain as well as to improve the data exchange and access to information for the public and businesses.

Open data

The policy and the legal frameworks in the area of open data require further development to raise at a comparable level with other EaP countries and harness economic, social and environmental benefits, including reduced costs for public administration. In this respect, Belarus could consider developing an open data policy, defining the main principles of open data management and the priority datasets to be published. In addition, the public authorities could strongly benefit from clearly defined responsibilities and procedures for open data management and dissemination.

Nevertheless, the country made progress in open data infrastructure and developed a software solution for open data. The Open Data Portal developed in 2018 was further updated in 2020. There is still limited progress in the population of the portal with new datasets, as currently the Open Data Portal contains approximately 100 datasets with only six of them related to the environmental domain.

To stimulate the open data initiative, the Ministry of Communication and Informatisation is currently developing a draft governmental resolution with the goal of promoting open data usage and supporting the development of applications based on open data. In addition, the resolution aims to encourage the public authorities to actively use the Open Data Portal in order to make the data and information available[26]. The resolution is planned to be adopted in 2020, and due to its high relevance, the fast implementation is strongly recommended.

Environmental information sharing and dissemination

The existing legislation cover the general obligation to disseminate environmental information. In 2007, the Law on Environment Protection was updated to specify the types and the sources of environmental information, as well as the conditions for access to environmental information. However, it is recommended to further develop and adopt more detailed procedures for data management and dissemination.

The environment information is spread among many environmental portals and there is no single web access point, which would allow the public to easily access all web platforms hosting environmental information.

[24] https://portal.gov.by
[25] See example of Trembita information system of Ukraine for further ideas of development
[26] https://www.mpt.gov.by/sites/default/files/poyasnitelnaya_zapiska.doc

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

European Environment Agency

The most comprehensive framework for managing environmental information is the National Environmental Monitoring System (NEMS) coordinated by the Main Information and Analytical Centre of the National Environmental Monitoring System (under auspices of BELHYDROMET). It is recommended to enhance the interoperability of existing platforms in the area of environment by introducing application programming interfaces (APIs), protocols and procedures for data exchange. Building on NAIS can be a practical solution under the present conditions.

Suggested recommendations

Following an analysis of the current situation, the proposed roadmap outlines key areas for future development in the field of e-government, open data and dissemination of environmental information, and provides concrete measures for improvement. Additionally, to facilitate the implementation of the roadmap, several examples and practical recommendations are provided in the report 'Open data and e-government good practices for fostering environmental information sharing and dissemination'.

As a general remark, the success and rapid advancement of the country in this challenging domain remain strongly dependent on clear priority-setting, multidisciplinary teamwork and regular monitoring of progress. Furthermore, once progress is made in one or several areas proposed for consideration, readjustments and amendments to the roadmap will be needed to keep it relevant and focused on the key priorities for the country.

The measures recommended for Belarus in the context of the roadmap have been grouped into the following categories: policy-related, legal and technical measures. They cover the following issues:

- Policy measures: covering, among others, the adoption of an open data policy;
- Legal measures: addressing, among others, the adoption of international standards for interoperability and metadata description, defining procedures for open data preparation, regular update, quality assurance/quality control and dissemination;
- Technical measures: referring, among others, the development of an integrated information system and the setting up of a single access point for environmental information, updating licencing terms and conditions, preparation of metadata description and enhancing the multilingual aspect of web portals and websites in the area of the environment.

All the measures need to be seen as strongly interacting with and interdependent of each other and the impact of their gradual implementation closely monitored, as it may bring systemic changes across the whole data and information chain.

It is also strongly recommended that a multidisciplinary team should be set up to address and oversee the implementation of all the above-mentioned measures. Belarus has good experience by developing the NEMS framework in setting up cross-sectoral teams operating horizontally. This experience should be continued and applied in the field of open data and environmental information.

Based on the findings of the report three specific recommendations should be considered as a priority for Belarus: raising awareness among public officials on the benefits of open data, linking the existing environmental information systems and keeping the environmental information regularly updated.

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

European Environment Agency

In practice, these recommendations could be achieved by implementing relevant actions set out in the roadmap and summarised below:

- Specific policy measures, to promote and harness the benefits of open data, recognise the environmental domain as a priority for open data, including priority datasets;
- Specific legal measures, which could define open data policy as well as dedicated roles and responsibilities for public authorities in open data management procedures and processes, as well as preparing detailed methodological guidelines for open data preparation cycle;
- Specific technical measures, targeting capacity-building and awareness-raising activities to improve the understanding of public authorities on how to technically prepare and maintain open data as well as developing integrations and APIs for existing environmental information systems.

The present report depicts the current status of e-government, open data and environmental information management and dissemination in Belarus. Given the exponential development of this area and its recognition as a top policy priority for the near future, a regular update and assessment of the situation and progress achieved is strongly recommended.

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

European Environment Agency

3 Readiness of environmental information

3.1 E-government, open data and environmental information – legal policy and institutional framework

This section contains a summary of the legal, policy and institutional frameworks related to e-government, open data and environmental information.

3.1.1 National policy and legal framework

3.1.1.1 E-government

This section presents the main laws and policies shaping the e-government landscape in Belarus.

Decree of the President of the Republic of Belarus of 8 November 2011 No. 515 on the approval of the measures for the development of information society in the Republic of Belarus[27]

The decree establishes:

- the functioning of the state system for managing the electronic digital signature verification in Belarus;
- cryptographic protection of information that does not contain information related to the state secrets;
- interdepartmental information exchange of state authorities and other state organisations (except for information classified as state secrets);
- the operation and development of interdepartmental information systems.

Decree of the President of the Republic of Belarus on 21 December 2017 No. 8 'On the Development of the Digital Economy' [28]

The Decree defines the goal to develop innovation sphere and build modern digital economy in the Republic of Belarus and establishes:

- creation of conditions for the introduction of the blockchain and other technologies which are based on the principles of distribution, decentralisation and security;
- provision of the benefits (e.g., release of tax duty) to the users of the modern technologies;
- establishing of measures aimed at increasing the legal protection of the users of the modern financial technologies;
- the conditions for the development of the IT industry and defines the legal basis for the activities of the High Technology Park, the notion of 'high technology' itself, and the requirements for their activities, and measures of state support for its residents.

[27] https://cis-legislation.com/document.fwx?rgn=47739#A3CZ0W473O
[28] http://president.gov.by/ru/official_documents_ru/view/dekret-8-ot-21-dekabrja-2017-g-17716/

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

European Environment Agency

Resolution of the Council of Ministers of the Republic of Belarus of 10 February 2012 No. 138 on the basic electronic services

This resolution covers:

- a list of basic electronic services, which are provided through a single electronic services portal;
- a plan for the development of state information resources that are required for the provision of basic electronic services through a single portal of electronic services;
- a plan for a phased transition to the provision of electronic services through a single electronic services portal.

Resolution of the Council of Ministers of the Republic of Belarus of 14 July 2017 No. 529 on the approval of the 'Administrative services to be implemented electronically'[29]

This resolution provides a renewed list of administrative procedures to be implemented in electronic form through a single portal of electronic services to the broader public, as well as legal entities and individual entrepreneurs. This also includes administrative procedures related to the environmental matters.

Strategy for the Development of Informatisation in the Republic of Belarus for 2016 – 2022 approved at the meeting of the Presidium of the Council of Ministers on 3 November 2015[30]

This Strategy defines the principles of the state policy of the Republic of Belarus in the field of informatisation and the main directions of development of the information society:

- development of an effective and transparent system of public administration;
- development of national information and communication infrastructure;
- development of digital business infrastructure, online market, banking services;
- introduction of information and communication technologies in the real sector of the economy;
- improving the social sphere on the basis of information and communication technologies;
- development of national electronic content;
- development of its own branch of information technologies;
- ensuring digital trust, protection of information resources and information and communication infrastructure;
- scientific support for the development of informatisation.

Resolution of the Council of Ministers of the Republic of Belarus of 23 March 2016 No. 235 on the approval of the State Programme for the Development of the Digital Economy and Information Society for 2016–2020[31]

The programme was launched based on the principles stated in the Strategy for the development of informatisation in the Republic of Belarus for 2016 – 2022 and contains three sub-programmes:

[29] https://pravo.by/document/?guid=12551&p0=C21700529&p1=1
[30] http://e-gov.by/zakony-i-dokumenty/strategiya-razvitiya-informatizacii-v-respublike-belarus-na-2016-2022-gody
[31] https://www.pravo.by/document/?guid=3871&p0=C21600235

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

European Environment Agency

- *Informatisation infrastructure* – aims to further implement e-government technologies. Its main goal is to improve the efficiency and transparency of the State Regulation system through information and communication technologies (ICT) solutions.
- *Information and communication infrastructure* – include measures for the establishment and development of modern national information and communication infrastructure, platforms and services based on modern ICT technologies.
- *Digital transformation* – aimed at providing efficiency gains for selected functions and increase labour productivity through the digitalisation of processes in all spheres of the national digital market. Additionally, the sub-program framework includes the development of the Belarusian integrated service and settlement system and the development of the State Electronic Control System[32].

The set-up of the Open Data Portal at the national level is at the heart of the sub-programme 'Information and communication infrastructure'. The Government of Belarus launched a national portal at the end of 2018 (see also chapter 4.1.1 in this report).

The progress of the programme implementation is being monitored and reported[33]. The report of 2019 indicates the growth of internet coverage and users. In addition, it indicates that the development of regulatory and legal conditions for the open data initiative continued throughout the year.

3.1.1.2 Open data

Compared to other EaP countries, the legal framework on open data requires further development. A review of the current legislation is necessary to provide concrete mechanisms to share public information. In particular, the country would benefit from a separate open data strategy and policy. It could encapsulate the basic principles, roles and responsibilities, tools and methods, licences, and procedures for the publication of open data.

Law on Information, Information Technologies and Information Security[34]

The Law on Information, Information Technologies and Information security regulates:

- collection, processing, aggregation, storage search, sharing, and dissemination , as well as use of the information;
- development and use of information technology, information systems and information networks, development of the information resources;
- organisation of information security.

3.1.1.3 Environmental information

Environment legislation covers the main topics for environmental information management and dissemination. However, the implementation the legal and policy acts needs further

[32] Open keys control system, the national segment of the Eurasian Economic Union integrated information system.
[33] https://www.mpt.gov.by/ru/informaciya-o-hode-vypolneniya-gosudarstvennoy-programmy-v-2019-godu
[34] http://www.pravo.by/document/?guid=3871&p0=H10800455

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

European Environment Agency

strengthening[35]. This section presents the main laws and policies shaping the environmental information landscape in Belarus.

Law on Environmental Protection [36]

The Law on Environmental Protection establishes the legal basis for environmental protection, nature management, preservation and restoration of biological diversity, natural resources and objects. It is aimed at ensuring the constitutional rights of the public to an environment that is favourable to life and health.

In 2007, amendments to the law introduced specific definitions, types and sources of environmental information, as well as defining the conditions for access to environmental information.

Resolution of the Council of Ministers of the Republic of Belarus of 24 May 2008 No. 734 on the approval of regulations on the procedure for forming and maintaining the state database on the state of the environment and related impacts and the structure of general environmental information[37]

The resolution requires providers of environmental information38 to maintain registers of the environmental information they possess. The resolution envisages the development of a consolidated register of environmental information by the Ministry of Natural Resources and Environmental Protection. The register would include the list of environmental information available in the registers of environmental information providers.

In late 2014, the Ministry requested that other state authorities provide information for inclusion in the consolidated register. The consolidated information register is available online in the form of a *doc* file.[39] The register helps to search for environmental information and indicates aspects such as:

- the organisation carrying out the type of activity, as a result of which a register of environmental information is formed;
- the titles of environmental documents;
- the form of environmental information;
- the access conditions.

In 2020 the Resolution was updated by setting roles and responsibilities for the environmental information registry owners in terms of data and information storage and dissemination. The document includes also a mandatory environmental data and information dissemination plan.

Other major environment-related legislation

The table below lists other legislation that covers environment-related provisions.

---

[35] Annex 1 of the Commission Implementing Decision on the Annual Action Programme 2015 in favour of the Republic of Belarus – Action Document for "Strengthening Air Quality and Environmental Management in Belarus".
[36] http://pravo.by/document/?guid=3871&p0=v19201982
[37] https://etalonline.by/document/?regnum=c20800734&q_id=2228865. It is to be noted that access to the document is limited with the paid registration.
[38] Ministry of Natural Resources and Environmental Protection, Ministry of Forestry, Ministry of Agriculture and Food, Ministry of Emergency Situations, Ministry of Education, State Committee on Property, State Inspectorate for the Protection of Flora and Fauna, National Academy of Sciences, local executive and administrative bodies, other state authorities
[39] http://minpriroda.gov.by/ru/new_url_857709135-ru/

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

European Environment Agency

Table 1. List of major environment-related legislation containing provisions on access to information (as of May 2020)

No	Title of the document	Date of adoption
1.	Law on Environmental Protection	26 November 1992
2.	Law on the Safety of Genetic Engineering Activities	9 January 2006
3.	Resolution of the Council of Ministers of the Republic of Belarus of 24 May 2008 No. 734 on the approval of regulations on the procedure for forming and maintaining the state database on the state of the environment and related impacts and the structure of general environmental information	24 May 2008
4.	Law on Local Government and Self-Government in the Republic of Belarus	4 January 2010
5.	Decree of the President of the Republic of Belarus on the approval of integrated environmental permits	17 November 2011
6.	Resolution of the Council of Ministers of the Republic of Belarus on the approval of some measures for the implementation of the law on introducing amendments and addenda to some laws on architectural, city-planning and construction activities of the Republic of Belarus	6 June 2011
7.	Resolution of the Council of Ministers of the Republic of Belarus on the approval of regulations on the procedure for providing public environmental expertise	1 June 2011
8.	Resolution of Council of Ministers of the Republic of Belarus on the approval of measures for the implementation of the decree of the President of the Republic of Belarus of 17 November 2011 No. 528	12 December 2011
9.	Resolution of the Council of Ministers of the Republic of Belarus on the approval of regulations on the procedure for conducting a state safety review of genetically engineered organisms and approximate terms of contracts concluded for its conduct and issuing permits to release non-pathogenic genetically engineered organisms into the environment for testing	12 June 2019
10.	Amendments to the Law of the Republic of Belarus on State Environmental Expert Review, Strategic Environmental Assessment and Environmental Impact Assessment[40]	13 June 2019

Environmental Strategy of the Republic of Belarus until 2025[41]

The Environmental Strategy until 2025 defines the main principles and areas of environmental policy implementation in the country. The goal of this strategy is to provide environmentally favourable living conditions for the population, promoting the solution of global and regional environmental issues, and ensuring the sustainable social and economic development of Belarus.

To achieve this goal, the following objectives are set: reducing harmful effects on the environment, restoring natural ecosystems, improving waste management, ensuring sustainable territorial development, preserving biological and landscape diversity, minimising

[40] http://www.house.gov.by/by/zakony-by/view/ab-unjasenni-zmjanennjau-i-dapaunennjau-u-zakon-respubliki-belarus-ab-dzjarzhaunaj-ekalagichnaj-ekspertyze-477/
[41] http://www.minpriroda.gov.by/ru/new_url_1670219329-ru/

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

European Environment Agency

and adapting to climate change, planning environmental measures using geo-information technologies and activities.

After analysing strategic documents of Belarus, specific actions for further development could be recommended as follows:

- different environmental objectives could be further prioritised;
- a stronger link between the agreed environmental targets and the government development strategy could be ensured;
- the integration of environmental issues into sectoral strategies, programmes, and activities could be strengthen and its implementation closely monitored

3.1.2 Main policies and international agreements

Belarus is a party to several international agreements addressing the public access to environmental information or/and setting up environmental reporting obligations. An overview of the key policies, international agreements and other relevant environmental processes Belarus is actively engaged in are presented below.

3.1.2.1 Multilateral Environmental Agreements setting out public access to information and reporting obligations

Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention)[42]

Belarus approved[43] the Aarhus Convention on March 9, 2000. The Convention entered into force on October 30, 2001. Within its broad scope, the Convention sets out obligations to provide effective public access to environmental information held by various public authorities, public participation in decision-making and access to justice in environmental matters. The progress of implementation of obligations by Belarus is reflected in national implementation reports for the Convention[44].

In October 2014 the Ministry of Natural Resources and Environmental Protection approved the Action Plan for the implementation of the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters of the environment, for the period 2014-2017 to rationalise the implementation of the Convention.

Protocol on Pollutant Release and Transfer Registers to the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Protocol on PRTRs)[45]

The Protocol sets out obligations to establish pollutant release and transfer registers, namely a national database or inventory of potentially hazardous chemical substances released into the

[42] https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XXVII-13&chapter=27&clang=_en
[43] Decree of the President of the Republic of Belarus № 726 of 14 December 1999 on the approval of the "Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters pertaining to the environment"
[44] https://aarhusclearinghouse.unece.org/national-reports
[45] https://www.unece.org/env/pp/prtr.html

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

European Environment Agency

air, water and soil and off-site transfers. As such, the inventory allows public authorities to track each release and transfer of a hazardous chemical substance consistently over time.

Belarus has not yet become a Party to the Protocol on PRTRs.

