Sharing and dissemination of environmental information

Draft country maturity report: Republic of Moldova

Date: February 2019

From: PricewaterhouseCoopers

Contents

Table of figures

List of tables

European Environment Agency

Note

The current draft report was built on publicly available information up to October 2018. This draft version will be reviewed during the year 2019. It is not intended 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.

In particular, this report contains information obtained or derived from a variety of publicly available sources described within the report in more detail.

This draft report was produced by PricewaterhouseCoopers as part of the 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 ENI SEIS II East project 2016-2020.

It is expected that during the 2019 the draft report will be reviewed by the national authorities involved in the environmental information management, and use at national level and enriched with more specific, up to date information available.

List of acronyms

AGMR	Agency of Geology and Mineral Resources
ANRANR	Agency for Regulation of Nuclear and Radiological Activities
CIEMIM	Centre on Integrated Data Monitoring and Informational Management
EaP	Eastern Partnership
EEA	European Environment Agency
eGA	E-Governance Agency
EGDI	E-government Development Index
EMM	Ecological Movement of Moldova
EPI	Environmental Performance Index
GeT	Governance e-Transformation Project
GODI	Global Open Data Index
HCI	Human Capital Index
IEG	Institute of Ecology and Geography
M-Cloud	Government Cloud Computing Infrastructure
MARDE	Ministry of Agriculture, Regional Development and Environment
NCPH	National Centre of Public Health
NGO	Non-governmental Organisation
NHS	National Bureau of Statistics
NSOs	National Statistical Offices
ODIN	Open Data Inventory
OSI	Online service Index
POPs	Persistent Organic Pollutants
PRTR	Pollutant Release and Transfer Registers
SEI	State Ecological Inspectorate
SEIS East	Shared Environmental Information System principle and practices in the Eastern Partnership countries
SHS	State Hydrometeorological Service
SoER	State of the Environment Report
TII	Telecommunication Infrastructure Index
UNECE	The United Nations Economic Commission for Europe

1 Executive summary

The Republic of Moldova is now ranked 69th in the world E-government Development Index (EGDI, 2018), and ranked 14th according to the Open Data Inventory (ODIN) score (2017). As such, the Republic of Moldova is considered to be the most advanced EaP country in terms of Open Data, the main challenge now being the publication of more datasets on the Open Data portal. The country also has now over 80% of Households with Internet access at home[1].

In regard with environmental information, the Republic of Moldova is equipped with an advanced information system for the visualisation of environmental indicators on website of the National Bureau of Statistics.

A key challenge for the Republic of Moldova is now to leverage on e-government and Open Data initiatives and to foster collaboration between environmental information holders in order to improve environmental information sharing and dissemination.

E-government

In the past years, the Republic of Moldova has been working at the improvement of its governance framework, public administration efficiency, public service efficiency and the use of ICT in public institutions. These elements have been translated in the E-Transformation Agenda, the National Action Plan(s), the Public Services Modernisation Reform for 2017-2021 and the Public Administration Reform for 2016-2020.

In this context, the Republic of Moldova has implemented the Open Government Action Plan for 2016-2018[2], and approved the plan for an Open Government for 2019-2020[3]. The country has committed to implement the action plan for "an open government" as a member of the Open Government Partnership (OGP)[4]. The last evaluation of the Action Plan was in 2017. It showed that 15 out of 21 sub-actions were accomplished.

The public service portal https://servicii.gov.md/ hosts around 635 services and around 164 e-services; the number of services is increasing fast[5]. The portal provides a standard description of services, according to a national standard "service passport". Lately, the Republic of Moldova started an initiative to standardise and describe all public services according to European Union standards[6].

In terms of digitalisation, the Republic of Moldova undertook the development of a Government Cloud Computing Infrastructure, namely the M-Cloud. In addition, it also fostered the development of a selected number of e-Government services and shared applications to be delivered through multiple channels, including government portals and mobile phones (e.g.-Connect, M-Pass, M-Pay, M-Sign, M-Notify).

---

[1] https://www.itu.int/net4/itu-d/icteye/CountryProfileReport.aspx?countryID=274
[2] https://www.opengovpartnership.org/documents/moldova-national-action-plan-2016-2018
[3] http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=378313
[4] For more information: https://www.opengovpartnership.org/countries/moldova
[5] The number of services increased by more than 5% in the last 6 months.
[6] In this context, we refer to the Core Public Service Vocabulary published by the European Commission.

Open data

The Republic of Moldova has developed a policy and legal framework to pave the foundations for its open data initiative. The most important legal acts that regulate the issues of open data are the Law no.982 from 11.05.2000 on access to information[7] and the Law no.142 from 19.07.2018 on Data Exchange and Interoperability[8]. The Moldovan constitution obliges governmental entities to publish public information, and Open data principles are embedded in the national open data policy and governance e-Transformation Agenda, approved in September 2011[9].

Nonetheless, in practice, there are still few datasets published on the Open Data portal, although most of these are published in machine-readable format. The portal is also easy to use and provides a functionality to preview data. In terms of technology, the portal unfortunately does not provide any information regarding its API and metadata standard. As such, it is to be noted that the combination of few datasets with a non-public API might not bring the expected economic potential of Open Data.