Other multilateral environmental agreements

This section analyses selected multilateral environmental agreements (MEAs) in terms of public access to information, reporting and monitoring requirements. The MEAs that are presented in the table below were chosen as examples to reflect on whether the country should carry out relevant monitoring, report data in thematic areas of water, air, biodiversity, climate change and the ozone layer and provide effective public access to information. For this report, the analysis focuses on the following:

- **public access to information.** In this respect**,** a review of the Belarusian public authorities' portals was performed. The analysis shows the extent to which publicly available information covers the requirements of the MEAs presented in the table below.
- **reporting.** In this case, a review of MEAs related databases was performed in order to determine if the official national reporting obligations are fulfilled by the responsible public authorities according to each type of legal obligation. The analysis indicates whether the national report related to each specific MEA was submitted on time. The situation is presented in the table below.
- **monitoring activities**. A review of the monitoring activities was performed, as defined by the respective MEA and available on the official portals (including the related reports provided by the public authorities). The analysis indicates if the monitoring activity was performed on time in accordance with the requirements of each MEA.

The table below presents some examples of the MEAs analysed in this section.

Table 2. Analysis of selected MEAs in terms of public access to information, reporting and monitoring requirements (as of May 2020, developed by the report's authors)

MEA	Public access to information	Reporting	Monitoring
UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention)	Yes[46]	Yes[47]	Yes[48]
UNECE Convention on Long-range Transboundary Air Pollution	Yes[49]	Yes[50]	Yes[51]

[46] Source: sdgplatform.belstat.gov.by
[47] The national reports are submitted to the UNECE Water Convention secretariat and will be made available at https://www.unece.org/water/transboundary_water_cooperation_reporting.html
[48] Source: sdgplatform.belstat.gov.by
[49] Source: nsmos.by
[50] Source: ceip.at
[51] Source: nsmos.by

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

European Environment Agency

MEA	Public access to information	Reporting	Monitoring
UNECE Protocol to the 1979 Convention on Long-range Transboundary Air Pollution on the Reduction of Sulphur Emissions or their Transboundary Fluxes by at least 30 per cent	Yes[52]	Yes[53]	Yes[54]
UNECE Protocol to the 1979 Convention on Long-range Transboundary Air Pollution Concerning the Control of Emissions of Nitrogen Oxides or their Transboundary Fluxes	Yes[55]	Yes[56]	Yes[57]
UNECE Protocol to the 1979 Convention on Long-range Transboundary Air Pollution to Abate Acidification, Eutrophication and Ground-level Ozone	Not a party		
UN Convention on Biological Diversity	Yes[58]	Yes[59]	Yes[60]
UN Framework Convention on Climate Change	Yes[61]	Yes[62]	Yes[63]
UN Vienna Convention for the Protection of the Ozone Layer	Yes[64]	Yes[65]	Yes[66]
UN Montreal Protocol on Substances that Deplete the Ozone Layer	Yes[67]	Yes[68]	Yes[69]

** Explanation of the markings in the table:*

- *Yes – the country provides publicly available information on official portals or official reports related to MEAs;*
- *No – the country does not provide information on official portals or official reports;*
- *Not a party – the country has not acceded to the MEA.*

[52] Source: nsmos.by
[53] Source: ceip.at
[54] Source: nsmos.by
[55] Source: nsmos.by
[56] Source: ceip.at
[57] Source: nsmos.by
[58] Source: belstat.gov.by/en
[59] https://www.cbd.int/doc/world/by/by-nr-05-ru.doc
[60] Source: nsmos.by
[61]https://www.belstat.gov.by/en/ofitsialnaya-statistika/macroeconomy-and-environment/okruzhayuschaya-sreda/the-shared-environmental-information-system/a-air-pollution-and-ozone-depletio-1-air-polluting-emissions/
[62] https://unfccc.int/sites/default/files/resource/92104765_Belarus-NC7-1-AI_BLR_NC7.pdf
[63] http://www.nsmos.by/content/173.html
[64]https://ozone.unep.org/countries/data?report_type=0&party%5B0%5D=37&period_start=1986&period_end=2019&output_type=odp-CO2e-tonnes
[65] https://ozone.unep.org/countries/profile/blr
[66] https://ozone.unep.org/countries/profile/blr
[67]https://ozone.unep.org/countries/data?report_type=0&party%5B0%5D=37&period_start=1986&period_end=2019&output_type=odp-CO2e-tonnes
[68] https://ozone.unep.org/countries/profile/blr
[69] https://ozone.unep.org/countries/profile/blr

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

European Environment Agency

3.1.2.2 Other international fora promoting sharing and accessibility of environmental information

'Environment for Europe' process

The first 'Environment for Europe' ministerial conference took place in 1991 at Dobris Castle in the former Czechoslovakia. A set of basic guidelines for a pan-European cooperation strategy was laid down[70]. The Shared Environmental Information System (SEIS) in the pan-European region was launched at the 'Environment for Europe' ministerial conference in 2011.

In 2016, the eighth 'Environment for Europe' ministerial conference[71] took place in Batumi, Georgia. The ministers also signed the ministerial declaration[72] 'Greener, cleaner and smarter!' calling for the continuation of efforts and the further development of national information systems to have SEIS in place in the countries of Europe and Central Asia by 2021[73].

The next 'Environment for Europe' ministerial conference will review progress in this area of the environment and celebrate 30 years of the 'Environment for Europe' process.

3.1.2.3 Cooperation with the EU

This section provides an overview of the main policy frameworks and assistance programmes which serves as a basis for the cooperation with the EU.

Declaration on Cooperation on Environment and Climate Change in Eastern Partnership[74]

In 2016, the European Union (EU) and countries of the EaP adopted the Declaration on Cooperation on Environment and Climate Change (Luxembourg Declaration). The declaration aims to strengthen regional cooperation on environmental and climate measure and sustainable development in the Eastern Partnership framework, through (i) implementing relevant international agreements, such as the 2030 Agenda for Sustainable Development and the Paris Agreement on Climate Change; (ii) raising awareness among and cooperate with relevant stakeholders; supporting the involvement of civil society in decision-making, strategic planning and implementation; and (iii) monitor the results of environmental policies, programmes and plans, and other commitments.

The second Eastern Partnership (EaP) ministerial meeting on the environment and climate change took place on 9 November 2018 in Luxembourg, co-organised by the European Commission and Austrian Presidency. The progress achieved by the countries was discussed and assessed in view of further strengthening the cooperation[75]. The third Eastern Partnership high-level meeting is scheduled now for early 2021 (while only a virtual summit will take place on 18 June 2020 due to coronavirus restrictions).

[70] More information: https://www.unece.org/env/efe/historyofefe/history.en1991_01.html
[71] The Conference was organised based on the provisions of the Environment for Europe Reform Plan, adopted in 2009, and in accordance with the procedures for the Batumi Ministerial Conference, adopted in 2014.
[72] https://www.unece.org/fileadmin/DAM/env/documents/2016/ece/ece.batumi.conf.2016.2.add.1.e.pdf
[73] The main outcome of the conference is available here: https://www.unece.org/index.php?id=41721
[74]http://ec.europa.eu/environment/international_issues/pdf/declaration_on_cooperation_eastern_partnership.pdf
[75] Belarus progress factsheet: https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/eap_factsheet_belarus.pdf

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

European Environment Agency

EaP Connect project[76]

The programme was launched in July 2015. It aims to link the national research and education networks in the partner countries to the pan-European research and education network GÉANT. It connects more than two million scientists, academics and students from 700 institutions across the region. The joint initiative of the EU, Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova and Ukraine is an example of an effort undertaken to foster the development of digital economies and promote open data in the EU Neighbouring countries[77].

3.1.3 National standards, interoperability and quality control

3.1.3.1 Metadata standards

There is no publicly known standard for the description of metadata established for the dissemination of environmental information at the national level. Metadata standards are necessary to allow data users to find and reuse data easily.

The following table presents the availability status of the metadata standards in Belarus.

Table 3. Metadata standards per portal (as of May 2020)

Component	Metadata standards
Open data	Each dataset is described in a structured and unified manner. However, it is not clear if it follows a common metadata standard (e.g. DCAT-AP[78]) or has been newly developed. The Open Data portal is recently updated (March 2020), so it does not provide much additional documentation for open data providers and users.
Spatial	To achieve the common understanding on geodesic and cartographic data characteristics and attributes, geodesic metadata are defined (technical norms and standards of geodesic and cartographic activities are listed in regulatory acts).
Environmental information	In Belarus, environmental information standards are set by public authorities responsible for monitoring the specific environmental area. Belarus is also applying various international standards, for example, in monitoring water.
Statistical metadata	The State Committee for Standardisation publishes a series of "Statistical classifiers"[79]. However, none of them specifically defines classifiers for the environment. Belarus uses norms for the definition of metadata for statistics (classifiers – reference data)[80]. In 2019, metadata files (Indicator Assessments) and analytical files (Indicator Specification) for some SEIS indicators were prepared. Further details into the methodology used, concerning the data collection, management and dissemination

[76] https://www.eapconnect.eu/
[77] EDP Analytical Report 7, Open Data in the European Union Neighbourhood, p. 9
[78] The DCAT Application profile for data portals in Europe (DCAT-AP) is a specification based on W3C's Data Catalogue vocabulary (DCAT) for describing metadata of public sector datasets in Europe https://joinup.ec.europa.eu/solution/dcat-application-profile-data-portals-europe/release/200
[79] http://tnpa.by/#!/en/tabs/TnpaKindList/type=25
[80] http://www.belstat.gov.by/upload-belstat/upload-belstat-word/Metod_pologenija/stat_okr_sreda_08_02_2019.docx

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

European Environment Agency

Component	Metadata standards
	process for indicators could be provided. The metadata files will be posted on the Belstat website once approved[81].

3.1.3.2 Interoperability

In 2019, the National Automated Information System (NAIS)[82] was developed. NAIS is designed to integrate national information resources and automate the activities of government public authorities in providing information services to other government public authorities, organisations and the public. The objective of NAIS is to improve the efficiency and quality of the functioning of public authorities and, consequently, the quality of the services provided. Currently, there are 28 national systems integrated with NAIS.

As a result of the establishment of interdepartmental cooperation mechanisms, public authorities can carry out their functions faster and more efficiently. For the public, this means simplicity, convenience and rapidity in satisfying their requests.

Moreover, the State Programme for the Development of the Digital Economy and Information Society for 2016–2020 specifies that state information systems are subject to mandatory integration with the national automated information system in order to provide electronic services.

NAIS is a good example of an e-government initiative in the area of e-services and system interoperability -which can be used by other EaP countries looking for integrative solutions. For environmental domain, NAIS could be leveraged to improve the interoperability of multi-component environmental information system.

3.1.3.3 Quality control of environmental data

The general legal basis for standardisation in the field of environmental protection is established by the Law on Environmental Protection, Technical Regulation and Standardisation, Conformity Assessment with Technical Requirements and Accreditation of Conformity for the Assessment Authorities[83].

Moreover, in the Law on Environmental Protection, Chapter 5 'Regulations, technical regulatory legal acts in the field of environmental protection it is stated that:

- Environmental quality standards, standards for permissible impact on the environment, as well as other standards in the field of environmental protection are developed, approved and put into effect based on modern science and technology, considering international rules and standards in the field of environmental protection.
- Standards for permissible emissions and discharges of chemical and other substances are established for stationary and mobile sources of environmental impact, based on

[81] Presented during the 4th ENI SEIS II East Project Steering Committee meeting on 12 November 2019 in Copenhagen. Presentations are available at: https://eni-seis.eionet.europa.eu/east/areas-of-work/communication/events/project-related-events/4th-eni-seis-ii-east-project-steering-committee-meeting

[82] https://portal.gov.by

[83] Translated from "Об оценке соответствия техническим требованиям и аккредитации органов по оценке соответствия".

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

European Environment Agency

environmental, technological and permissible anthropogenic pressure on environment standards.

- Technological standards are established for stationary and mobile sources, based on the best available technical methods and technologies, which ensure compliance with environmental requirements and considering economic and social factors.
- Measurements in the field of environmental protection are carried out by testing laboratories (centres) accredited by the legislation of Belarus.

In addition, Belstat has quality control mechanisms in place on raw data to generate official statistical information. In particular, the work of Belstat is confirmed by the ISO Certificate 9001-2015.

3.1.4 Institutional framework for environmental information management and involvement of stakeholders

The following diagram illustrates the main providers of environmental information, open data and e-governance services in Belarus.

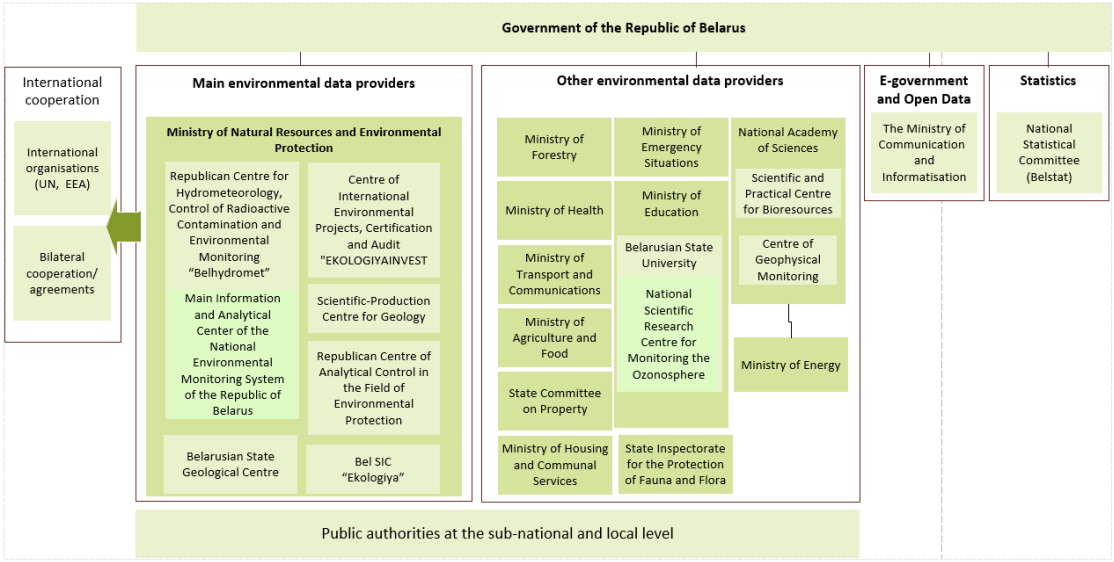


Figure 4. Environmental and e-government stakeholders of Belarus (as of May 2020, developed by the report's authors)

Ministry of Natural Resources and Environmental Protection[84]

The Ministry of Natural Resources and Environmental Protection oversees the implementation of state policy on environmental protection and rational use of natural resources. It is also responsible for the implementation of state policy on the use and protection of subsoils and hydrometeorological activity. The Ministry has the following responsibilities regarding environmental information:

[84] http://minpriroda.gov.by/en/

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

European Environment Agency

- establishing and maintaining a state register of monitoring/observation points of the National Environmental Monitoring System of Belarus;
- establishing the regime, order and formats of information exchange;
- establishing and maintaining databases of aggregated environmental information;
- jointly with other public authorities and the National Academy of Sciences of Belarus, preparing an annual environmental review based on the results of monitoring;
- developing, together with other public authorities and the National Academy of Sciences of Belarus, draft concepts and state programmes in the field of environmental monitoring;
- supervising the work of the Interdepartmental Coordinating Council of the National Environmental Monitoring System;
- coordinating scientific research in the field of environmental monitoring.

The Ministry of Natural Resources and Environmental Protection has been provided with an important platform for dialogue with the public by the Public Environmental Coordinating Council (active since 2001). The Public Council has the function to bring closer the interests of the state and various social groups by advising the authorities on the development of their public policies.

Subordinated sectoral organisations are often entrusted with substantive assistance within the development of strategic and policy documents and national implementation reports. This is due to the fact that public authorities operate under the scope of different central administration units and specific knowledge of each type of public authority. The following organisations, subordinate to the Ministry of Natural Resources and Environmental Protection, are involved in environmental monitoring:

- **State Enterprise 'Central research institute[85] for the sustainable use of water resources'[86].** The main goal of the Institute is to ensure scientific and technological progress in the field of efficient use of water resources and their protection from pollution and depletion by developing new methods, technologies and tools. It is also an accredited scientific organization and carries out scientific activity in the fields of natural and technical sciences. The institute maintains several water-related information resources.
- **Centre of Analytical Control in the Field of Environmental Protection**[87]. The main tasks of the centre are: (1) sampling and measurement in the field of environmental protection; (2) managing of the information and analytical centre for local environmental monitoring; (3) conducting regular observations of the state of surface water; (4) participation in the implementation of the requirements of international agreements.
- **Belarusian State Geological Centre (State Enterprise 'Belgosgeotsentr')**[88]**.** The main tasks of this centre are collection, systematisation and accounting of geological information that is held in the State Geological Fund. Also, the centre is responsible

[85] Research Institute is a state owned enterprise.
[86] http://www.cricuwr.by/
[87] http://analitcentre.by/en/
[88] http://www.belgeocentr.by/

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

European Environment Agency

for the selection and provision of information from the State Geological Fund to legal entities and individuals.

- **State Enterprise 'Bel SIC 'Ecology'[89].** The main tasks of this institution include environmental impact assessment and development of normative technical and methodological documents in the field of environmental protection[90].
- **State Enterprise 'Centre of International Environmental Projects, Certification and Audit 'EKOLOGIYAINVEST''[91].** The centre cooperates with legal entities and individual entrepreneurs to prevent environmental pollution. It also aims to promote exports, increase the competitiveness of domestic products through environmental certification of environmental management systems and improve the quality of environmental services by certifying them. In addition, the centre conducts environmental audits and implement works on technical standardisation in the field of environmental protection[92].
- **Republican Centre[93] Hydrometeorology Radioactive Pollution Control and Monitoring (BELHYDROMET)**. This is an organisation that carries out regular environmental observation and analysis. The main tasks of the centre cover the collection, processing, storage, provision and dissemination of environmental information obtained through the National Environmental Monitoring System, as well as through other information systems. The main areas of work of the institution are agro-hydrometeorology, radiation and climatology. The Main Information and Analytical Centre of the National Environmental Monitoring System (responsible for the collection, processing, storage, provision and dissemination of environmental information) is based under auspices of the BELHYDROMET in 2017.
- **State Enterprise 'Research and Production Centre for Geology'[94].** The centre maintains a database of observations related to the state of groundwater reserves. It provides information gathered through of groundwater monitoring to various national authorities, local executive and administrative bodies, scientific institutions, legal entities and public.

The territorial agencies of the Ministry of Natural Resources and Environmental Protection consist of: regional and Minsk city committees of natural resources and environmental protection; and city, district, and regional inspections of natural resources and environmental protection. They consist of six oblast committees, and 120 towns and district inspection units (sometimes joint town and district inspection units).

The oblast and Minsk city committees as well as the inspection units are subordinated only to the ministry.

Other environmental information providers:

- **National Academy of Sciences[95]**. The National Academy of Sciences is the state scientific body of Belarus. It organises and coordinates basic and applied scientific

[89] http://www.ecoinfo.by/
[90] http://www.ecoinfo.by/
[91] In Russian: Центр международных экологических проектов, сертификации и аудита «Экологияинвест»
[92] http://www.ecoinv.by/
[93] http://belgidromet.by/en/
[94] http://geologiya.by/
[95] http://nasb.gov.by/bel/about/glavnaya/

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

European Environment Agency

research in all areas of scientific activity, conducting basic and applied scientific research, development, organisational and technical support for the provision of state scientific expertise. The academy acts as the head organisation on scientific and methodological support for informatisation development.

- The **Scientific Centre for Bioresources**[96] is a research centre under the National Academy of Sciences and covers such areas as the monitoring quality of surface water, monitoring of water basins and assessment of biological contamination of river and lake ecosystems.
- **The Centre of Geophysical Monitoring** is also under the National Academy of Sciences of Belarus.[97] This centre is responsible for seismic and geodynamic monitoring.
- **State Inspectorate for the Protection of Fauna and Flora under the President of the Republic of Belarus**[98]**.** The tasks of the inspectorate include state control over the protection and use of wild animals related to hunting and fishing, protection, restoration and use of the forest fund, fisheries and fishing, and hunting areas and hunting. The inspectorate is also responsible for the maintenance of the Red Book.
- **Ministry of Health**[99]**.** The ministry is in charge of managing the health sector through its health inspectorates of regional and Minsk municipal executive committees. In terms of environmental monitoring, the ministry is responsible for monitoring drinking water quality.
- **Ministry of Emergency Situations**[100]. The ministry is responsible for coordination and maintenance of the emergency monitoring and forecasting system, as well as the collection, storage and processing of emergency information and forecasts.
- **Ministry of Forestry**[101]. The ministry is responsible for monitoring[102] the state of forests, developing strategy for the protection and sustainable use of the forest resources.
- **Ministry of Housing and Communal Services**[103]**.** The main objectives of this ministry include the formation and implementation of state policy in housing and communal services, coordination of activities in this sphere with other authorities of state administration and other state organisations subordinated to the Government of Belarus. In terms of environmental monitoring, it is responsible for monitoring waste, water quality and soil conditions.
- **Ministry of Education**[104]**.** The ministry is responsible for state policy in the area of education. In terms of environmental monitoring and information, the ministry is involved in some monitoring activities through the activity of several academic institutions, as the case of **Belarusian State University- National Scientific Research Centre for Monitoring the Ozonosphere**[105]**.**

[96] http://biobel.by/index.php/laboratoriya-gidrobiologii
[97] http://www.cgm.org.by/
[98] https://gosinspekciya.gov.by/by/
[99] http://minzdrav.gov.by/
[100] https://mchs.gov.by/
[101] http://www.mlh.by/
[102] Resolution of the Council of Ministers of the Republic of Belarus, 16 March 2004 № 298, "Questions of the Ministry of Forestry of the Republic of Belarus"
[103] http://www.mjkx.gov.by/
[104] https://edu.gov.by/by-be/
[105] https://www.bsu.by/be/main.aspx

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

European Environment Agency

- **Ministry of Energy**[106]. The ministry is responsible for energy security, nuclear and radiation safety, and for implementing the state policy in the field of power and gas distribution and supply.
- **Ministry of Transport and Communications**[107]**.** The ministry is focussing on the implementation of a unified transport policy (including alternative fuel and green transport and infrastructure) aiming to accommodate g the demands of the economy and the population for transport services, and taking into account the minimisation of harmful effects on the environment.
- **Ministry of Agriculture and Food**[108]**.** The ministry is responsible for the implementation of the state policy in the field of agriculture, fishery, food production, as well as in the field of seeds variety development and testing, plant protection, conservation and increase of soil fertility, veterinary, quality assurance of food, automation and digitalisation of agricultural production.
- **State Committee on Property**[109]**.** The Committee carries out activities in the area of geodesy and cartography, monitoring oversight and property survey.

- **The National Statistical Committee (Belstat)**[110]

  The National Statistical Committee (Belstat) is responsible for the implementation of policy in the field of state statistics. Belstat is responsible for the regulation and administration as well as coordination of statistical activities of other government agencies and other organisations. Belstat is subordinated directly to the President of the Republic of Belarus.

  Belstat receives data from various data providers and compiles information in Statistical Yearbooks, bulletins and other publications. Statistics are disseminated and presented to the public as publications, via mass media and posts on official websites of government statistical agencies, as well as through agreements and one-time requests (as stated in the Policy for Dissemination of Official Statistical Information[111]).

  - **The Ministry of Communication and Informatisation**[112]

  The Ministry of Communication and Informatisation is responsible for government regulation and management of activities in the field of data and information management and dissemination. The ministry coordinates the activity of various legal entities operating in this area independent of their ownership. The ministry is also responsible for the development and maintenance of the Open Data Portal.

[106] http://minenergo.gov.by/en/
[107] http://www.mintrans.gov.by/
[108] http://www.mshp.gov.by/
[109] http://gki.gov.by/en/sale_of_stocks/
[110] http://www.belstat.gov.by/
[111] https://www.belstat.gov.by/ofitsialnaya-statistika/polzovatelyam/poryadok-rasprostraneniya-ofitsialnoy-statisticheskoy-informatsii/
[112] https://mpt.gov.by/en/main-eng

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

European Environment Agency

Non-governmental organisations (NGOs)

The third UNECE Environmental Performance Review for Belarus (2016)[113] evaluated, among others, the existence and challenges of NGOs operating in the field of environmental protection. The focus of the work covers a wide range of topics such as: (1) nature protection and restoration of ecosystems, (2) promotion of public participation in environmental decision-making, and (3) development of the green movement in Belarus. They also work on various assessments and evaluations on the current state and quality of, e.g. environmental data and information provided by various public authorities.

Aarhus Centre[114]

There are two Aarhus centres in Belarus – one operating in Minsk and another one in Hrodna. The Aarhus Centre in Minsk is in operation since 2005 and the main activities cover[115]:

- collection, storage and dissemination of environmental information;
- assistance in providing environmental information at the request of individuals, legal entities and individual entrepreneurs;
- advising individuals, legal entities and individual entrepreneurs on the application of their rights to access environmental information, participation in decision-making and access to justice in environmental matters;
- carrying out educational activities (trainings, seminars, lectures);
- organisation of and hosting round tables;
- media publications, radio appearances, publication of booklets with information related to the implementation of the Aarhus Convention and other relevant national legislation.

3.2 Environmental data flows

This section describes the main state actors of environmental data sharing and the information flow between them.

National Environmental Monitoring System (NEMS)[116]

The National Environmental Monitoring System, established in 1993, is the central system for environmental monitoring in the country.

The National Environmental Monitoring System aims to ensure the availability of environmental information at all levels of government as well as support the implementation of international agreements. The operation of the National Environmental Monitoring System of is regulated by the resolution of the Council of Ministers of 28 July 2003 No. 949 on the approval of the

[113] Environmental Performance Reviews, Belarus, Third Review, UNECE, 2016, p. 35 < http://www.unece.org/environmental-policy/environmental-performance-reviews/enveprpublications/environmental-performance-reviews/2016/3rd-environmental-performance-review-of-belarus/docs.html >
[114] https://aarhus.osce.org/belarus
[115] http://aarhusbel.com
[116] http://www.nsmos.by

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

European Environment Agency

'National Environmental Monitoring System of the Republic of Belarus' and many other resolutions referring to the specific types of monitoring.

The National Environmental Monitoring System covers 12 thematic environmental monitoring types that are conducted following common principles. The organisation of monitoring activities is carried out by:

- the Ministry of Natural Resources and Environmental Protection in terms of atmospheric air, surface water, groundwater, radiation and local environmental monitoring;
- the Ministry of Education (specifically Belarusian State University, National Scientific Research Centre for Monitoring the Ozonosphere) regarding ozone layer monitoring;
- the National Academy of Sciences regarding monitoring of flora and fauna, geophysical monitoring and integrated monitoring of natural ecological systems, including protected natural areas;
- the Ministry of Forestry regarding forest monitoring;
- the State Committee on Property regarding the monitoring of land.

The Main Information and Analytical Centre is responsible for managing the information exchange and maintenance of the National Environmental Monitoring System. Since 2017, the Main Information and Analytical Centre of the National Environmental Monitoring System has been placed under auspices of the Republican Centre for Hydrometeorology, Radioactive Pollution Control and Environmental Monitoring (BELHYDROMET). Each of these public authorities and the National Academy of Sciences, involved in the National Environmental Monitoring System, ensure the collection, storage, processing and analysis of environmental monitoring data, as well as the provision and access to the environmental information resulting from their activities. For these purposes, the environmental information and analytical centres are established in order to monitor different environment areas, as follows:

- land monitoring;
- surface water monitoring;
- groundwater monitoring;
- air monitoring;
- ozone layer monitoring;
- flora monitoring;
- forest monitoring;
- wildlife monitoring;
- radiation monitoring;
- geophysical monitoring;
- local environmental monitoring;
- complex ecosystem monitoring in specially protected natural territories.

The environmental information and analytical centres collect data on each environmental topic mentioned above. The Main Information and Analytical Centre is responsible for integrating this information into the National Environmental Monitoring System. This ensures information exchange and provision of environmental information to public authorities, other state organisations and legal entities, as well as to international organisations in accordance with various commitments.

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

European Environment Agency

In 2005, the Ministry of Natural Resources and Environmental Protection, the Ministry of Health and the Ministry of Emergency Situations agreed to exchange, regularly and free of charge, environmental information. In practice, the exchange is taking place between various monitoring systems such as: the National Environmental Monitoring System, the System of Social and Hygiene Monitoring and the System of Monitoring and Forecasting of Natural and Man-made Hazards.

The exchange of information among the three systems also functions at the local level, for example, through agreements on the exchange of information between oblast centres for hydrometeorology and environmental monitoring and oblast centres for hygiene, epidemiology and public health.

3.2.1 Available environmental assessment reports, indicators and statistics

3.2.1.1 Environmental assessment reports

The ENI SEIS II East page[117] summarises the environmental assessment reports published in Belarus. Reports are mostly published by the Ministry of Natural Resources and Environmental Protection and Belstat. The following table presents the main environmental reports available in Belarus.

Table 4. List of main environmental assessment reports (as of May 2020, from ENI SEIS II East project website)

Type of report	Report description
National environmental reports	Report: The State of Environment in the Republic of Belarus Data source: http://minpriroda.gov.by/uploads/files/Natsionalnyj-doklad-o-sostojanii-okruzhajuschej-sredy-Respubliki-Belarus-2015-2018-gg.pdf Prepared by: Ministry of Natural Resources and Environmental Protection Last year published: 2019 Frequency: every four years
Thematic reports - climate (national communications to UNFCCC)	Report: The Seventh National Communication of the Republic of Belarus in accordance with obligations to the United Nations Framework Convention on Climate Change Data source: https://unfccc.int/documents/199865 Prepared by: Ministry of Natural Resources and Environmental Protection and the State Enterprise "Bel SIC 'Ecology' Last year published: 2019 Frequency: every four years
Thematic reports - land	Report: Land Monitoring report Data source: http://www.nsmos.by/content/164.html Prepared by: State Enterprise "Belgiprozem" Last year published: 2019 Frequency: every year
Thematic reports - air	Report: Atmospheric air monitoring Data source: http://www.nsmos.by/content/173.html

[117] https://eni-seis.eionet.europa.eu/east/countries/belarus

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

European Environment Agency

Type of report	Report description
	Prepared by: Main Information and Analytical Centre of the National Environmental Monitoring System Last year published: 2019 Frequency: annual
Thematic reports - water	Report: Surface water monitoring Data source: http://www.nsmos.by/content/174.html Prepared by: Main Information and Analytical Centre of the National Environmental Monitoring System Last year published: 2019 Frequency: annual
Thematic reports – biodiversity	Report: Monitoring of Fauna Data source: http://www.nsmos.by/content/178.html Prepared by: Main Information and Analytical Centre of the National Environmental Monitoring System Last year published: 2019 Frequency: annual
Thematic reports - waste	Report: Waste management Data source: http://www.minpriroda.gov.by/ru/otxody-ru/ Prepared by: Ministry of Natural Resources and Environmental Protection Last year published: 2019 Frequency: inconstant
Indicator-based reports	Report: National Environmental Monitoring System of the Republic of Belarus: observation results Data source: http://www.nsmos.by/content/781.html Prepared by: Main Information and Analytical Centre of the National Environmental Monitoring System Last year published: 2019 Frequency: annual
National Statistical Yearbook	Report: Statistical Yearbook Data source: http://www.belstat.gov.by/en/ofitsialnaya-statistika/publications/statistical-publications-data-books-bulletins/public_compilation/index_15568/ Prepared by: National Statistical Committee (Belstat) Last year published: 2019 Frequency: annual
National Statistical Yearbook on environment	Report: Statistical data book - Environmental protection in the Republic of Belarus, 2019 Data source: http://www.belstat.gov.by/en/ofitsialnaya-statistika/publications/statistical-publications-data-books-bulletins/public_compilation/index_14075/ Prepared by: National Statistical Committee (Belstat) Last year published: 2019 Frequency: annual
Report on sustainable development	Report: The Sustainable Development Goals Report 2018 Data source: https://sustainabledevelopment.un.org/content/documents/16357Belarus.pdf Prepared by: no information available Last year published: 2017 Frequency: not regular

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

European Environment Agency

3.2.1.2 UNECE environmental indicators produced by Belarus

In 2010, per the Guidelines for the Application of Environmental Indicators in Eastern Europe, the Caucasus and Central Asia (now referred to as Online Guidelines for the Application of Environmental Indicators, UNECE), Belstat, together with the Ministry of Natural Resources and Environmental Protection, the Ministry of Housing and Communal Services and the State Committee on Property, developed and approved the 'System of core environmental indicators of the Republic of Belarus'.

Belarus adjusted its environmental indicator system in line with UNECE guidelines and has gradually widened the range of data provided in accordance with SEIS principles[118]. Indicators are comparable at the international level and available in Russian and English. As of 2015, Belarus has published information on indicators of air protection, ozone layer depletion, climate change, water, biodiversity, waste, application of fertilisers, passenger turnover, and energy. For each indicator, the system includes information on the unit and methodology of measurement, source of information and importance of the indicator for environmental policy. The system is available on the Belstat webpage.[119]

The following table provides information about monitored indicators for the main areas related to environmental protection.