Environmental information

The national legislation covers environmental information and the most important Law in this area is the Law no. 1515 from 10.06.1993 on Environmental Protection[10]. This Law is regularly amended and updated, the latest amendment dating from 2018. According to this Law, environment protection is a national priority. As such, the Republic of Moldova was the first country that has ratified the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention). The Republic of Moldova also ratified the Protocol on Pollutant Release and Transfer Registers to the Aarhus Convention on 23 December 2013. In addition, the Republic of Moldova is also party to many international agreements related to environmental protection and environmental information sharing. In order to ensure the implementation of the provisions of these treaties at national level, the Republic of Moldova adopted the Government Decision no. 1467/2016 for the approval of the Regulation on public access to environmental information and the Government Decision no. 373/2018 on the National Register of Pollutant Emissions and Transfer.

The country is also signatory to the Declaration on Cooperation on Environment and Climate Change in the Eastern Partnership (EaP) since 2016. In fact, international cooperation for environmental protection and alignment with European Union legal framework and standards is a national objective translated in the "Decision No. 301 of 24.04.2014 on the approval of the Environmental Strategy for the years 2014-2023 and the Action Plan for its implementation", as well as the EU-Moldova Association Agreement and the Action Plan for the years 2017-2019 for its implementation (GD 1472/2016). Few agencies also collaborate with neighbouring countries and share transboundary environmental information, as for instance the Environmental Agency, which controls the water quality of transboundary rivers or the Agency „Apele Moldovei", that implement measures for transboundary water protection with Romania and Ukraine.

---

[7] http://lex.justice.md/md/311759/

[8] http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=376762

[9] The Government Decision no.710 from September 20th, 2011 on the approval of the strategic technological modernisation Program of the governance (e-Transformation): http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=340301 and the Government Decision approved for the realisation (implementation) of the article 2 from the Law no.173 (2011) regarding the ratification of the Financing Agreement between the Republic of Moldova and the International Development Association on the implementation of the "Governance e-transformation" project (http://lex.justice.md/viewdoc.php?action=view&view=doc&id=339783&lang=1).

[10] http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=311604

In order to achieve the objectives set up nationally and internationally, the Republic of Moldova created mechanisms for the dissemination of environmental information. The two main platforms for finding environmental information are the websites of the National Bureau of Statistics and of the Ministry of Agriculture, Regional Development and Environment websites including its subordinate institutions: Environment Agency, "Apele Moldovei" Agency, Moldsilva Agency, Agency for Geology and Mineral Resources, Inspectorate for Environmental Protection, State Hydrometeorological Service, and others.

At this moment, ministries and institutions have separate databases with information relevant to their field of activity. There is no interconnection between these databases[11], and no central system for environmental information monitoring and/or sharing. These elements might undermine the collaboration between institutions and also hinder national environmental reporting.

In terms of institutional framework, as part of the "Public administration reform strategy of 2016 – 2020"[12], the former Ministry of Environment became a part of the newly created Ministry of Agriculture, Regional Development and Environment. The integration of the two ministries resulted in a temporary discontinuity in the publication and update of the environment portals[13]. In this context, the Environment Agency was created as a subordinate institution to this Ministry, which was invested with the function of creating and managing environment data and information, as well as ensuring public access to these information.

Main challenges

The Republic of Moldova at the moment lacks an integrated, comprehensive and efficient environmental information management system that would bring together all data regarding monitoring of environmental components and ensure smooth cooperation and information exchange between the different institutional actors.

The spread of environmental data and absence of environmental metadata standard also renders difficult finding information. In that regard, the elaboration of a central register of environmental data might be a part of the solution. Another part would be a review of the legal framework shaping the institutional framework of environmental information, with the aim of clarifying attributions of environmental policies' elaboration, implementation and legislation compliance control responsibilities among environmental institutions. In that regard, the obligation to publish all environmental information on a dedicated environmental portal could also be a solution. Such obligation should also be implemented with mechanisms to enforce it.

Besides, the Republic of Moldova also lacks of datasets on the Open Data portal and timely environmental reporting. In that regard, the country requires to promote environmental protection[14] and information sharing among public institutions, but also public sector information re-use among citizens. In particular, Open Data takes value when re-used and the assessment of their impact is key for driving their supply and demand.

---

[11]   https://wedocs.unep.org/bitstream/handle/20.500.11822/9507/-Environmental_Strategy_for_the_years_2014-2023-2014Moldova_EnvironmentalStrategy_2014-202.pdf?sequence=3&isAllowed=y

[12]   https://cancelaria.gov.md/ro/apc/planul-de-actiuni-si-strategia-de-reforma-administratiei-publice-pentru-anii-2016-2020 (English version also available).

[13] Portals are described in more details in the section « Statistics and reports » and « Portals » of this report.

[14] National Environment Strategy 2014-2023

European Environment Agency

1.1 E-government, Open Data and environmental information legal and institutional framework

This section contains a summary of the legal framework, public policy and institutional framework in terms of e-government, open data and environmental information. It is to be noted that the Republic of Moldova considers the environment as a top priority in its national strategy 2020.

1.1.1 National policy and legal framework

1.1.1.1 E-Government

This section presents the main Laws shaping the e-government landscape in the Republic of Moldova.

E-government agenda and National Action Plan

The last document publicly available related to the e-government strategy dates from 2014[15]. It is not clear whether another strategy is under preparation. So far, the Republic of Moldova does not integrate environmental information sharing and dissemination as part of the e-governance strategy.