Table 5. List of UNECE environmental indicators produced on a regular basis by public authorities in Belarus (as of May 2020, all information is publicly available on the National Statistical Committee's (Belstat) website, belstat.gov.by)

Thematic areas	UNECE indicator	National entity	Status
A. Air pollution and ozone depletion	A1. Emissions of pollutants into the atmospheric air	Ministry of Natural Resources and Environmental Protection	Publicly available Frequency: Annual
	A2. Ambient air quality in urban areas	Ministry of Natural Resources and Environmental Protection	Publicly available Frequency: Annual
	A3. Consumption of ozone-depleting substances	Ministry of Natural Resources and Environmental Protection	Publicly available Frequency: Annual
B. Climate change	B1. Air temperature	Ministry of Natural Resources and Environmental Protection	Publicly available Frequency: Annual
	B2. Atmospheric precipitation	Ministry of Natural Resources and Environmental Protection	Publicly available Frequency: Annual
	B3. Greenhouse gas emissions	Ministry of Natural Resources and Environmental Protection	Publicly available Frequency: Annual
C. Water	C1. Renewable freshwater resources	Ministry of Natural Resources and Environmental Protection	Publicly available Frequency: Annual
	C2. Freshwater abstraction	Ministry of Natural Resources and Environmental Protection	Publicly available Frequency: Annual
	C3. Total water use	Ministry of Natural Resources and Environmental Protection	Publicly available Frequency: Annual

[118] Shared Environmental Information System and Green Growth. Regional workshop for the countries of Eastern Europe, the Caucasus and Central Asia. OECD Paris, 10-11 March 2015
[119] Source: the National Statistical Committee (Belstat), belstat.gov.by

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

European Environment Agency

Thematic areas	UNECE indicator	National entity	Status
	C4. Household water use per capita	National Statistical Committee	Publicly available Frequency: Annual
	C5. Water supply industry and population connected to the water supply industry and C6. Connection of population to public water supply	Ministry of Housing and Communal Services (C5) National Statistical Committee (C6)	Publicly available (C5) Frequency (C5): Annual Publicly available (C6) Frequency (C6): Biannual
	C7. Water losses	-	Publicly not available
	C8. Reuse and recycling of freshwater	-	Publicly not available
	C9. Drinking water quality	-	Publicly not available
	C10. BOD and concentration of ammonium in rivers	National Environmental Monitoring System and Ministry of Natural Resources and Environmental Protection	Publicly available Frequency: Annual
	C11. Nutrients in freshwater	Ministry of Natural Resources and Environmental Protection	Publicly available Frequency: Annual
	C12. Nutrients in coastal seawaters	-	-
	C13. Concentrations of pollutants in coastal seawater and sediments (except nutrients)	-	-
	C14. Population connected to wastewater treatment	National Statistical Committee	Publicly available Frequency: Annual
	C15. Wastewater treatment facilities	-	Publicly not available
	C16. Polluted (non-treated) wastewaters	Ministry of Natural Resources and Environmental Protection	Publicly available Frequency: Annual
D. Biodiversity	D1. Protected areas	Ministry of Natural Resources and Environmental Protection	Publicly available Frequency: Annual
	D2. Biosphere reserves and wetlands of international importance	-	Publicly not available
	D3. Forests and other wooded land	Ministry of Forestry	Publicly available Frequency: Annual
	D4. Threatened and protected species	National Academy of Sciences and Ministry of Natural Resources and Environmental Protection	Publicly available Frequency: Annual

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

European Environment Agency

Thematic areas	UNECE indicator	National entity	Status
	D5. Trends in the number and distribution of selected species	-	Publicly not available
	D6. Invasive alien species	-	Publicly not available
E. Land and soil	E1. Land uptake	State Committee on Property	Publicly available Frequency: Annual
	E2. The area affected by soil erosion	-	Publicly not available
F. Agriculture	F1. Irrigation	-	Publicly not available
	F2. Fertiliser consumption	State Committee on Property	Publicly available Frequency: Annual
	F3. Gross nitrogen balance	-	Publicly not available
	F4. Pesticide consumption	-	Publicly not available
G. Energy	G1. Final energy consumption	Ministry of Energy	Publicly available Frequency: Annual
	G2. Total primary energy supply	Ministry of Energy	Publicly available Frequency: Annual
	G3. Energy intensity	Ministry of Energy	Publicly available Frequency: Annual
	G4. Renewable energy consumption	Ministry of Energy	Publicly available Frequency: Annual
	G5. Final electricity consumption	Ministry of Energy	Publicly available Frequency: Annual
	G6. Gross electricity production	Ministry of Energy	Publicly available Frequency: Annual
H. Transport	H1. Passenger transport demand	Ministry of Transport and Communications	Publicly available Frequency: Annual
	H2. Freight transport demand	National Statistical Committee and Ministry of Transport and Communications	Publicly available Frequency: Annual
	H3. Composition of road motor vehicle fleet by fuel type	-	Publicly not available
	H4. Age of road motor vehicle fleet	-	Publicly not available
I. Waste	I1. Waste generation	Ministry of Natural Resources and Environmental Protection	Publicly available Frequency: Annual
	I2. Management of hazardous waste	Ministry of Natural Resources and Environmental Protection	Publicly available Frequency: Annual
	I3. Waste reuse and recycling	-	Publicly not available
	I4. Final waste	-	Publicly not available

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

European Environment Agency

Thematic areas	UNECE indicator	National entity	Status
J. Environmental financing	J1. Environmental protection expenditure	-	Publicly available Frequency: Annual

The website of ENI SEIS II East provides an assessment of environmental information available as well as links to national environmental indicators reports and other thematic environmental reports. The overall assessment in producing environmental indicators by thematic areas is provided in the table below.

Table 6. Assessment of performance in producing UNECE indicators (as of May 2020, ENI SEIS II East website[120])

Thematic areas	Evaluation
A. Air pollution and ozone depletion	
B. Climate change	
C. Water	
D. Biodiversity	
E. Land and soil	
F. Agriculture	
G. Energy	
H. Transport	
I. Waste	
J. Environmental financing	
Total	

0/No data | 25% | 50% | 75% | 100%

3.2.1.3 Environmental statistics published

Belarus has a well-established system of collecting, processing, storing and protecting statistics, formation, accumulation, distribution and representation of official statistical information on water use, atmospheric emissions, waste production, and environmental costs.

A wide range of administrative data is used on land, biodiversity, climate change, urban air quality, water quality in water facilities, solid municipal waste management, pollution of radionuclides, natural and man-made hazards.

The main aspects of the formation of environmental statistics in the country are outlined in the Methodological Regulations on Environmental Statistics published on the website of Belstat[121].

As part of the ENI SEIS II East project, in 2018, with the support of experts from the European Environment Agency, work was carried out in areas such as water resources, biodiversity, atmospheric air, preparation of a national report on the state of the environment, and

[120] https://eni-seis.eionet.europa.eu/east/countries/belarus
[121] http://www.belstat.gov.by/upload-belstat/upload-belstat-word/Metod_pologenija/stat_okr_sreda_08_02_2019.docx

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

European Environment Agency

communication in the field of the environment. As part of the work on water resources statistics, per international recommendations, tables of SEIS indicators on the availability, production and use of water resources (C1-C5) were developed and presented on the Belstat website. In addition, the formation of metadata files and analytical information on indicators C1-C5 are being established, as well as an analysis of tables of water resources and the use of water resources for 2016 and 2017.

As part of work on biodiversity statistics, tables of the SEIS indicator on specially protected natural areas (D1) were developed and presented on the Belstat website. The formation of metadata files and analytical information on the indicator continues. The results of the work done have simplified access to environmental indicators for users, as well as the process of filling in international questionnaires.

The table below lists other environmental statistics published on the Belstat website.

Table 7. Environmental statistics published (as of May 2020, belstat.gov.by)

Thematic area	Environmental statistics published
D. Biodiversity	• Forest regeneration and protection against pests and diseases • Forest fires and area affected by fires • Forest fires by region in 2019 • Commercial fish catch
F. Agriculture	• Agricultural production • Animal husbandry production in agricultural organisations by region • Main livestock populations in agricultural organisations by region • Indices of agricultural output by type of farm • Indices of agricultural output in farms of all types by region • Sown area under main agricultural crops • Gross harvest of major agricultural crops • Yield size of major agricultural crops • Sown area under main agricultural crops by region • Gross harvest of staple agricultural crops by regions • Yield size of major agricultural crops by regions • Number of livestock and poultry • Structure of livestock population by type of farm • Production of basic animal husbandry products by region • Production of basic animal husbandry products • Per capita production of main agricultural products • Structure of agricultural output by type of farm • Number of fur-bearing animals in entreprises specialised in breeding cage-raised fur-bearing animals
G. Energy	• Provision of general access to affordable, reliable and modern energy services • Increase in renewable energy consumption • Increase in energy efficiency • Supply (sale) of fuel, heat and electricity and average energy costs for population • Electricity production by type of plant • Heat final consumption • Heat production by type of plant • Heat consumption with climatic corrections

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

European Environment Agency

Thematic area	Environmental statistics published
	• Fuel consumption with climatic corrections • Final energy consumption by sector • Sources of energy resources formation • Primary energy production
H. Transport	• Freight turnover by type of transport • Passengers transported by type of transport • Freight transported by type of transport • Passenger turnover by type of transport • Private transport vehicles • Freight transportation indices by mode of transport • Freight turnover indices by mode of transport • Passenger transportation indices by mode of transport • Passenger turnover indices by mode of transport
J.Environmental financing	• Current environmental protection expenditure by economic activity • Current environmental protection expenditure by the direction of expenditure in 2018 - 2019

3.2.2 Environmental data sharing arrangements/agreements

The general approach and the rules for the collection, storage and dissemination of digital information are described in a number of legal documents, such as the Resolution of the Council of Ministers of Belarus No. 734 of 24 May 2008 on approval of the 'Regulations on the procedure for forming and maintaining the state database on the state of the environment and related impacts and the general structure of environment information'.

The providers of environmental information maintain registers that are included in the general register of environmental information developed and maintained by the Ministry of Natural Resources and Environmental Protection. These providers update their registers and inform the Ministry of Natural Resources and Environmental Protection on an annual basis, but no later than October 1. The Ministry of Natural Resources and Environmental Protection ensures the publication of the general register on its official website[122].

The table below describes the main actors in environmental data sharing and the flow of environmental information between them.

Table 8. Environmental data sharing arrangements (as of May 2020, developed by the report's authors)

Institution	Thematic area	Inter-institutional cooperation for data exchange
Ministry of Natural Resources and Environmental Protection	A. Air pollution and ozone depletion B. Climate change C. Water D. Biodiversity E. Land and soil I. Waste	The ministry conducts the regular exchange of environmental information with the following state and governmental authorities: • Ministry of Health • State Inspectorate for the Protection of Fauna and Flora under the President • Ministry of Forestry • Ministry of Agriculture and Food

[122] The Republic of Belarus Country Report, European Environmental Agency, 2012, p. 36

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

European Environment Agency

Institution	Thematic area	Inter-institutional cooperation for data exchange
		• Ministry of Housing and Communal Services • National Academy of Sciences of Belarus • Ministry of Foreign Affairs • Ministry of Internal Affairs
Republican Center for Hydrometeorology, Radioactive Pollution Control and Environmental Monitoring (BELHYDROMET)	A. Air pollution and ozone depletion B. Climate change C. Water D. Biodiversity E. Land and soil	The scope of environmental information exchange is determined by the resolution of the Council of Ministers of the Republic of Belarus №1316 of 6 October 2006 on the approval of the "Provision on procuring hydrometeorological information of civil aviation in the Republic of Belarus". The institution also participates in the interstate exchange of information on the state of the environment following the recommendations of WMO and UNESCO and implements active access to environmental information. In 2017 the Main Information analytical Centre of the National Environmental Monitoring System fall under the auspices of BELHYDROMET, adding biodiversity, land and soil domains to BELHYDROMET's thematic coverage.
State Enterprise 'Central research institute for comprehensive use of water resources'	C. Water	The main goal of the Institute is to facilitate scientific and technological advancement in the field of efficient use and protection of water resources against pollution and depletion. The centre is also responsible for water cadastre. There are no publicly available information on the data exchange agreements.
State Enterprise 'Bel SIC 'Ekologiya'	A. Air pollution and ozone depletion D. Biodiversity E. Land and soil I. Waste	Bel SIC "Ekologiya" is responsible for the preparation of documentation to fulfil the national obligations under the UN Framework Convention on Climate Change and the Kyoto Protocol. Bel SIC "Ekologiya" also maintains registers of facilities which specifically work in the area of storage, disposal and processing/use of waste.
State Enterprise 'Research and Production Center for Geology'	E. Land and soil	There are no publicly available information on the data exchange agreements.
Ministry of Agriculture and Food	C. Water D. Biodiversity E. Land and soil F. Agriculture	The ministry exchanges materials with the Scientific and Practical Centres of the National Academy of Sciences concerning agriculture and fauna. The ministry exchanges environmental information through the National Environmental Monitoring System.
Ministry of Forestry	D. Biodiversity E. Land and soil	Information is submitted to interested ministries and departments, as well as to organisations and other entities subordinated to them. The ministry exchanges environmental information through the National Environmental Monitoring System.

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

European Environment Agency

Institution	Thematic area	Inter-institutional cooperation for data exchange
Ministry of Energy	G. Energy	Most of the environmental information is published and exchanged by the Nuclear Power Plant (NPP) Information Centre. The ministry exchanges environmental information through the National Environmental Monitoring System.
Centre of Geophysical Monitoring of the National Academy of Sciences	C. Water E. Land and soil	The Centre for Geophysical Monitoring of the National Academy of Sciences carries out operational cooperation with the Ministry of Emergency Situations), the Ministry of Natural Resources and Environmental Protection and other interested departments on the occurrence of natural hazards and possible prevention of their negative impacts. The summarised information is annually transmitted to the Main Information and Analytical Centre (under auspices of BELHYDROROMET). Upon request, the centre provides information on the geomagnetic situation. The centre also cooperates with various research organisations of the National Academy of Sciences and other academic bodies (Belarusian State University, Polotsk State University, etc.).
Ministry of Emergency Situations	A. Air pollution and ozone depletion C. Water E. Land and soil I. Waste	The ministry exchanges environmental information through the National Environmental Monitoring System.
Ministry of Health	A. Air pollution and ozone depletion C. Water	The ministry exchanges environmental information through the National Environmental Monitoring System.
State Committee of Property	E. Land and soil	The committee exchanges environmental information through the National Environmental Monitoring System.
National Scientific Research Centre for Monitoring the Ozonosphere of the Belarusian State University (Ministry of Education)	A. Air pollution and ozone depletion B. Climate change	Observational data are exchanged with the Main Information and Analytical Centre (under auspices of BELHYDROROMET) from the atmospheric air monitoring system and from meteorological observations. Summarised information is transmitted annually to the Main Information and Analytical Centre (under auspices of BELHYDROROMET). The centre also cooperates with various research organisations of the National Academy of Sciences and other academic bodies (Belarusian State University, Gomel State University)
National Statistical Committee 'Belstat'	A. Air pollution and ozone depletion B. Climate change C. Water D. Biodiversity	The list of public authorities to which agreements on information provision are concluded (including environmental information) is covering: • Ministry of Housing and Communal Services;

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

European Environment Agency

Institution	Thematic area	Inter-institutional cooperation for data exchange
	E. Land and soil F. Agriculture G. Energy H. Transport I. Waste J. Environmental financing	• Ministry of Health; • Ministry of Emergency Situations; • Ministry of Forestry; • Ministry of Education; • Ministry of Natural Resources and Environmental Protection; • Ministry of Agriculture and Food; • Ministry of Finance; • Ministry of Economy; • Ministry of Energy; • State Committee on Property; • National Academy of Sciences

3.2.3 Licencing norms

The following table presents the main websites where environmental information is published:

Table 9. Licencing norms per portal (as of May 2020)

Portal	Licencing
Open Data Portal	No information on licencing is available on the Open Data Portal.
National Environmental Monitoring System	Neither licencing conditions nor copyright are specified on the website. There is a section dedicated to 'Licences' on the website, but it has no content.
National Statistical Committee	The note on the website states 'Information posted on the site is publicly available. When using it, the reference to the source is required'. This statement corresponds to the CC-BY licence.

3.3 Progress so far

3.3.1 Main initiatives

The main initiatives related to e-government, open data and environmental information in Belarus are presented below.

Open Data initiative

The launch of the Open Data Portal in 2018 was a milestone for public data availability in Belarus. However, the number of datasets is still very low and awareness and use of the portal by public or state authorities is limited.

In May 2019, a draft proposal for a Resolution on the Functioning of the National Open Data Portal on the basis of a Single Electronic Services Portal was submitted to the Council of Ministers of Belarus[123]. This resolution would represent a considerable advancement in establishing open data dissemination in Belarus - it would cover the definition of ownership of the portal, data on the portal, the responsibilities of the owner as well as of the publisher and

[123] https://pravo.by/novosti/novosti-pravo-by/2019/may/35673/

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

European Environment Agency

the duties of state authorities regarding the dissemination of public data, among others. The resolution is planned to be adopted by the end of 2020.

The work to improve the Open Data Portal is ongoing – the last update of the portal took place in February 2020. The portal is described in section *4.1 Portals.*

Portal 'Open Data'

The 'Open Data'[124] portal was developed by a community of experts with similar interests, without a formal structure. It contains information gathered from different state, academic and non-governmental sources.

Currently, the 'Open Data' portal has 228 datasets available.

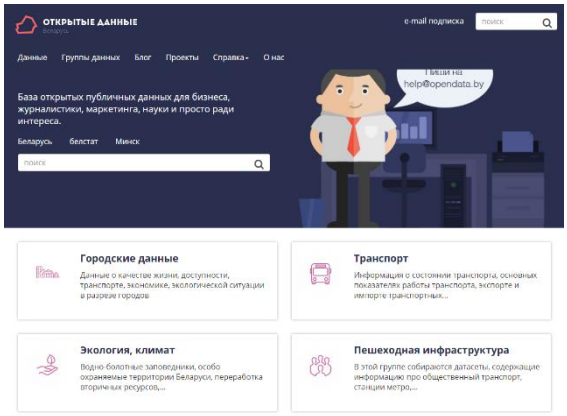


Figure 5. 'Open Data' Portal (as of May 2020, opendata.by)

App 'Weather in Your Pocket'

BELHYDROROMET published a mobile app 'Weather in Your Pocket'[125]. The app provides information on the current weather, hydrological, agrometeorological and radiation-ecological conditions in Belarus.

3.3.2 International rankings

International rankings are important, as they assess progress made against other countries based on internationally acknowledged methodologies.

E-government Development Index (EGDI)[126]

As a composite indicator, the EGDI is used to measure the readiness and capacity of national public authorities to use ICTs to deliver public services. Its components include the Online Service Index (OSI), Telecommunication Infrastructure Index (TII) and Human Capital Index (HCI).

In 2018, Belarus scored 0.7641, reaching 38th in the world ranking. The average score of the EGDI index in 2018 for Europe was 0.7727, which indicates that Belarus is very close to the EU average.

[124] https://opendata.by/
[125] http://www.belgidromet.by/en/news-en/view/new-version-of-mobile-app-the-weather-in-your-pocket-is-available-in-the-play-market-1895/
[126] https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/16-Belarus

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

European Environment Agency

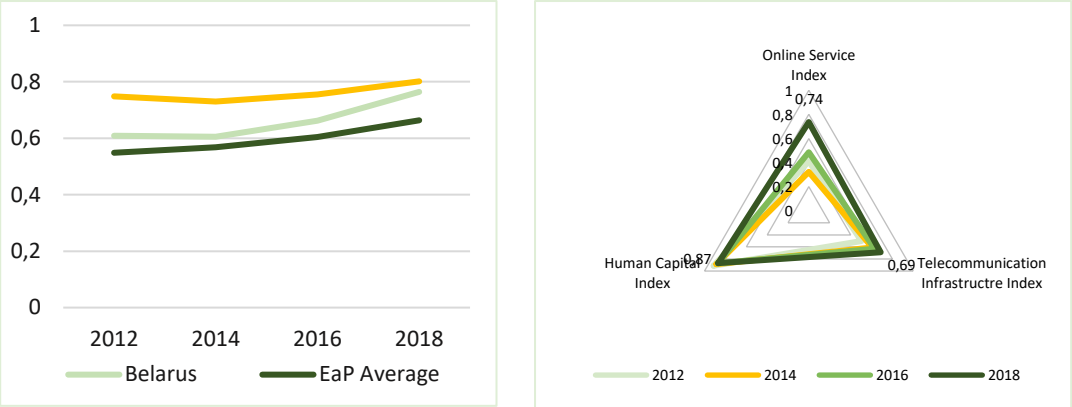


Figure 6. E-Government development index indicator for Belarus (2012-2018) (based on EGDI data, developed by the report's authors)

The figure above shows the change in the value of EGDI components between 2012 and 2018. Online Service Index (OSI) has increased significantly in the last two years to the level of 0.7361 (51.6% increase). The large improvement for the OSI in Belarus is to be attributed to the development of the e-service portal and the Nationwide Automated Information System which connects a series of information resources.

Human Capital Index, on the other hand, is stable. Telecommunication Infrastructure Index has the lowest score out of these 3 categories, but it has been experiencing steady growth in recent years and is currently at the level of 0.6881[127].

Open Data Barometer[128]

The Open Data Barometer is produced by the World Wide Web Foundation with the support of the Omidyar Network and aims to uncover the readiness, implementation status and impact of open data initiatives around the world. It analyses global trends and provides comparative data on governments and regions using an in-depth methodology that combines contextual data, technical assessments and secondary indicators.

The fourth edition of Open Data Barometer[129] was published in May 2017, covering the period between July 2015 and June 2016. This is also the first edition of the report where data from Belarus are available. Covering 114 countries, the fourth edition of the report ranks governments on:

- readiness for open data initiatives (27 out of 100 points for Belarus);
- implementation of open data programmes (10 out of 100 points for Belarus);
- impact that open data are having on business, politics and civil society (2 out of 100 points for Belarus).

These results in individual categories gave Belarus 93rd place in Open Data Barometer ranking with a combined score of 10.95 points. It is hard to assess the progress made by Belarus in the context of this ranking since the country appeared in the Open Data Barometer for the first time.

[127] https://publicadministration.un.org/egovkb/en-us/data/country-information/id/16-belarus
[128] https://opendatabarometer.org/
[129] https://opendatabarometer.org/4thedition/detail-country/?_year=2016&indicator=ODB&detail=BLR

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

European Environment Agency

The figure below presents a comparison of the Belarus Open Data Barometer score and EaP average country score. It shows that Belarus is underperforming, compared to other EaP countries.

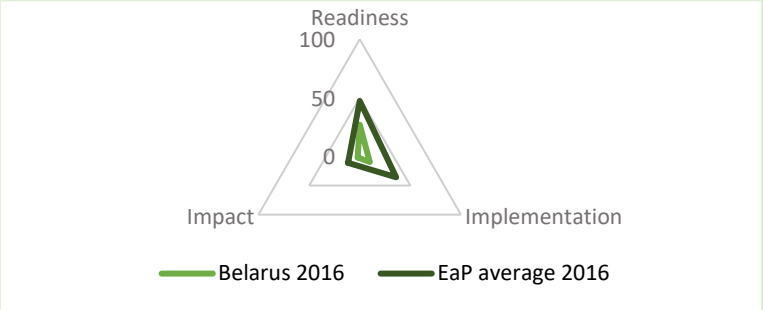


Figure 7. Open Data Barometer score, 2016 (based on Open Barometer data, developed by the report's authors)

In regard to environmental information, the Open Data Barometer gives a score of 15 out of 100. The main issues for environmental open data in Belarus are unclear licencing, the difficulty of finding datasets, a lack of metadata standards, a lack of machine-readable format, and the absence of impact analysis.

The following table provides more details about the open data barometer assessment in terms of environmental (or related) data.

Table 10. Open Data Barometer environmental evaluation (status 2016 and progress evaluation based on 2020 findings. Based on Open Barometer data, developed by the report's authors)

	Environmental data		Cartography	
	2016	2020	2016	2020
Data exists	●	↑	●	↑
Online availability	●	↑	●	↑
Machine-readable	●	↗	●	↗
Reusable data	●	↗	●	↗
Free of charge	●	↗	●	↗
Open licence	●	↗	●	↗
Data validity	●	↗	●	↗
Data update	●	↑	●	↗
Data discovery rating	●	↗	●	↑
Metadata	●	↗	●	↗

Note: During the preparation of the report, updated information about open data was captured, which showed progress in specific areas. Therefore, the columns in the table above represent:

- *2016 - Open Data Barometer environmental evaluation;*
- *2020 – the progress evaluation based on the report findings mainly related to recent developments on the Open Data Portal, Statistical, Geoportal of Land Information System, Belarus Cadastral Map.*
- ● *- Yes,* ● *- No,* ● *- Partly* ↑ *- improvement in the area,* ↗ - partial improvement in the area, ● *- no significant changes in the area.*

Global Open Data Index

The Global Open Data Index is the annual global benchmark for publication of open government data, run by the Open Knowledge Network. The survey is designed to assess the openness of specific government datasets according to the Open Definition in 16 different areas including

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

European Environment Agency

Government budget, spending and procurement, access to information about land ownership, election results at all levels and national statistics.

Belarus is not evaluated in the Global Open Data Index.

Open Data Inventory (ODIN) score[130]

The Open Data Inventory (ODIN) assesses data provided by national statistical offices on their principal websites about thematic coverage and openness. The results are tabulated to allow comparisons across different datasets within a country and between countries. ODIN methodology has so far been applied to 180 countries.

In 2018, Belarus had 66 points (out of 100) in terms of data coverage and 38 points (out of 100) when it comes to data openness. This translates into a combined result of 51 points (out of 100) for the ODIN score (66th in the world). Within the country, the highest levels of coverage and openness are on economic information, but the lowest levels are on social information, environmental information is rated in the middle. In particular, the environment coverage sub-score is 75% and the openness sub-score is 34%.

The following table presents the ODIN score between 2015 and 2018.

Table 11. ODIN score for Belarus between 2015-2018 (based on ODIN data, developed by the report's authors)

	2015	2016	2017	2018
Coverage	55	62	58	66
Openness	18	37	40	38
All elements	36	49	48	51

The figure below illustrates the distribution of component scores for coverage and openness.

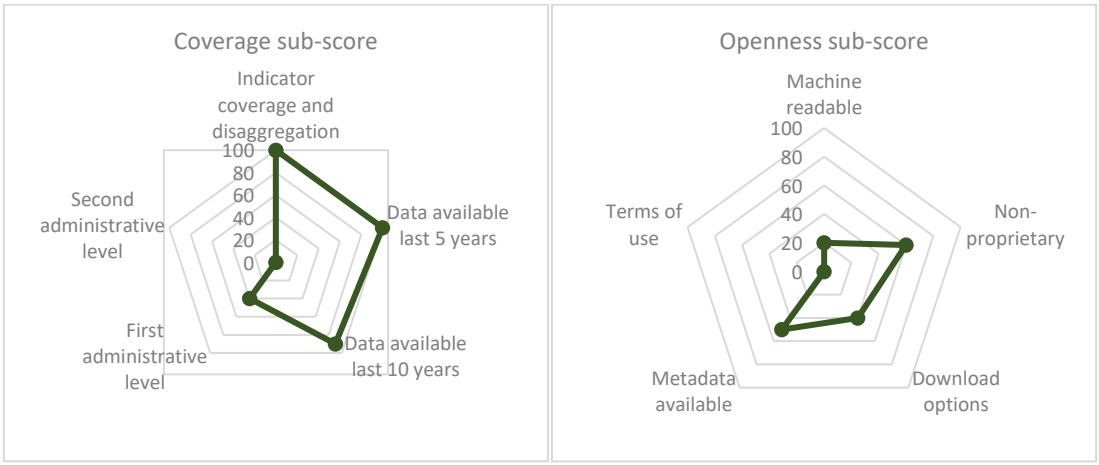


Figure 8. Coverage sub-score and openness sub-score of Environment Statistics 2018 (based on ODIN data, developed by the report's authors)

[130] https://odin.opendatawatch.com/Report/countryProfile/BLR?appConfigId=4

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

European Environment Agency

Environmental Performance Index (EPI)

The Environmental Performance Index (EPI) ranks 180 countries on 24 performance indicators across 10 categories covering environmental health and ecosystem vitality. These metrics provide a national perspective of how close countries are to established environmental policy goals.

In 2018, Belarus ranked 44 out of 180 countries with a score 64.98. The figure below shows the main indicators of the Environmental Performance Index for Belarus[131].

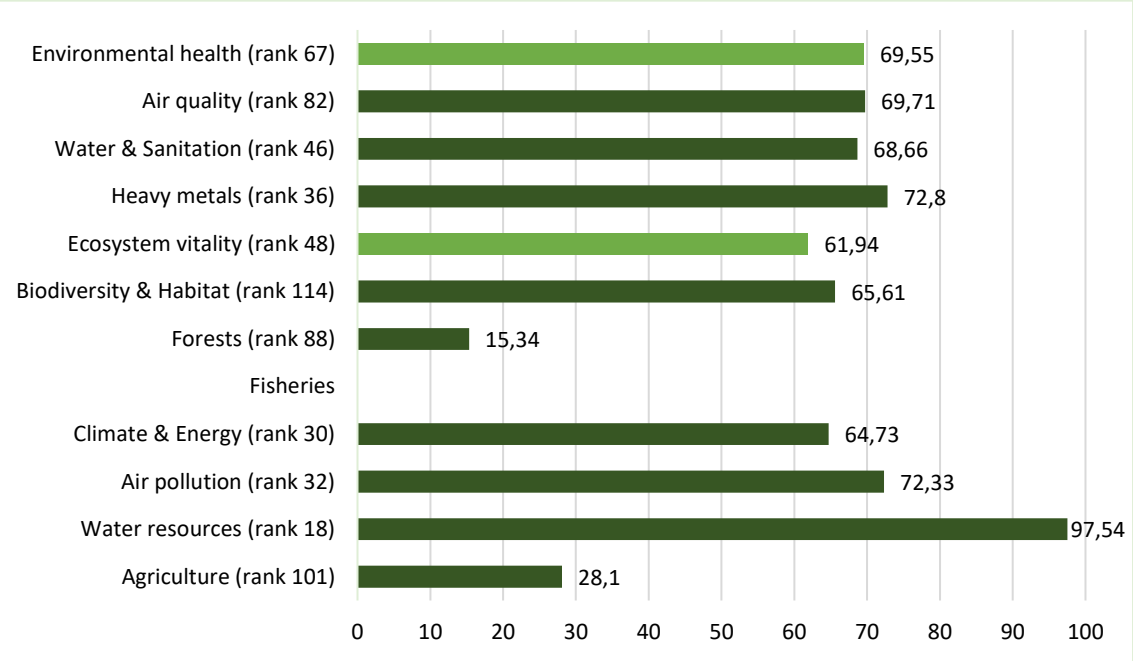


Figure 9. Indicators of EPI of Belarus (2018, epi.envirocenter.yale.edu/epi-country-report/BLR)

3.3.3 ICT related statistics

The International Telecommunication Union[132] has published the annual report "Measuring Information Society Report", which assesses the development of ICT in 176 countries. As stated in the report of 2018, Belarus ranks 28th and is the leader in the development of ICT in the post-Soviet countries. Belarus ranks ahead of several European countries – Lithuania, Latvia, Czech Republic, Italy, and Poland.

According to the International Telecommunication Union, Belarus had at the end of 2018:

- Fixed-telephone subscriptions per 100 inhabitants: 47
- Mobile-cellular subscriptions per 100 inhabitants : 123
- Fixed (wired)-broadband subscriptions per 100 inhabitants: 33
- Mobile-broadband subscriptions per 100 inhabitants: 83
- Households with a computer (%): 70
- Households with internet access (%): 72.4

[131] https://epi.envirocenter.yale.edu/epi-country-report/BLR
[132] Link to country profile with the latest data: https://www.itu.int/net4/itu-d/icteye/CountryProfile.aspx

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

European Environment Agency

- Individuals using the internet (%): 79.1

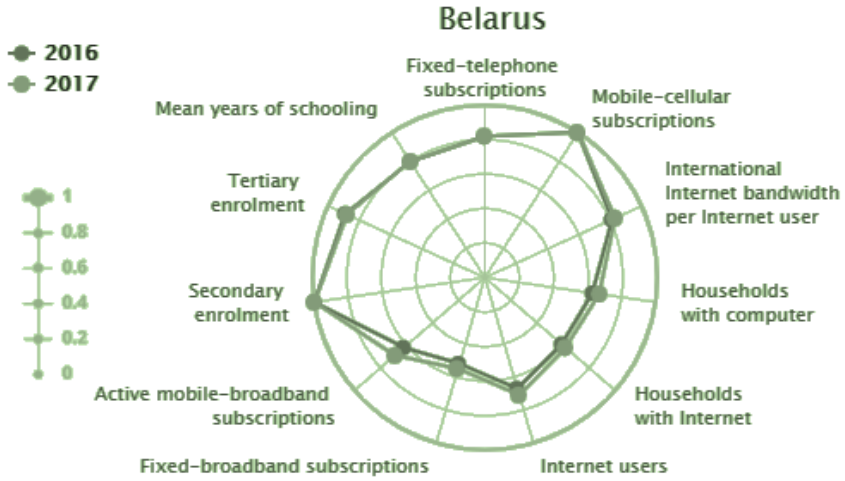


Figure 10. International Telecommunications Union ICT ranking (2017, www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2017.aspx)

In comparison with the previous year, Belarus managed to make progress on the sub-index of access to ICT (+3 items) and ICT use (+2 positions), and to maintain its position among world leaders in terms of human-use development (5th place). The report notes that due to sophisticated and progressive policy in Belarus, an infrastructure has been developed. Developed infrastructure makes it possible to provide the population with quality and affordable fixed and mobile-broadband internet access services.

According to forecasts of the International Telecommunication Union (ITU), the successful implementation of the state programme for the development of the digital economy and information society will help to consolidate and improve the position of Belarus in the ITU rating by further deploying LTE[133] (Long-Term Evolution) networks in regions of the country, developing fibre-optic networks, satellite communications, digital television and cloud technologies.

[133] In telecommunication, Long-Term Evolution (LTE) is a standard for wireless broadband communication for mobile devices and data terminals, based on GSM/EDGE and UMTS/HSPA technologies. It increases capacity and speed using a different radio interface together with core network improvements.

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

European Environment Agency

4 Technology enablers for environmental information sharing

4.1 Portals

In this section, the platforms available for the publication of environmental information at a national and international level are presented.

4.1.1 Open Data Portal

In 2018, the national Open Data Portal of Belarus was developed. The main purpose of the Open Data Portal is to allow public authorities, local governments and information-analytical organisations to post publicly available information on the internet in the form of open data and to create conditions for maximising the international, political, social and economic effect of their use by citizens of Belarus and the business community.

The portal was updated in 2020. In May 2020, the Open Data Portal contained 100 open datasets provided by public authorities and organisations.

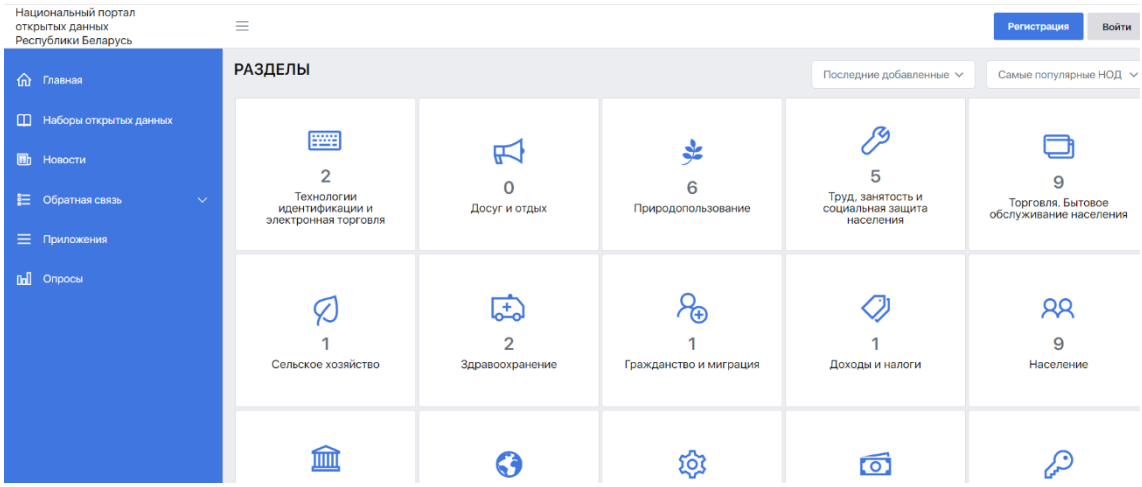


Figure 11. Open Data Portal (as of May 2020, data.gov.by)

The open datasets accessible on the portal are grouped by categories. There were six datasets available (at the moment of preparing the present report) under the category 'Environmental Management', with four of them – published by Belstat, and two – by the local authorities of Minsk municipality.