As part of the Open Government Partnership initiative, the Republic of Moldova published several National Action Plans (the latest being 2016-2018[16] and 2018-2020[17]). Currently, the Republic of Moldova is implementing the third National Action Plan on Open Government and adopted the new action plan for 2019-2020[18]. According to the Government Decision no. 1432 of 29 December 2016, the government has to develop an annual report to assess the results of the action plan. The evaluation of the Action in 2017 showed that 15 out of 21 sub-actions were finished[19].

The first steps of the Action Plan aimed to increase transparency, improve government efficiency and public service delivery, as well as to fight corruption by harnessing the potential of information technologies. In this context, environmental information sharing was not included as a priority in any of the previous National action plans, in exception of the Action Plan of 2012, which stated the objective of "*Increasing access to information on environment quality and protection*". In this context, environmental data to be disclosed were: a) acts of control / inspection for compliance with environmental legislation; b) information on environmental quality components; c) Data on financial sources. Nonetheless, according to the "Moldova Progress Report 2012-13", none of the central public institutions, with the exception of the former Ministry of Environment, have published information on environmental protection.

The current Action Plan 2018-2020 further builds on the pillars of the previous Action Plan, more particularly:

(1) increasing the transparency of public spending
(2) ensuring access to information and promoting the use of open data by citizens

---

[15] Government decision "On the approval of the Action Plan for 2014 for the implementation of the Strategic Program technological modernisation of governance (e-Transformation)": http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=351125

[16] https://www.opengovpartnership.org/documents/moldova-national-action-plan-2016-2018

[17] https://www.opengovpartnership.org/sites/default/files/Moldova_Action-Plan_2018-2020_EN.docx

[18] http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=378313

[19] https://www.opengovpartnership.org/sites/default/files/Moldova_Mid-Term-Self-Assessment_2016-2018_EN.pdf

(3) improving government processes[20] (public service efficiency)
(4) strengthening public integrity by ensuring a participative decision-making process of citizens and increasing transparency in the governance process
(5) developing the usage of ICT solutions in public administrations

Strategy on the Public Administration Reform for 2016-2020[21]

This strategy aims to establish a general framework for the public administration reform for 2016-2020. The general objective of this reform is to create modern and professional public administrations, which provide high quality public services.

The strategy serves as a reference document for developing and updating the policy papers that contribute to this reform, in particular the Public Service Modernisation Action Plan[22] and the Action Plan for Open Government.

The strategy is based on six components, e-governance being a cross-cutting domain. The Specific objective no 4 of this component aims to ensure a mechanism for monitoring, accountability and transparency of public authorities' activity.[23]

Another component is dedicated to the modernisation of public services. The general objective is to develop a system for public administrative services delivery at central and local level, by 1) improving access to these services and their efficiency, 2) reducing unnecessary administrative burdens and minimising the cost of services for both beneficiaries and service providers, and 3) improving the effectiveness of services according to the needs and requirements of the beneficiaries.

To achieve the objective of public services modernisation, the government also adopted the Action Plan for Public Services Modernisation Reform for 2017-2021[24].

Government Decision no. 966 on the approval of the Action Plan for Public Services Modernisation Reform for 2017-2021

The Action Plan for Public Services Modernisation Reform for 2017-2021 is based on three objectives: 1) development and implementation of necessary framework[25] for the modernisation of public services, according to best European and international practices in the field; 2) strengthening institutional and human capacity to modernise public services; 3) increasing quality and accessibility of public services[26].

---

[20] The Republic of Moldova is currently undertaking an inventory of all public services, with the aim of 1) describing them according to the European Union Core Public Service standard, and 2) re-engineering these services where possible in order to make them available on the public service portal.

[21] https://cancelaria.gov.md/en/apc/public-administration-reform

[22] https://cancelaria.gov.md/sites/default/files/plan_de_actiuni_12.pdf

[23] The strategy concerns the preparation of amendments to the Access to Information Law, including the assignment of an institution for monitoring its implementation, identifying main issues and needs, promoting a proactive attitude towards transparency, ensuring compliance with mandatory requirements on official pages of authorities and public institutions, updating informative materials on their official web pages, and publishing up-to-date data registers.

[24] http://egov.md/en/communication/news/approved-action-plan-modernisation-public-services-reform-2017-2021

[25] Development and implementation of necessary framework for the modernisation of public services: 1) development of the normative and methodological frameworks; 2) development of institutional and organisational frameworks; 3) development of technological framework.

[26] Measures undertaken: Reengineering of public services; Digitisation of public services previously subjected to re-engineering; Creation of universal service delivery centres; Monitoring of public services quality; Modernisation of selected public services; Strengthening of e-government platforms and infrastructure.

1.1.1.2 *Open Data*

Open data recently became an important topic in the Republic of Moldova. Indeed, for many years, Laws regarding these issues were incomplete and outdated. The reforms introduced from 2012 until 2018 enabled the country to bridge the gaps in its legal framework and to establish the foundations of public information dissemination. In that sense, multiple documents and legal texts define the boundaries of public information and the main rules for their dissemination. The next challenge will be to align and synchronise all the package of legal acts (Laws, Decisions, Methodologies, and Norms) in order to avoid overlapping and/or duplication of rules and definitions, which could lead to some confusion.