The portal has a dedicated section for interactions with the users (e.g., to propose ideas, to submit a request), as well as the sections for publishing news and information on the respective applications. The later sections are currently empty.

The Open Data Portal should represent a gateway for developers in the country and could be used as a tool to provide economic opportunities and foster public access to information and increased transparency.

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

European Environment Agency

Within the framework of ENI SEIS II East project (funded by EU and implemented by EEA) , the Ministry of Communication and Informatisation, together with the Ministry of Natural Resources and Environmental Protection, were using the Open Data Portal for publishing open data in the field of the environment.

4.1.2 E-government portal "The Unified Portal of E-services"

The portal is a single access point for e-services and information on administrative procedures for the public and business in Belarus. Each of the e-service available in the portal is described by using a standard service 'passport' (description), however there are inconsistencies in the details provided. The portal enables searching of services by institution, state information resources or category. Public services can be ordered by using various authentication tools, such as email login, USB and mobile authentication devices. The portal transfers the service requests to the institutions responsible for service delivery. Different maturity levels exist among the e-services provided in the portal, thus it is necessary to further document public services and enhance digitisation in the public service delivery process.

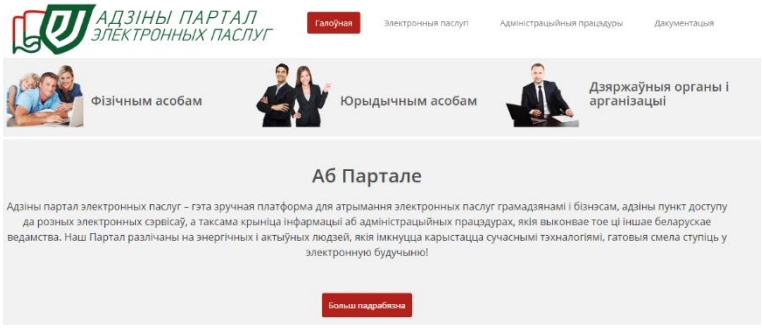


Figure 12. Screenshot of The Unified Portal of E-services (as of May 2020, portal.gov.by)

4.1.3 Environmental portals

In general, analytical and reference materials on the state of the environment are made available on an annual basis on the website of the National Environmental Monitoring System. Information on all types of environmental monitoring is provided also on an annual basis in the publication 'The National Environmental Monitoring System of the Republic of Belarus: Results of Observations'[134].

Environmental information and data are available on the website of the National Environmental Monitoring System and the websites of other information providers such as the Ministry of Natural Resources and Environmental Protection, Belstat, the Republican Centre for Hydrometeorology, Control of Radioactive Contamination and Environmental Monitoring 'BELHYDROMET', and other websites.

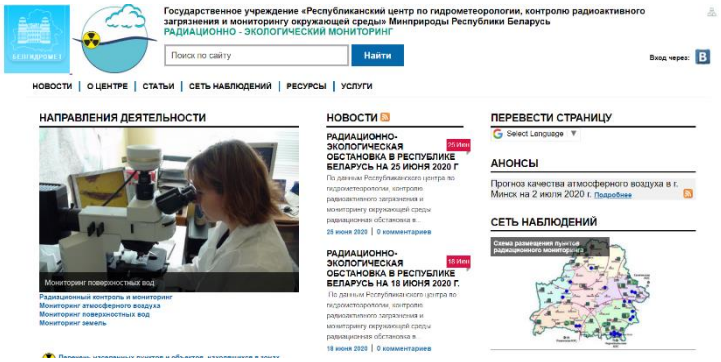
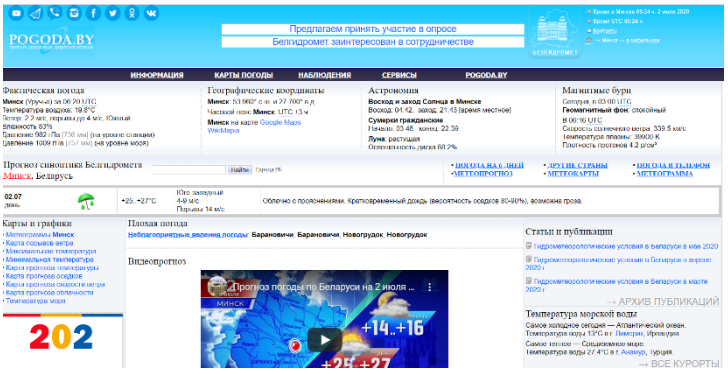
The selected portals frequently used to publish environmental information are described in the table below.

[134] http://www.nsmos.by/content/402.html

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

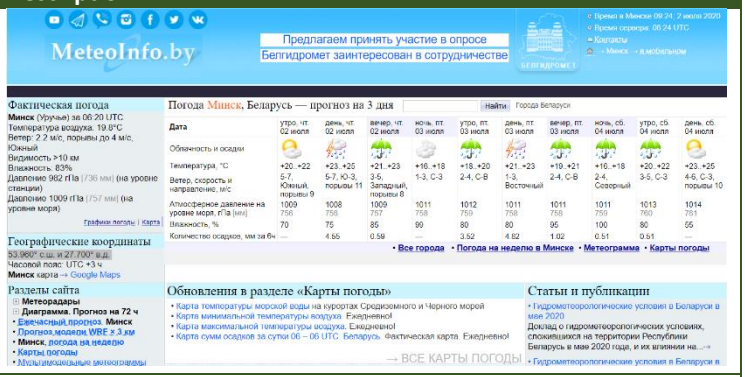
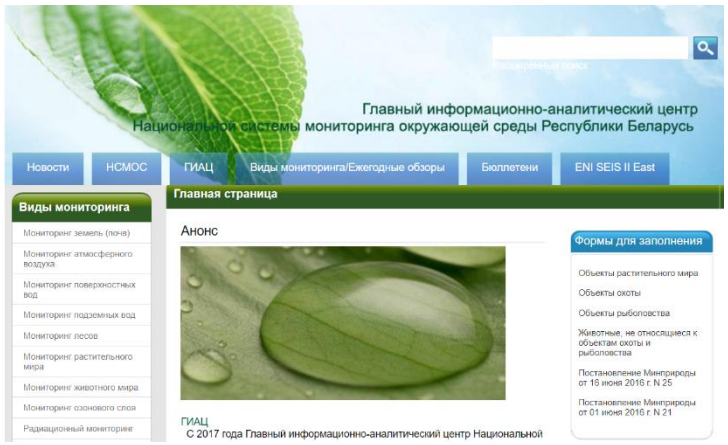
European Environment Agency

Table 12. Main environmental information platforms and portals managed by public authorities (as of May 2020)

Institution	Description
Ministry of Natural Resources and Environmental Protection minpriroda.gov.by	The website provides a summary of the key activities of the ministry and access to a number of national reports. The website is user-friendly. All information published is in PDF format (non-machine readable). The information is available in national language, in Russian and in English.
Republican Centre for Hydrometeorology, Control of Radioactive Contamination and Environmental Monitoring 'BELHYDROMET' belgidromet.by/	The website provides information on the main activities of the Centre. Most data and information are provided through specialised websites (described below). The website is modern and user-friendly. The information is available in national language, in Russian and in English.
Specialised websites of BELHYDROMET: **Radiation rad.org.by/** **Weather www.pogoda.by/ and meteoinfo.by/**	These websites provide access to specialised information and reporting. They provide access to graphs, maps and figures. However, the data are not easily reusable as most are presented in HTML format. The user interface is outdated. Information is difficult to find. The websites are only available in Russian. rad.org.by  pogoda.by  meteoinfo.by

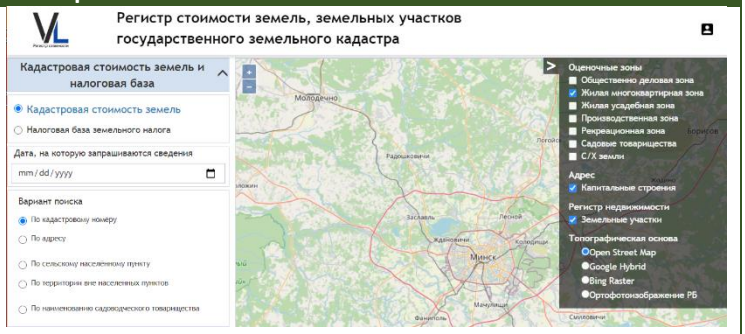
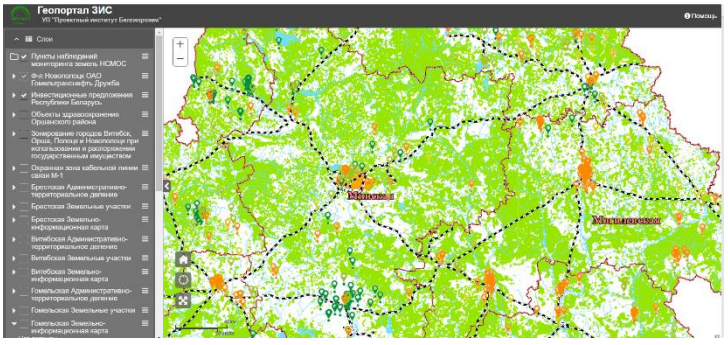
This project is funded by the European Union and is implemented by the European Environment Agency

European Environment Agency

Institution	Description
	
National Environmental Monitoring System portal **www.nsmos.by**	The purpose of this website is to provide access to the public to reports on various environmental topics. The website also provided a gateway to the work under various projects, including the ENI SEIS II East project and its Open Data component. Annual reports on land, surface and underground water, air, ozone layer, flora, fauna, radiation and the state of ecosystems, as well as quarterly reports on air, water and soils, are published on the website. No underpinning data can be downloaded; data are only available in the form of reports and in PDF format. The portal, as well as the reports, are available only in Russian language. 
State Committee on Property **gki.gov.by**	The State Committee on Property has published data on several specialised platforms such as the Belarus Land Information Map (the Geoportal), Belarus Cadastral Map and others. Data are provided using interactive maps. Licencing agreements are provided and define the use of the maps strictly for non-commercial purposes. It does not provide tools to download or reuse data (at least for unauthorised users). The information is available in national language, Russian and English. Belarus Cadastral Map: vl.nca.by

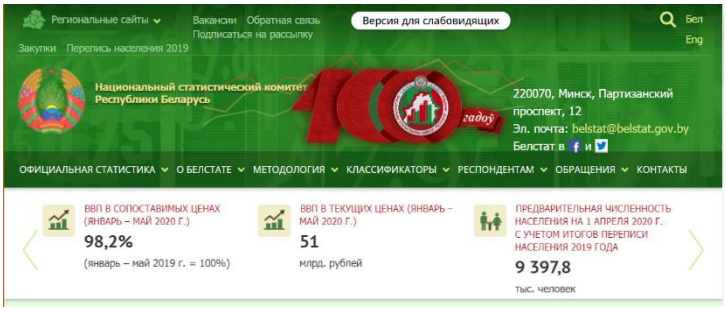
This project is funded by the European Union and is implemented by the European Environment Agency

European Environment Agency

Institution	Description
	
Geoportal of Land Information System **gismap.by**	The data are stored in the State Register of Information Systems of the Ministry of Communication and Information. The geoportal provides functionalities for users to edit spatial data, search for data according to different criteria and share information between users – including electronic copies of documents, navigating and measuring maps, and integrating spatial data from a variety of sources. The geoportal also has dedicated custom modules with specific functionalities for specific user needs (e.g. for agricultural organisations). The development and maintenance of the geoportal, as well as the timely update of data (content management), are carried out by the institute Belgiprozem. The geoportal provides spatial information supporting the decision-making process regarding the environment and management of natural resources, such as lands, forests and water. It also provides information on the boundaries of administrative and territorial units and land plots, on land coverage of the territory, reclamation conditions, use restrictions, engineering communications, etc. The portal is also useful for geodesy, land cadastres, pipeline maintenance and other organisational purposes. For populated areas, the accuracy of information on the geoportal corresponds to the accuracy of topographical maps at a scale of 1:2000; for other territories - the scale is 1:10000. Information on the terms of provision to users is divided into two parts: a public part available to any unauthorised user, and a specialised one that is only available as part of a subscription. The portal is available only in Russian language. 

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

European Environment Agency

Institution	Description
National Statistical Committee **www.belstat.gov.by** **A national platform for reporting indicators of Sustainable Development Goals (SDGs)** **sdgplatform.belstat.gov.by**	The Belstat website acts (among others) as a single platform for the publication of SEIS indicators. Indicators are presented in the form of tables and in XLSX format. Also, brief metadata is available containing the name of the indicator, structure, brief methodological explanations and the source. The portal presents the environment indicators of Belarus under the section "The Shared Environmental Information System Indicator". The website would require a review of the user interface according to modern standards; however, the information is clear, available in English and easy to find. The English version of the website is different from the Belarusian one. It is important to ensure full consistency in the translation of the website.  Belstat also launched the National platform for reporting on SDGs indicators. The platform presents indicators from the national list of indicators for achieving the Sustainable Development Goals. The portal is available in Russian and in English.

4.2 Environment open data availability and reuse

The table below presents a comparison of the Open Data Portal and the Belstat website in terms of data availability and reusability.

Table 13. Comparison of the Open Data Portal and the Belstat website (as of May 2020)

	Open Data Portal	Belstat website
Statistics referring to the availability of environmental data online	Launched in 2018, the portal contains 100 datasets in total, and datasets under the category "Environmental Management" only six. The portal provides statistics on the datasets published. Filtering of data is available based on dataset popularity, date of publication, region, and publishing institution. There is no facility to filter out datasets on formats.	Currently, 36 out of 49 UNECE environmental indicators[135] which can provide a way to track the state of the environment across Europe are produced and available in the Belstat website. All datasets are available as XLSX files for download. However, environmental data cannot be visualised dynamically.

[135] https://www.unece.org/index.php?id=30331&L=0

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

European Environment Agency

	Open Data Portal	Belstat website
Reusability of data	Even without the legal obligations, all the datasets on the official Open Data Portal are provided in machine-readable format, namely, the three formats are as follows: XML, JSON and CSV. Every dataset has also a XSD format schema.	Belstat compiles data based on state statistical reporting. It publishes statistical yearbooks, bulletins and the annual statistical edition of 'Environmental protection in the Republic of Belarus'. Belstat also publishes on its webpage a set of core indicators provided to the Shared Environmental Information System (SEIS)[136]. All indicators are published in XLSX and in time series.

[136] http://www.belstat.gov.by/en/ofitsialnaya-statistika/macroeconomy-and-environment/okruzhayuschaya-sreda/the-shared-environmental-information-system/

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

European Environment Agency

5 Achieving a high level of maturity for environmental data management

5.1 Main challenges

5.1.1 E-government

The major challenges related to the implementation and maintenance of e-governance initiatives in Belarus are presented in the table below.

Table 14. Major challenges related to e-governance

Content	• **Relatively low number of e-services available.** The e-service portal has a limited number of online services, hence further development of e-services to increase their effectiveness is advised. The public authorities need to provide more e-services to the public, find innovative solutions to engage the public in the decision-making process and simplify the public service delivery process. • **Lack of consistency in metadata description of e-services**. Currently, the e-government portal does not provide an extended or complete metadata description for public services, thus hindering search and interoperability. • **Absence of systematic interoperability framework across public authorities**. Even though a set of important policy documents[137] has been approved aiming at introducing e-services in Belarus, a systematic approach to interoperability is still needed. Integrated implementation of e-services requires definitions of common rules, standards and formats.
Infrastructure	• **Lack of interoperability standards implementation that would allow linking similar information from various state information resources**. This challenge may cause serious difficulties in the establishment of organisational-legal and semantic interoperability of state information resources. • **Limited number of minimum requirements for interoperability for the state information resources.** The differences between information systems coupled with the lack of common requirements lead to difficulties in introducing interoperability at a national level.
Cooperation	• **Weak communication between public authorities related to data and information exchange**. To set a common interoperability framework and standards for data exchange, efficient communication and dialogue between various public authorities is needed.

[137] Resolution of the Council of Ministers of the Republic of Belarus No. 1074 from August 9,2011 on the approval of the 'Provision of electronic services and the implementation of state functions electronically through the state-wide automated information system'
Resolution of the Council of Ministers of the Republic of Belarus No. 529 from July 14, 2017 on the approval of the 'Administrative procedures to be implemented electronically'
Resolution of the Council of Ministers of the Republic of Belarus No. 637 from August 22, 2017 on the approval of the 'Measures to implement the Law on Amending the Law on the Basics of Administrative Procedures'
Resolution of the Council of Ministers of the Republic of Belarus No. 882 from October 4, 2013 on the approval of the 'List of organisations providing electronic services as intermediate information through national automated information systems'

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

European Environment Agency

5.1.2 Open data

The major challenges related to electronic access to environmental information and open data are presented in the table below.