Law No.142 of July 19, 2018 on data exchange and interoperability[27]

The Law was published on August 10, 2018 and came into force on November 10, 2018. It focuses on the facilitation (and improvement) of data exchange and interoperability between public and private sector actors. In particular, it provides basic definitions of concepts for the introduction of an interoperability framework and data exchange mechanism. This Law is applicable for all institutions, but does not provide any detail on the exchange of environmental data. As such, it is possible to deduct that the exchange of environmental data should go through the "central interoperability system" and according to the standards defined by the government. It is to be noted that this requirement might 1) lead to integration issues with European or international systems, and 2) lead to integration issues for environmental, spatial and health data[28].

It is to be noted that the Article 7 of the "Law on data exchange and interoperability" contradicts to some extent the Article 4 of the "Law on access to information" regarding the "price" for disclosing public information. Indeed, the Article 7 allows asking for a payment from private entities who request public information, while the Article 4 requires to make all public information available for free.

The Law on access to information (No. 982-XIV) of 11 May 2000[29]

The Law on access to information (adopted in 2000) requires public institutions to disclose all public information, except the restrictions of the Article 3 in the Law: a) "respecting other people's rights and reputation", and b) "protecting national security or public order, as well as public health or morals". In particular, it restricts public access to state secrets, to confidential business information, and to personal data. The Article 5 of the Law stipulates that the direct subjects of this Law are both central and local public administration authorities.

The Law also stipulates the obligation to disclose public information upon request, and where restriction are to be applied, to remove all restricted data.

According to the Freedom House report from 2016[30], compliance with the Law on access to information remains weak, as no state body has the full Authority to enforce its implementation. The People's Advocate (Ombudsman) has the authority to oversee the implementation of the Law; however, this office lacks the capacity and the resources to exercise control.

According to the Law, public information has to be disclosed free of charge in the national language. Specific requests can be made verbally in writing.

---

[27] http://egov.md/en/content/Law-no-142-july-19-2018-data-exchange-and-interoperability
[28] These data are usually considered as specific. Hence, a single interoperability platform might not include all the necessary specificities related to these data.
[29] https://www.legislationline.org/documents/id/6394
[30] https://freedomhouse.org/report/freedom-world/2018/moldova

Law No. 305 of December 26, 2012 on public sector information reuse[31]

One of the most ambitious action from the Open Government Action Plan was the adoption of the Law on public sector information reuse. The content of this Law is consistent with the EU Directive 2003/98/EC on the reuse of public sector information, as well as with the amendments reflected in the Directive 2013/37/EU. To enforce this Law, the Ministry of Information Technology and Communications developed methodological norms. These set out the terms and conditions for accessing and reusing Public Sector Information. The Ministry also developed an open data license for the Republic of Moldova's public data. In practice, though, licensing of public information made available remain unclear and varies from portal to portal.

In particular, the norms provide a list of formats in which public information should be presented. The norms offer a methodology for calculating the marginal cost associated with the dissemination of public sector information. This Law is aligned with best international practices in terms of public sector information reuse and allows citizens to access and reuse public data in machine-readable format for any purpose.

In addition, in this context, the Republic of Moldova approved a national open data policy to concretise the principle of "open data by default" within the government. The policy brings clarity to the data dissemination process, provides recommendations for machine-readable formats to be used for dissemination of data, and defines standards on data collection, archiving and publishing. Each ministry and government agency is to embed an open data action plan in their sectoral e-transformation action plan[32].

Government Resolution No. 700 from 2014 "Policy concept on the principles of open government data"[33]

The purpose of this resolution was to establish a policy framework in line with the adhesion to the Open Data Initiative, to which the Republic of Moldova became a member in 2011. The following principles have been established:

- Opening up data implicitly and proactively
- Protecting sensitive data
- Opening up source data, with the minimum number of changes
- Publishing data online (i.e. on the Open Data portal www.date.gov.md or on public institutions web pages)
- Publishing timely data (i.e. up-to-date and updated regularly)
- Publishing data in open and machine-readable formats (e.g. JSON, CSV, XML, ODS, XLS, XLSX and the geospatial data formats)
- Bulk access - provides a simple but effective means of publishing datasets.
- Data description - data will be described using full metadata
- Data re-use (i.e. data should be re-usable and published online)
- Prioritisation of data to make sure that the most useful data for the public will be published first.

These principles are compliant with international engagements made in the context of the Open Government Partnership. In practice, the Republic of Moldova still needs to 1) publish more data on the open data portal – and be more proactive, 2) keep data up-to-date on the portal – frequent update, 3) provide a public API to access these data in order to leverage on economic benefits.

---

[31] http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=347200
[32] Republic of Moldova – Handbook of Transparency and Citizen Participation, Council of Europe 2016
[33] http://egov.md/en/legislation/government-resolution-no-700-policy-concept-principles-open-government-data

Government decision No. 701 from 2014 on the approval of the Methodology for publishing Open Government Data[34]

According to this decision, the ministries and other central administrative authorities subordinated to the government, shall apply the rules of this methodology when publishing open government data. The methodology establishes the following rules:

1. operating mode of www.date.gov.md portal;

2. the type of information to be opened and published;

3. access rights to the open government data portal;

4. portal access management by public institutions.

The methodology could include more insights on how the organisation should inventory, prepare, clean (e.g. anonymization, enrichment), publish and maintain open data.

1.1.1.3   *Environmental information*

Since 2005, few environment-related Laws have been adopted in the Republic of Moldova. In fact, the environmental legislation adopted before 2005 did not change substantially apart from few amendments.

Nonetheless, the Republic of Moldova, in the Decision No 301 of 2014, stipulated the objective to align its legal framework with the EU, and also to foster international collaboration. In that context, the Republic of Moldova has laid down the foundation for reforming its institutional and legal framework for the environment. These are reflected in its Environmental Strategy and also in a complete refactoring of water and waste management. Last, the public administration reform also impacted the institutional framework for the environment.

Constitution of the Republic of Moldova of July 29, 1994[35]

The Constitution refers to the "environmental legislation" and "dissemination of environmental information" mainly in two articles.

The Article 37 ("Right to a Healthy Environment") states that every individual has the right to 1) live in an ecologically safe and healthy environment, 2) to consume healthy food and 3) to use harmless household appliances.

The Article 37 is also linked to Article 34, which refers to the right to information. This Article gives the right to citizens to have access to any kind of information of public interest. Also, public authorities, according to their assigned competences, shall be committed to ensure that citizens are correctly informed both on public affairs and issues of personal interest. In practice, though, most environmental information published is outdated.

It is to be noted that concealment or distortions of information regarding the elements that are harmful to human health are prohibited by the Law.

---

[34] http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=354534
[35] http://www.presedinte.md/titlul2#2

European Environment Agency

Law of the Republic of Moldova about environmental protection (June 16 1993 No. 1515-XII)[36]

According to this Law, environmental protection is the national priority wherever it directly concerns 1) living conditions and health of the population, 2) realisation of economic, public and humanistic[37] interests, and 3) opportunities for sustainable development.

The Law sets the foundation for environmental protection and basic rights for citizens. It does not elaborate on environmental information monitoring nor on sharing/dissemination. Nonetheless, the Article 3 sets out the principles for carrying out environmental assessment and refers to the Law on environmental impact assessment No. 86/2014. The Environmental impact assessment have to be performed based on the following principles:

a) principle of preventive actions;

b) principle of reliability and completeness of information;

c) principle of transparency and availability;

d) principle of participation.

These principles are aligned with the legal framework built in the context of public information. The last edition of the environmental protection Law was approved on September 21, 2017.

Resolution № 1467 from 12/30/2016 on the Approval of the Public Access Regulations on access to environmental information[38]

This Regulation transposes the Directive No. 2003/4 / EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information and on the repeal of Council Directive No. 90/313 / EEC published in the Official Journal of the European Union (OJ) No. L 41 dated February 14, 2000.

The Regulation on Public Access to Environmental Information (hereinafter referred to as the Regulation) provides the right of access to environmental information held by public authorities, and defines terms, basic conditions and procedure for exercising this right. Under this Resolution, environmental information shall be disseminated progressively and made available to the public in order to maximise, as far as possible, wide and systematic access and dissemination of this information. To achieve this goal, in particular, the use of information technologies and electronic communications is being promoted.

Decision No. 301 of 24.04.2014 on the approval of the Environmental Strategy for the years 2014-2023 and of the Action Plan for its implementation[39]

In order to ensure the implementation of the provisions of the Programme of Activity of the Government of the Republic of Moldova "European Integration: Freedom, Democracy, Welfare" for the years 2013-2014 and the creation of a strategic framework in the field of environmental protection, the government of the Republic of Moldova decided to 1) approve the Environmental Strategy for the years 2014-2023, as in annex no. 1 to the Decision, and 2) the Action Plan for the

---

[36] http://cis-legislation.com/document.fwx?rgn=3317
[37] This term is translated from Romanian. The Law is not clear on what this terms refers to.
[38] http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=369027
[39] http://green.gov.md/pageview.php?l=en&idc=41&t=/Regulatory-framework/

implementation of the National Environmental Strategy for the years 2014-2023, as in annex no. 2 of the Decision. In particular, the Decision aims to:

a) establish basic principles and priorities in the field of environmental protection, rational use of natural resources and sustainable development of the country;

b) ensure the synergy of implementation of international obligations and the adaptation of the policy framework to the European Union legislation;

c) constitute the basis of the institutional reform and capacity building for the implementation of the policy and legal framework.

The Decision also requires the draft of a National Environmental Strategy and an annual review of its achievements. The national environmental strategy stipulates clearly the adaptation of national Laws to the European Union legislation.

The Environmental Strategy is very explicit about the priorities and objectives, but is rather weak regarding environmental information[40]. Besides, even though the strategy acknowledges the lack of integrated information system for managing environmental information, its need is unfortunately not translated into the strategy.

As such, the environmental strategy is relatively poor concerning environmental information and also misses alignment with the Law on interoperability and data exchange and the reform of public administrations[41]. This point can be strengthened considering the time period covered (2014-2023).

The Law on the National Environmental Network (NEN)[42]

The 2007 Law No.94-XVI on the National Environmental Network (NEN) creates the legal framework for the establishment, development, management and protection of the network, as part of the Pan-European Ecological Network and of local ecological networks.

The Law no.93 on official statistics[43]

In order to reform the national statistics according to EU requirements and to modernise the official statistics production processes, the Parliament of the Republic of Moldova adopted on 26th May, 2017 the Law no.93 on official statistics.