Table 15. Major challenges related to open data

Content	• **Public access to information needs further improvement**. The public has access to public information, but further improvements are necessary. There are numerous exemptions and difficulties in receiving any information related to public sector activities. Information may be released by public authorities upon request, but there is no clear obligation for them to do so. • **Low number of datasets available on the Open Data Portal, especially related to the environmental domain**. There is a need to foster the publication of open data by public authorities so that the publication of public data becomes a 'default' process. • **Lack of a consistency in providing electronic access to state information resources by the public authorities**. Public authorities define their rules/procedures for access to information and providing their lists and frequency of publications. This causes differences in terms of access to information. There are several public authorities that are more open than others and yet, their comparatively advanced stance towards open data is not an internal policy but rather an individual initiative taken at a low and medium organisational level.
Infrastructure	• **Further development and enhancement of the Open Data Portal coupled with the development of APIs**. It is necessary to continue the development and maintenance of the Open Data Portal. Integrations with other portals should be considered and stimulated in order to increase the access to open data.
Cooperation	• **Limited and uneven degree of involvement of the public authorities in the dissemination of public information**. The increased involvement and participation of a larger number of public authorities in the open data initiatives is necessary in order to publish data and information that is demanded currently (and in the future) by the various users. • **Limited understanding of the potential benefits of using and reusing open data**. It is necessary to raise awareness among the public and business operators of the need to create an open data "economy" and establish tools for monitoring the use and reuse of data.

5.1.3 Environmental information sharing

The main challenges related to environmental information management are presented in the table below.

Table 16. Major challenges related to environmental information management

Content	• **Insufficient regulatory framework to promote collection, access to and dissemination of environmental information using modern digital technologies and lack of clear procedures and measures to assist the implementation.** Some pieces of environmental legislation have been adjusted to meet the Aarhus Convention requirements, but the rest remain outdated. According to present rules, public authorities are supposed to collect and manage the environmental

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

European Environment Agency

	data, however the way it is processed does not correspond to the needs of digital transformation and modernisation of environmental information system. Thus, there is a need to adopt a data policy regulating the management and sharing/access to environmental information at the national level. • **Limited evidence-based and scenario-based strategic decision-making in environmental domain.** There is a need for: (1) a clear prioritisation of environmental goals based on available assessments and scenarios; 2) setting clear environmental targets and monitoring mechanisms in environment-related strategies, and (3) integrating environmental considerations in sectoral strategies, programmes, and activities.
Infrastructure	• **Widespread dissemination of environmental information through various portals**. This situation leads to such issues as information and functionality duplication, high cost of information system maintenance, uncertainty in accessing the correct information and difficulties with regular updates, among others. • **Limited use of modern digital technologies, such as Geographical Information Systems (GIS)** For example, the register of National Environmental Monitoring System observation points was developed using GIS technologies. However, since links to the various databases are not in place, the regular update of the information in the system is done manually. The lack of appropriate tools delays the assessment of the state of the environment. • **Limited efficiency in the data exchange**. Current exchange of information in the NEMS is based on XLSX files and is not automated. There are no direct interfaces with the information systems of health, transport, energy, the Open Data Portal, and Belstat. The lack of standard APIs and national interoperability standards are limiting effective data exchange.
Cooperation	• **Lack of consistency in strategic planning.** Despite having a developed system of an umbrella (horizontal) strategic planning, which goes beyond environmental issues and covers all the planning areas, strategies are approved at different levels and not all public entities put enough emphasis into the environmental issues. • **Incomplete procedures for state of environment reporting affecting the timely flow of information**. Consequently, the NEMS system could be further improved by introducing unified tools for environmental data management and dissemination. • **Lack of systematic approach in the professional training of public officials related to the use and benefits of modern technology.** The lack of necessary technical knowledge limits the transition to the use of more modern technologies. • **Lack of progress information available on the performance of public functions**. The stakeholders have limited access to information about monitoring, evaluation and reporting on the progress of environmental policy implementation.

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

European Environment Agency

5.2 Roadmap[138]

In general, it is recommended that Belarus should focus on some key elements for ensuring coherent and effective open data and environmental information management and for addressing the common challenges presented above. In brief, the focus should be on the following:

- **Policy measures:**
    - *Long-term digital action plan*: an action plan for e-government and open data should be in place. It should ensure scoping, management and funding of the national e-government and open data portals, as well as digital awareness-raising activities for both public authorities and the public. In doing so, all available results and good practices acquired from previous activities and projects across the whole economy spectrum should be assessed and put in motion.
    - *General interoperability framework*: the country should have in place an interoperability framework or at least its foundation. This is especially required for building an integrated environmental information system(s) and ensuring the smooth integration/exchange/sharing of environmental data.
    - *Roadmap in the field of open data and environmental information*: this roadmap should contain key objectives for fostering sharing and dissemination of environmental information.
- **Legal measures:**
    - *Enforcement mechanisms* for the regular collection, sharing and dissemination of environmental information and for monitoring implementation.
- **Technical measures:**
    - *E-government, open data and geo-portals*: the country should have effective e-government, open data and environmental portals on which environmental data and information can be shared/disseminated with spatial attributes, and where services can be built.
    - *Implementation of international standards*: standards developed by the EU, the International Organisation for Standardisation (ISO), the World Meteorological Organisation, the Open Geospatial Consortium, the World Wide Web Consortium, the National Institute of Standards and Technology and other international organisations which are responsible for standards development could be adjusted and introduced in the areas of designing an information system, metadata standards and interoperability standards.

[138] The proposed roadmap has been updated taking into consideration the presentation made during the 4th ENI SEIS II East Project Steering Committee Meeting on 12 November 2019 in Copenhagen. Presentations are available here: https://eni-seis.eionet.europa.eu/east/areas-of-work/communication/events/project-related-events/4th-eni-seis-ii-east-project-steering-committee-meeting

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

European Environment Agency

Some of these elements are already in place in Belarus (e.g. the Open Data Portal and other portals containing environmental data and information). Nonetheless, it is advised to look at these aspects from an integrated perspective of environmental information sharing and dissemination and to update them where appropriate. These elements are under continuous development; hence a periodic review is necessary.

Guidance for the implementation of the roadmap

The roadmap provided in the following section outlines key areas for further development in the field of open data and environmental information. It also provides recommendations and suggested actions for improvement that are organised according to the following SEIS pillars: content, infrastructure and cooperation.

The success and rapid advancement of the country in this challenging domain is strongly dependent on clear prioritisation, multidisciplinary teamwork and regular monitoring and adjustment of results. Furthermore, as progress is gradually made in one or several areas proposed for consideration, improvements, readjustments or amendments to the roadmap will be needed to keep it relevant and focused on the key priorities of the country.

To support the implementation process of the proposed measures at the national level, it is recommended to start by establishing an interdisciplinary team that would be responsible for driving and overseeing the overall process. The measures should be prioritised and implemented to support and enhance the e-government, open data and environment strategies of the country. Furthermore, this process should not be carried out in isolation. On the contrary, it should also be undertaken by taking into account the extensive experience already gained in this area by other countries and organisations and in the context of broad regional exchange and international collaboration.

The proposed measures are to be implemented by specific authorities at various levels of decision-making and across disciplines. In this respect, the measures are grouped in three major categories, namely: policy, legal and technical measures. These categories are indicated by the colour scheme (provided in the table below). They aim to signal the leading expertise or decision-making level required for the implementation of each measure, while being considered in an interdisciplinary setting.

Table 17. Legend for the colour scheme of the roadmap measures

Colour	Type of measure	Description
	Policy	The measures in this category cover the development of specific strategies and policies and their integration into the overall policy framework at the national level. They include establishing clear and measurable targets as well as monitoring the implementation of the strategies and policies. Furthermore, they imply supervision, coordination and other practical arrangements in terms of interdisciplinary work on open data and e-governance across various areas, including the environment.
	Legal	The measures in this category cover the development and adoption of new or revision of existing legislation followed by the development of secondary legislation, guidelines and methodologies in the area of open data and e-governance across various domains, including the environment. Legal measures include governance set-up, ensuring a

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

European Environment Agency

Colour	Type of measure	Description
		clear division of responsibilities and proposing enforcement mechanisms for obligations provided in the legislation.
	Technical	The measures in this category cover the adoption and/or development of technical tools, methodologies and procedures, as well as the introduction and adoption of international standards, where appropriate, at national level. These measures also embrace developing new competences and training specialists to ensure the successful implementation and sustainability of technology initiatives.

It is recommended for the Belarus to implement measures proposed in the roadmap after consideration of the latest policy, legal and technology changes happening in the country. The table below suggests a recommended timeframe to implement measures with different priorities assigned. Considering that this domain is very dynamic these suggested time perspectives could be shortened.

Table 18. The recommended timeframe for measures implementation

Priority	Recommended timeframe for the measure implementation
High	In the next 1-3 years
Medium	In the next 3-5 years
Low	Over the next 5 years

Priorities proposed in this roadmap were based on information received and aggregated from 2018 to 2020. Depending on the measure implementation, changes in the policy, legislation or technology the suggested priorities might change. To ensure effective implementation of proposed measures and their relevance regular measure monitoring is essential.

'Open data and e-government good practices for fostering environmental information sharing and dissemination' report

The implementation of the proposed measures in the roadmap is assisted by the Good Practices Report "Open data and e-government good practices for fostering environmental information sharing and dissemination" (in brief, the Good Practices Report). This report is an integral part of the present project and provides relevant examples from other countries and organisations on the practical implementation of the roadmap measures.

The Good Practices Report is organised into two sections – e-government and open data – each part following the SEIS pillars 'Content', 'Infrastructure', and 'Cooperation (Network)'. In addition to this, the following resources can also be used to support the implementation of the measures proposed in this roadmap:

- Report on the 'Promotion of good practices for national environment information systems and tools for data harvesting at EU level';
- Streamlining Environmental Reporting – Action Plan;
- Open Data Maturity in Europe 2019[139, 140];

[139] https://www.europeandataportal.eu/sites/default/files/open_data_maturity_report_2019.pdf
[140] https://www.europeandataportal.eu/sites/default/files/european_data_portal_-_open_data_goldbook.pdf

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

European Environment Agency

- Development of an assessment framework on environmental governance in the EU Member States[141].

5.2.1 Roadmap measures: Content

The measures proposed to Belarus from the perspective of SEIS pillar: Content are presented in the table below.

Table 19. Measures from the perspective of SEIS pillar: Content

	Measure	Priority	Description
	1. Revision of the legal framework to promote and regulate the online accessibility and reuse of public sector information (PSI)	High	Adopt or amend as needed, the legal acts referring to data management and accessibility related to environmental domain (monitoring, assessment and reporting, management and control of natural resources, ecosystems and pollution), in accordance with the Aarhus Convention and the Protocol on PRTRs (as appropriate). This can include: • Improving environmental information system by defining themes, sources (lists, registers, databases, funds, etc.), formats, metadata, licencing and interoperability requirements; • Improving procedures for environmental data collection in machine-readable format and its accessibility as open data; • Improving procedures for managing environmental data flows and regular updating, quality assurance and quality control, reporting, inter-institutional sharing and exchange, online dissemination and other means of dissemination; • Setting up the public participation procedures for involving public at large in the design, use and update of the environmental information system(s); considering ways to take on board citizen science and the public engagement initiatives; • Streamlining the responsibilities of public authorities at all levels and across sectors to ensure clear competences and coordination; • Reviewing periodically the application of the exceptions in the disclosure of environmental information; • Monitoring the legitimate application of these exceptions and the disclosure of information on emissions in accordance with the Aarhus Convention – (in particular clarify the practical rules to separate non-confidential information of public importance for its further disclosure).

[141] "Development of an assessment framework on environmental governance in the EU Member States" under the contract No 07.0203/2017/764990/SER/ENV.E.4 funded by the European Commission, Final report May 2019.

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

European Environment Agency

	Measure	Priority	Description
			As discussed during the national roundtable, improvements regarding the regulatory framework, especially environmental information management, are being continually implemented and are continuously required. However, full enforcement of the Aarhus Convention requires that the legal framework be amended and complemented. *Belarus has adopted the 'State Programme for the Development of the Digital Economy and Information Society for the period 2016-2020', which partially covers areas related to open data. However, the strategy does not specify concrete measures to be implemented in order to facilitate environment data sharing.* *For guidance, consult the section 'Designing an open data legal framework and provision of enforcement mechanism' of Good Practices Report.* *This measure is closely linked with 'Establish a collaborative institutional framework for the implementation of open data' in the Cooperation (Network) section.*
	2. Adopt guidelines defining the practical arrangements for environmental information management, sharing and dissemination	High	Adopt guidelines defining the practical arrangements for environmental information management, sharing and dissemination, specifying: • The scope of environmental information system(s) with metadata description and registry; • The environmental data management structure (including data architecture, data stewardship, system administration, data privacy, data security and data quality); • Decision-making procedures for sharing and making available online on relevant portals of non-confidential information and datasets (e.g. websites of public authorities, environmental portals-one web-access point for environmental information, geospatial portals, statistical, open data and other portals); • Separation of non-confidential information as appropriate; • Gradually improve data quality assurance mechanisms.
	3. Develop and adopt an environmental data policy	High	Adoption of an environmental data policy by the authorities in charge with environment protection, to include: • List of varied environmental information available and the scope thereof; • Basic terms of availability and accessibility, including open access and data sharing aspects;

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

European Environment Agency

	Measure	Priority	Description
			• Data holder support for availability and accessibility by third parties; • Rights and obligations of data and information holders/providers in terms of maintenance, update, quality assurance and reliability of data and information about their responsibility; • Licencing terms and conditions; • Contact point for access to environmental information. *For an example of data policy, consult the European Environment Agency's website at: https://www.eea.europa.eu/legal/eea-data-policy/data-policy*
	4. Develop/update licencing terms and conditions to promote open data access, use and reuse of environmental information using an open licence	Medium	This measure will involve defining or updating the licencing terms and conditions used on the different portals for accessing and using the environmental data. *At present, the licencing mechanisms for re-using the data published by public authorities are not harmonised. Some public authorities indicate that the information can be reused if the source is acknowledged. However, this differs among the various public authorities that publish environmental information.* *According to the PSI Directive, it is recommended to use open licences as they are available online and provide clear licencing conditions[142].* *More information about licencing are available in the Good Practices Report in the section 'Adopt/update licencing terms and conditions of environmental data to promote its public use and reuse'.*
	5. Regular collection and timely reporting of environmental data and information in accordance with national and international obligations	High	This measure will: • Ensure the effective implementation of the Aarhus Convention and its decisions and recommendations from the Meeting of the Parties on promoting effective access to information and electronic information tools. • Identify practical arrangements for establishing the Pollutant Release and Transfer Register and for its incorporation within the integrated environmental information system(s) by using good international working practices. • Belarus made significant progress towards the production of SOER indicator-based and its online availability. It is recommended to further

[142] Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L1024&from=EN

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

European Environment Agency

	Measure	Priority	Description
			concentrate on ensuring the traceability of assessments and indicators by linking them with the available data sources used. • Ensure the implementation of other international commitments related to the regular provision of environmental data and information. *This measure is closely linked with the measures 'Enhance interoperability of geospatial, statistical, health and environment information systems' and 'Establish an electronic registry of public environmental information' in the Infrastructure section.*
	6. Improve and make publicly available the quality assurance/quality control mechanisms behind the published environmental data and information	High	The results and methodology used for quality assurance and quality control of environmental data are to be published in a detailed manner in order to enable public and other stakeholders to assess the reliability of the data. This measure will: • Assess the current quality control mechanisms from the collection of environmental data, to aggregation, manipulation, processing and publication across the whole MDIAR chain[143]; • Publish the current procedures in place and set minimum standards to respect all stages of the data flow (data collection, data preparation and control, aggregation and data publication); • Further develop the legal framework to include clear responsibilities at different levels, regarding quality control of environmental data including penalties for non-compliance; • Fully implement the quality control measures and set up an annual reporting process for the evaluation of the quality of environmental data provided. *At present, quality control is the responsibility of the institution that collects data, however, there are no common quality control process that would ensure the uniform quality control procedures[144] (see Section 3.1.3.3 Quality control).* *Belarus set up quality requirements for data management in a legal framework, and Belstat is also working in accordance with ISO Certificate 9001-2015 (see section 3.1.3.3 Quality control). However, there are*

[143]The monitoring/data/information/assessment/reporting (MDIAR) chain is the flow of data and information from national monitoring to European reporting.

[144] As discussed in the national roundtable.