This Law also covers the quality assurance requirements for environmental information published on the National Bureau of Statistics of the Republic of Moldova. Last, according to Article 19 of the Law on Official Statistics No. 93 dated of 26.05.2017, producers of official statistics shall take all regulatory, administrative, technical and organisational measures to protect confidential data and prevent their disclosure.

---

[40] The strategy mostly covers promoting and educational activities in the field of environmental protection.

[41] In particular, the strategy states: "discrepancy between institutional framework and the existing requirements and challenges. Attributions of environmental policies' elaboration, implementation and legislation compliance control are not clearly divided between environmental institutions. There are no agencies to deal with environmental policies' implementation in all respective areas. There is a series of confusions and overlapping of responsibilities and competences in the fields of environmental protection with those of other, non-environmental institutions (forest fund protection, soil protection)."

[42] https://cis-legislation.com/document.fwx?rgn=18399

[43] http://www.statistica.md/libview.php?l=en&idc=223&id=5810

Other Laws

Other Laws which shape the landscape of environmental protection and monitoring in the Republic of Moldova:

Table 1. Selected environmental protection and monitoring Laws in the Republic of Moldova

Title of the document (and short description)	Number	Date of approval/year
Law No.68 of 13.04.2017 on the approval 2017-2026 NATIONAL STRATEGY on Radioactive Waste Management and ACTION PLAN for the Implementation of the provisions of the 2017-2026 National Strategy on the Radioactive Waste Management	68	2017
Government Decision No. 618 about the approved list of indicators of sustainable forest management.	618	2007
Government Decision no. 418 from 17.04.2007 for the approval of the Regulation on the manner of presenting the reports by the beneficiaries of the subsoil	418	2007
Government Decision no. 934 of 15.08.2007 on the establishment of the Automated Information System "State Register of natural mineral waters, drinking and bottled non-alcoholic beverages"	934	2007
Law on Official Statistics	93	26.05.2017
Government Decision no. 1131 of 12.10.2016, for the approval of the Regulation on reporting requirements on the movement of reserves of useful mineral substances	1131	12.10.2016
Law on Waste	209	29.07.2016
Regulation on the organisation and functioning of the National Regulatory Agency for Nuclear and Radiological Activities, its structure and its limitation body	458	24.07.2015
Law on the carrying out safe conduct of nuclear and radiological activities.	132	08.06.2012
The Law on Water. Includes provisions on river basin districts, the establishment of administrative arrangements for international waters, analysis of river basin district characteristics, undertaking preliminary flood assessment, preparation of flood hazard maps etc. For its implementation the Law on Water requires the development of some 20 subsequent regulations.	272	23.12.2011
Government Decision no. 1003 of 23.10.2010 regarding the approval of the Technical Concept of the Automated Information System "State Geological Register"	no. 1003	23.10.2010
The Law on Energy Efficiency which provides, among others, for the establishment of an energy efficiency agency.		02.07.2010
The 2008 Code of Offences. Incorporation of a specialised chapter on environmental offences.	218-XVI	24.10.2008
The State supervision of Public Health. States that atmospheric and indoor health shall not pose risk to human health.	10-XVI	03.02.2009
The Law on Renewable Energy	160-XVI 142	12.07.2007

Title of the document (and short description)	Number	Date of approval/year
Methodology of elaboration of the norms of water consumption in the water supply and sewerage enterprises of the Republic of Moldova.	163	27.10.1999
Decision on the approval of the Regulation on the use of hydrometeorological information in the economic activity of economic agents	935	11.10.1999
Law of the Republic of Moldova on hydrometeorological activity	1536-XII	25.02.1998

1.1.2 Main international policies and agreements

The main policies and agreements are presented below.

1.1.2.1 *Multilateral Environmental Agreements with 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)[44]

The Republic of Moldova ratified the Aarhus on 9 August 1999. The Convention sets out obligations to provide effective public access to environmental information within its broad scope hold by various public authorities, public participation in decision-making and access to justice in environmental matters. The progress of its implementation by the Republic of Moldova is reflected in national implementation reports for the Convention.[45]

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)[46]

The Republic of Moldova ratified the Protocol on PRTRs on 23 December 2013. The Protocol establishes obligations for the Parties to establish PRTR, namely a national environmental database or inventory of potentially hazardous chemical substances released to air, water and soil and transferred off-site for treatment or disposal. As such, it allows the public authorities to track each release and transfer of a hazardous chemical substance consistently over time. The progress of its implementation and establishing pollutant release and transfer register by the Republic of Moldova is reflected in national implementation reports for the Protocol.[47]

1.1.2.2 *Other international forums promoting sharing and accessibility of environmental information*

Eighth Environment for Europe Ministerial Conference Batumi, Georgia

The Eighth Environment for Europe Ministerial Conference (Batumi, Georgia, 8-10 June 2016) adopted the Ministerial Declaration inviting countries to continue their efforts and to further develop their national information systems to have shared environmental information system in place in the countries of Europe and Central Asia by 2021.

The United Nations Economic Commission for Europe (UNECE) together with its partners has been working with target countries to produce and share environmental data for 8 indicators:

- Emissions of pollutants into the atmospheric air

- Ambient air quality

- Consumption of ozone-depleting substances (ODS)

- Greenhouse gas (GHG) emissions

---

[44] http://ec.europa.eu/environment/aarhus/index.htm
[45] https://aarhusclearinghouse.unece.org/national-reports
[46] http://www.oecd.org/chemicalsafety/pollutant-release-transfer-register
[47] https://aarhusclearinghouse.unece.org/national-reports

European Environment Agency

- Biochemical oxygen demand (BOD) and concentration of ammonium in rivers

- Nutrients in freshwater

- Protected areas

- Waste generation

The Republic of Moldova is doing well with data production, however it still needs to improve on meeting Indicator Guidelines on data structure.

Open Government Partnership Initiative[48]

The Government of the Republic of Moldova joined the Open Government Partnership (OGP) in 2011 to complement the already ongoing governance e-transformation agenda on specific issues such as transparency, access to public sector information, accountability, citizen engagement, fighting corruption and providing high quality public services. The Republic of Moldova committed itself to provide access to information[49].

As part of the open data initiative, the government Decision on public sector information reuse[50], in line with the EU PSI Directive, has been approved. A government open data portal has also been developed and normative supportive acts have been enacted.

Besides, the independent evaluation reports from OGP highlight the need for a broader effort to implement the principles of open government[51], such as proactive involvement of beneficiaries, public participation in decision-making, including the adoption of more legal requirements for public policy documents consultations, opening valuable and useful data to users. At the same time, following the implementation of the open government action plans, it was highlighted the need to frame the application of open governance principles not only as part of an isolated action plan, but in a wider context as part of anticorruption, public finances, health, education, social protection, environment, as well as other priority areas.[52]

International Open Data Charter[53]

The principles stated in the Open Data Charter were enforced through the Concept on Open Government data, adopted in 2014 by the Government of the Republic of Moldova through Government decision no 700[54]. Nonetheless, the Republic of Moldova has not adopted the charter.

EaP Connect Project[55]

The Project aims to link the National Research and Education Networks in the partner countries to the pan-European research and education network GÉANT, and connects over two million scientists, academics and students from 700 institutions across the region. The joint initiative of EU, Armenia,

---

[48] https://www.opengovpartnership.org/countries/moldova

[49] The Special Accountability Report Action Plan 2014 states that all information are covered. This includes environmental information by definition, even though nothing specific has been written.

[50]   https://www.opengovpartnership.org/commitment/032-drafting-government-decision-on-implementation-of-Law-on-public-sector-information

[51] https://www.opengovpartnership.org/report/moldova-mid-term-report-2016-2018-year-1

[52] Strategy on the reform of public administration for the years 2016-2020, approved by the Government Decision no. 911 of July 25, 2016

[53] https://opendatacharter.net/

[54]   https://www.scribd.com/doc/268025561/https-ru-scribd-com-doc-268024985-GOVERNMENT-RESOLUTION-No-700-from-25-08-2014

[55] https://www.eapconnect.eu/

Azerbaijan, Belarus, Georgia, Moldova and Ukraine is an example of effort undertaken to foster the creation of digital economies and promote Open Data in the EU Neighbouring countries.[56]

The programme was launched in July 2015.

1.1.2.3   Cooperation with the EU

Declaration on cooperation on environment and climate change in the Eastern Partnership[57]

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

The key results for the Republic of Moldova can be found on the website of the European Union External Action[58].

Moldova-European Union Association Agreement[59]

In the framework of the National Action Plan for the implementation of the "Moldova-European Union Association Agreement", at the chapter "Environment, Climate Action", the Republic of Moldova has agreed to progressively comply with the European Union legal framework. In that context, the Republic of Moldova has translated in to its national Law multiple environmental Directives, for instance in the areas of water[60] and waste management[61].

---

[56] EDP Analytical Report 7, Open Data in the European Union Neighbourhood, page 9
[57] Declaration on Cooperation on Environment and Climate Change in the Eastern Partnership, European Commission 2016.
[58] https://eeas.europa.eu/sites/eeas/files/eap_factsheet_moldova_eng_web.pdf
[59] https://eur-lex.europa.eu/legal-content/GA/TXT/?uri=CELEX:22014A0830(01)
[60] Law on water no. 272 of 23.12.2011
[61] Law on waste no 205 of 26.07.2016

European Environment Agency

1.1.3 National standards, interoperability and quality control

1.1.3.1 *Metadata standards*

The Institute for Standardisation of Moldova and the National Bureau of Statistics of the Republic of Moldova are the two primary actors shaping the standardisation landscape in the country.

1) The Institute for Standardisation of Moldova[62] is responsible for providing information – on request – over normative documents and standardisation activity in all regulated fields. It also assists the regulatory authorities on the withdrawal of conflicting national standards and the adoption of regional, international, European, and other standards as Moldovan standards.
2) The National Bureau of Statistics[63] of the Republic of Moldova publishes "Reference metadata" material which provide key information over the statistical datasets published on the website.

In addition, the National Accreditation Centre of the Republic of Moldova provides accreditation programmes and the possibility to consult, on their website, standards adopted in the context of environmental monitoring and information management[64].

There are no publicly known standard for the description of metadata for the dissemination of environmental information.