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

European Environment Agency

	Measure	Priority	Description
			no specific quality requirements for environmental data management. *Example of criteria for assessing quality control mechanisms are depicted in the document 'Promotion of good practices for national environmental information systems and tools for data harvesting at EU level', p. 165.* *Examples of standards, mechanisms and measures for quality control are also presented in the Good Practices Report, in the section 'Develop and publish quality control mechanisms for environmental data'.*
	7. Define, adopt and publish metadata description standards for all environmental data and information in accordance with international standards using a one-stop access point	Medium	This measure will aim to define metadata standards to facilitate the dissemination and exchange of environmental data and information (including dissemination of the available environmental reports). As a result, it will be easier for the public authorities to manage and share environmental data, while also making it easier for public to find the needed information. *It is recommended that the international standards should be adopted, as the standard development requires both technical expertise and resources. The adaptation of the standard to the EU standard DCAT-AP would require capturing additional metadata, which would also enable integration with other open data portals in Europe.* *Refer to the best practice report to get more information about metadata standards for open data.* *This measure is closely linked with the measures 'Enhance interoperability of geospatial, statistical, health and environment information systems' in the Infrastructure section.*
	8. Expand collection, prepare and publish environmental data in a machine-readable format	Medium	This measure aims to ensure the publication of environmental data in machine-readable format. Such a measure can be driven by the establishment of the open data legal framework, setting up the obligation to publish, as a rule, all datasets in machine-readable formats, unless data are not available in such a format and requires processing beforehand. Consider moving the SOER towards an assessment-based and interactive report, preferably indicator-based. *The Good Practices Report provides more details about machine-readable formats in the 'Transformation of data published to machine-readable format' section.* *This measure is closely linked with the 'Define, adopt and publish metadata description standards for all environmental data and information in accordance with the international standards using a one-stop access point' measures outlined in the Content section.*

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

European Environment Agency

	Measure	Priority	Description
	9. Inventory, re-engineering and publication of public services as e-services	Medium	This measure will define metadata standards and ensure that environmental services are described and accessible through the electronic service portal, in accordance with national standards. For the description of public services, it is recommended that the European Core Vocabularies, such as Core Public Service, Core Person, Core Location and Core Public Organisation, be adapted. This would allow a coherent and standardised description of e-services and improved interoperability to be ensured. *Belarus has made significant progress regarding e-services, but the current portal lacks information on life events and environment e-services are still available on a range of public websites. To achieve this, it is important to ensure a standard description of the public services registered.* *For an example of implementation, consult the Good Practices Report's 'Publishing e-services on a dedicated e-service portal' section.*
	10. Perform an open data impact analysis for the use/reuse of environment data	Continuous	This measure will support raising awareness through regular assessment of the impact of the use/reuse of environmental data, as part of the open data impact assessment framework, and will drive further developments. For example, performance can be evaluated against the following criteria: • Number of environmental datasets downloaded and reused; • User feedback collected; • Number of applications developed using environmental data and having an impact on the environment (including reuse of environmental data by other sectors, such as transport). *More information about the general open data impact assessment can be found in the Good Practices Report in the 'European Data Portal Impact maturity' section. The section provides an example of the European Open Data Portal relevant for this area.* *This measure is closely linked with the "Strengthen the technical capability for environmental monitoring" measure in the Infrastructure section.*

In order to facilitate the implementation of the provided measures, the Good Practices Report provides the following examples and recommendations:

- Building a digital strategy which includes the environment (example from Lithuania);
- Building e-services and public information systems according to national and international standards (examples from Estonia and the EU);

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

European Environment Agency

- Publishing e-services on a dedicated e-service portal (examples from the Lithuania, Romania and the UK);
- Develop a national strategy for open data and a measure plan to implement it for specific types of information (example from Ireland);
- Adopt an action plan based on the open data strategy and the digital strategy (example from the OGP);
- Adopt an open data policy, and extend it to environmental data (example from the EU);
- Designing an open data legal framework and provision of enforcement mechanisms (example from the EU);
- Definition of metadata description standard for all environmental information (examples from the EU and the UK);
- Transformation of data published to machine-readable format;
- Develop and publish quality control mechanisms for environmental data (example from the European Open Data Portal);
- Adopt/update licencing terms and conditions of environmental data to promote its public use and reuse (example from the European Open Data Portal);
- Evaluate the impact of open data (examples from the European Open Data Portal);
- Improve accessibility and use of available environmental data and information by improving the multilingual aspect of portals (example from the EEA).

5.2.2 Roadmap measures: Infrastructure

The measures proposed to Belarus from the perspective of SEIS pillar: Infrastructure are presented in the table below.

Table 20. Measures from the perspective of SEIS pillar: Infrastructure

	Measure	Priority	Description
	11. Establish a single and user-friendly web-access point for environmental information	High	The single access point can also be designed as an entry point for all environmental policy domains to support the implementation of decision VI/1 of the Meeting of the Parties to the Convention. In Belarus, National Environmental Monitoring System provides a web-access point to environmental information and could be further extended linking other types and sources of environmental information (e.g. dynamic environmental data, cadastres, etc.) to serve as environmental portal. The following suggestions are provided for the further development of the environmental portal (single access point for environmental information): • Design main technological solutions, which will be used as single and user-friendly web-access point for environment information – technological solution should be based on technological platform; • Agree upon a single access point by linking various data sources of environmental information (e.g. the

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

European Environment Agency

	Measure	Priority	Description
			single access point should provide access to environmental datasets, indicators, links to environmental reports and various applications); • Provide web-services and commonly agreed external application programming interfaces (APIs) to the existing portals so the public authorities can easily share their (structured) data and have the possibility to download datasets (e.g. EEA public map services [145], INSPIRE Directive); • Implement a tool for checking the quality of metadata provided by data providers; • Publish environmental information and data in accordance to the rules described in international metadata standards, such as DCAT-AP metadata vocabulary (this measure will also provide automatic synchronisation with other EU open data portals); • Develop search functionality to allow the user to apply multiple field search and filter options (e.g. file format) to refine a search; combining keywords with classifiers; • Maintain and enhance the portal by including feedback gathering as well as from the public consultations initiated by ministries and other governmental authorities. *More information about single access points can be found in the Good Practices Report in the 'Establish a single and user-friendly web-access point for environmental information' section (examples from the EU, EEA and Ireland).* *The design of environmental information system is also widely described in the document 'Promotion of good practices for national environmental information systems and tools for data harvesting at EU level'.*
	12. Enhance interoperability of geospatial, statistical, health and environmental information systems	High	This measure will facilitate the implementation of the interoperability standards defined for environmental and other thematic data. This measure will: • Assess the existing compatibility of various information systems with defined interoperability standards, in particular with the Open Data and geoportal; • Update and implement standards for metadata and data interoperability in accordance with international standards and good practices; • Develop APIs for external users;

[145] https://www.eea.europa.eu/code/gis

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

European Environment Agency

	Measure	Priority	Description
			• Provide automated mechanisms for sharing time-series data. These actions can also be included in the national interoperability framework. During the national roundtable, it was indicated that environmental information systems should leverage e-government solutions, such as NAIS and/or be integrated to foster interoperability. *Refer to the Good Practices Report for more details about the development of interoperability in Lithuania and the EU in the 'Establishing an interoperability framework' section.* *This measure is linked with the measure 'Develop and/or continue to enhance an integrated system for the management of environmental information in accordance with the Aarhus Convention and the Protocol on PRTRs' from the present roadmap.*
	13. Establish an electronic registry of public environmental information	High	This measure will aim to establish a registry of environmental information and data available in each public authority and system (i.e. the metadata management system), as well as data that is publishable taking into consideration the legal framework in place. The registry will be used by public officials to support the continuous development of environmental information systems and the dissemination of environmental information. Particularly, the registry will map the systems, databases, public authorities, datasets and reports published. This measure could be coupled with the standardisation of metadata for environmental information, and with the development of a single web-access point for environmental information which would be automatically refreshed based on the registry of environmental information. *The inventory of environmental information systems is widely described in the document "Promotion of good practices for national environmental information systems and tools for data harvesting at EU level", in the section 'Inventory of the environmental information system', p. 25.*
	14. Improve accessibility and usability of available environmental data and information by	Medium	This measure will provide a full translation to Belarusian, Russian and English of public authorities' websites, annual reports and environmental information metadata.

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

European Environment Agency

	Measure	Priority	Description
	improving the multilingual aspect		*An example of multilingual portal is the EEA GEMET[146], which provides a thesaurus of environmental terms, currently translated into 37 languages.*
	15. Develop e-services for the environment	Medium	This initiative will aim to develop environmental e-services according to the national standards (service passports), and service interoperability standards (e.g. e-signature, e-payment). *More information about the description of public services can be found in the Good Practices Report in the section 'Building e-services and public information systems according to national and international standards'.* *This measure is connected to the measure 'Inventory, re-engineering and publication of public services as e-services' from the present roadmap.*

	16. Strengthen the technical capability for environmental monitoring	Continuous	This measure aims to the strengthen the technical capability for environmental monitoring to other thematic areas such as water.
			
			The gradual provision of modernised monitoring equipment should be planned and gradually ensured. To do so, the following is recommended:
			
			• Define monitoring objectives at national and local level for each thematic area. These objectives should include:
			  ○ Frequency of observations (e.g. hourly, daily, monthly or yearly);
			  ○ Granularity of data gathered (accuracy);
			  ○ Space coverage (taking into consideration spatial requirements – urban vs rural areas, industrial areas);
			  ○ Quality of data;
			  ○ Compatibility with existing equipment and information systems and, as appropriate, implementation of the EU and international approaches.
			• Conduct critical assessment in relation to the needs of the status and performance capabilities of the current monitoring infrastructure for each thematic area starting with priority areas such as for example water. This can be achieved through the establishment of a cross-sectional team of experts that could reflect on the existing equipment and provide a complete assessment of the needs aligned with the objectives defined above.

[146] https://www.eionet.europa.eu/gemet/en/concept/4438

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

European Environment Agency

	Measure	Priority	Description
			• Develop a long-term and realistic national plan for gradual modernisation taking into consideration all financial possibilities and options. • Follow this process by developing a coherent and stepwise implementation plan to gradually integrate new equipment into the existing system. This point is crucial as a lack of integration of the monitoring process in information systems: 1) renders the exchange of data cumbersome, 2) increases the need for human resources and 3) undermines the quality and availability of data. • Identify potential environmental areas where gradually to complement the traditional environmental monitoring system with additional information coming from other sources (e.g. citizen science, earth observation). The acquisition of monitoring equipment requires consequent investments and should be well prioritised taking into consideration the local and national needs, and a long-time perspective. *This measure is linked with the measures 'Develop and/or continue to enhance an integrated system for the management of environmental information in accordance with the Aarhus Convention and the Protocol on PRTRs' from the present roadmap.*

	17. Develop and/or continue to enhance an integrated system for the management of environmental information in accordance with the Aarhus Convention and the Protocol on PRTRs	Medium	This measure recommends the development of an integrated environmental management system, which will ensure the coordinated management and exchange of environmental data and information. To do so, this measure recommends:
			
			• Making an inventory of all systems used for management of environmental information at national level;
			• Defining requirements for an integrated system for environmental information management. In particular, the system will provide functionalities, such as:
			  ○ Workflow (e.g. quality management);
			  ○ Environmental data collection;
			  ○ Automatic dissemination and update of open data;
			  ○ Document management;
			  ○ Integration with external systems (open data, statistical, health, transport, energy, cadastral, etc. as needed);
			  ○ Advanced visualisation tools and capability for integration with business intelligence tools.
			• Gradual implementation of the system;

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

European Environment Agency

	Measure	Priority	Description
			• Training of the potential users and public authorities involved on how to operate it, benefits and functionalities; • Regular assessment of performance and update of the system when needed. This measure will foresee the development of an efficient system for integrating various types of environmental data and information at different levels (sub-national, national) by connecting various existing systems. Note: the system should provide a standard API and the possibility to upload data manually so that compatibility with legacy and external systems could be maintained. *The document 'Promotion of good practices for national environmental information systems and tools for data harvesting at EU level' presents guidelines for the development of environmental information systems.* *This measure is linked to the measures 'Enhance interoperability of geospatial, statistical, health and environment information systems' from the present roadmap.*
	18. Develop applications to engage the public in environmental monitoring and protection activities	Low	This measure will aim to develop a series of software applications (e.g. mobile apps) that will expand the potential for e-government in order to create "environmental data ecosystem" and enable the public to access, consult and interact with environmental data. For instance, through the apps the public can: • access and consult environmental information in real-time according to their location; • report poaching, and mark and signal polluted areas, etc.; • participate in environmentally friendly events in their neighbourhood; • integrate environmental data they have collected with government apps, where possible. *This measure is linked with the measures proposed in the Cooperation (Network) section of the present roadmap.*

In order to facilitate the implementation of the provided measures, the Good Practice Report provides the following examples and recommendations:

- Establishing an interoperability framework (examples from the EU and Lithuania);
- Building an integrated environmental monitoring system at national level (example from Ukraine);

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

European Environment Agency

- Building an Open Data Portal and foster publication of public sector information (examples from Ireland, the Netherlands and Spain);
- Establishing a single and user-friendly web-access point for environmental information (examples from Ireland and the EEA);
- Developing infrastructure on the most advanced platforms based on geospatial data and GIS technologies (examples from the EU and Lithuania);
- Providing technological support for sharing environmental data at the regional level.

5.2.3 Roadmap measures: Cooperation (Network)

The measures proposed to Belarus from the perspective of SEIS pillar: Cooperation are presented in the table below.

Table 21. Measures from the perspective of SEIS pillar: Cooperation

	Measure	Priority	Description
	19. Establish a collaborative institutional framework for the implementation of open data	High	This measure will strengthen the necessary institutional framework for managing open data, especially in relation to the environmental component. This measure will imply the need to develop strong cooperation links between public authorities in order to ensure the publication, sharing, dissemination and (re)using of the environmental data and information. An example of an approach to establishing a collaborative institutional framework for open data involves: • Amendments/completion of the existing legal framework for better clarifying the roles and responsibilities of the different actors, and consequently ensure a proper division of responsibilities on open data at national and thematic levels (e.g. there should be general rules for governing Open data framework and specific rules for individual environmental data providers on how to organise an open data publishing process internally) • Establishment of a cross-sectorial working group which will assist/advice in the establishment of the operational mechanisms for collaboration (i.e. processes, procedures and good practices); • Organisation of events/fora/ regular dialogues to foster collaboration between national stakeholders and various data users. *Currently, a draft version of the Resolution on the Functioning of the National Open Data Portal on the Basis of a Single Electronic Services Portal is being developed and planned to be adopted in 2020. This*

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

European Environment Agency

	Measure	Priority	Description
			resolution would be a considerable advancement in establishing open data dissemination in Belarus and should be adopted as soon as possible. *The Good Practices Report provides examples of initiatives undertaken in the EU to foster inter-institutional and international cooperation in the field of open data (cooperation section in the open data part of the document). In addition, the open data maturity report 2019 provides criteria to assess the maturity of the institutional framework in a country. The document 'Development of an assessment framework on environmental governance in the EU Member States' also provides good practices to establish an institutional framework for environmental governance.* *This measure is linked with the recommendations presented in the Content section of the present roadmap and the targeting of the revision of the legal framework.*
	20. Develop and ensure increased capacity for handling environmental and open data	Medium	Components of this measure will cover: • Assessment of the capacities needed (human resources and tools) for managing and making available environmental data and information at national and local levels; • Recruitment of specialised staff and gradual acquisition of necessary tools for open data and environmental data management; • Development and integration of procedures and processes for preparing and disseminating environmental data and information; • Professional development/ training plans for public officials and/or data stewards or data officers working with data. In this regard, it is possible to foresee compulsory training programmes (mandatory) for all staff responsible for data handling and to document these trainings through certificates. *The document 'Development of an assessment framework on environmental governance in the EU Member States' provides multiple examples of initiatives undertaken to build capacity in this area. The section '2. Administrative capacity (environmental inspectorates, police, customs, prosecution services and audit authorities)' focuses strongly on the example of capacity-building in the EU.* *This measure is linked with the measures 'Strengthen the technical capability for environmental monitoring' and 'Develop and/or continue to enhance an integrated system for the management of environmental*

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

European Environment Agency

	Measure	Priority	Description
			information in accordance with the Aarhus Convention and the Protocol on PRTRs' of the present roadmap.
	21. Promote international and regional cooperation to facilitate the implementation of the roadmap	High	This measure aims to support Belarus with international expertise and good practices to assist in the implementation of the present roadmap. To do so, it is recommended that: • Fora and other platforms where experience can be shared need to be identified and used; • Contacts with key stakeholders at the regional and international levels be established to share experience and good practices; • An inventory of international and regional initiatives in this area can be made followed by an assessment of their potential and usability. *The Good Practices Report provides examples of initiatives that can be undertaken to implement this measure, in the section 'Increasing public administration, public and business awareness over open data and environmental data'.*
	22. Raise awareness on open government and open data for the environment among citizens and businesses	Continuous	This measure will focus on raising public awareness on the importance and role of environmental information, its accessibility, use and other related issues. This measure will boost the demand for open government and open data by raising awareness by conducting promotion campaigns at various levels. This measure will focus on raising public awareness on the role and impact of environmental information, its accessibility, usability and other related aspects, by pursuing ongoing activities and strengthening and expanding them where and when appropriate. Additionally, a series of activities for promoting the use/reuse and sharing of environmental information could be undertaken, such as: • Hackathons; • Fora; • Promotion campaigns; • Development of incubators; • Development of public-private partnerships; • Facilitating dialogue and cooperation between national authorities, NGOs and the academic community. *The Good Practices Report provides examples of initiatives that can be undertaken to implement this measure, in the 'Increasing public administration, public and business awareness over open data and environmental data' section.*

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

European Environment Agency

In order to facilitate the implementation of the provided measures, the Good Practice Report provides examples and recommendations on the following topics:

- Increasing awareness and motivation among public authorities over e-government and digital solutions (example from the EU);
- Increasing awareness on e-government among the public and private sectors (example from the EU);
- Coordinating open data initiative(s) (example from Ireland);
- Establishing processes and procedures for managing open data (example from Lithuania);
- Increasing awareness of public administration, public and business on open data and environmental data (example from Belgium, Cyprus, the EU, Italy and Luxembourg);
- Promoting open data to organisations;
- Collecting user feedback and providing new means of communication between open data providers and users (example from Spain).

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

European Environment Agency