The following table presents the list of metadata standards available in the Republic of Moldova:

Table 2 - Metadata standards per portal

Component	Metadata standards
Open Data	In 2014, the Republic of Moldova improved the open data portal and expanded the existing API[65]. The portal adopted the open source platform CKAN. The data catalogue is stored in CKAN[66], while the workflow is managed in Drupal[67].
	This version allows public institutions to publish their data from information systems through APIs and citizens to use social media in interacting with institutions on the portal. Allowing public institutions to publish raw data through API on the portal reduces their time and efforts spent on manually uploading datasets. It also ensure regular data updates as well as offers raw data to citizens for reuse in as many ways possible and build innovative applications. Nonetheless, the description of datasets is done through a non-disclosed standard.
	A script is provided to the European Union Open Data Portal in order to transform the metadata to the European standard DCAT-AP[68]. In general, the Open Data portal from the Republic of Moldova is not compliant to DCAT-AP and hence their datasets are not harvested correctly by the European Union system[69]. Likewise, other EaP partnership countries won't be able to harvest the portal unless they develop specific tools and/or align standards. The

---

[62] Previously National Institute for Standardisation (INS).

[63] Website : http://www.statistica.md

[64] Ministry of Economy and Infrastructure, ORDER No. 311 from 22.06.2018, regarding the approving of the List of reference standards, laying down the criteria for the competence of the national accreditation body and conformity assessment bodies.

[65] https://www.opengovpartnership.org/commitment/011-improving-government-open-data-portal

[66] The Comprehensive Knowledge Archive Network is a web-based open-source management system for the storage and distribution of open data. Website: https://ckan.org/

[67] Source: https://www.europeandataportal.eu, 2014 Moldova Open Data initiative.

[68] The DCAT Application profile for data portals in Europe (DCAT-AP) is a specification based on the Data Catalogue vocabulary (DCAT) for describing public sector datasets in Europe. Website : https://joinup.ec.europa.eu/solution/dcat-application-profile-data-portals-europe

[69] https://www.europeandataportal.eu/mqa-service/en/catalogue/government-open-data-portal-moldova

European Environment Agency

	absence of public API and metadata standard for the description of the datasets on the website also might undermine "national entrepreneurship" to build applications using the data published.
Health	**Publication of statistics** The National Bureau of Statistics of the Republic of Moldova published one document related to reference metadata for health statistics[70]. It covers the topics mentioned here above in the introduction of this section. The standard published for health data is mostly limited to the definition of concepts and formula. Besides, comparability of data is limited to 2008, the year when the Republic of Moldova began implementing the European Standards and criteria for registering in the official statistics of births and new-borns. Overall, the standard does not cover all the health statistics available and is therefore incomplete. On one hand, the reference metadata states that health statistics comply with the international standards and especially the WHO norms. **Exchange of information between systems** According to the vision for eHealth 2020 in Moldova[71], the main standard used for exchanging medical information between the national health system and healthcare providers is HL7[72].
Spatial	Standards regarding interoperability and quality control were described in the Law about national infrastructure of spatial data[73]. This Law provides the necessary legislative and institutional framework for the creation and implementation of the national spatial data infrastructure in the Republic of Moldova, and establish the necessary measures for the spatial data sharing on the territory of the country and for the integration of the national infrastructure in the European spatial data infrastructure. In particular, this Law transposes the provisions of Chapters I, II and IV, of Articles 3-5 and of Annexes 1-3 of the Directive no. 2007/2 / EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE), published in the Official Journal of the European Union L108 of 25 April 2007.
Environmental information	**Institute of Standardisation of Moldova** Standards related to the environment are included in the Catalogue of Moldovan standards[74] issued by the Institute of Standardisation of Moldova, under the group 13 "Environment. Health Protection. Security". This is an important area of standardisation with a large number of normative documents. There are many standards related to "Environment and environmental protection in general". The website is easy to use and clear but does not provide any reason for decommissioning the standards, any way to identify which standards replaces the previous one nor a link to

---

[70] http://www.statistica.md/public/files/Metadate/en/Sanatate_en.pdf

[71] Vision for eHealth 2020, Alexandru Rosioru, Chief Information Officer at Ministry of Health Republic of Moldova. Presentation: https://www.slideshare.net/alexandrurosioru/ehealth-strategy-of-republic-of-moldova

The vision for eHealth 2020 also named several potential standards: ISO-15288:20008, ISO-12207:2008, RT-38370656002:2006, HL7, DICOM, ISO 13606-4, ISO 13606-5, CEN – CONTSYS EN 13940, CEN EHRcom EN 13606. There is no information regarding the advancement of the implementation of these standards.

[72] Health Level Seven® INTERNATIONAL. Website : http://www.hl7.org/

[73] Law: http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=367941

[74] http://www.estandard.md

European Environment Agency

download or consult more information about them. Standards published related to the environment are mostly technical standards which cover very specific areas activities[75].

It is to be noted that many standards refer to the European Committee for Standardisation[76].

National Bureau of Statistics of the Republic of Moldova

The National Bureau of Statistics of the Republic of Moldova publishes multiple reference metadata documents. Nonetheless, there is only one reference metadata published on the website which relates to environmental information: "Atmospheric air protection, generation and use of waste". Besides, this reference metadata document states that statistics gathered neither are totally comparable with international statistics[77], neither are comparable with other national statistics.

It is to be noted that the amount of official environmental statistics exceeds the amount of "reference metadata". It is necessary to complete the list of standards with the list of environmental information available.

1.1.3.2 *Quality control*

The Republic of Moldova does not have a central organisation responsible for setting information quality standards. As such, three main organisations are involved in the quality standards:

- The National Bureau of Statistics
- The Accreditation Centre
- The Quality Management Department of the State Hydrometeorological Service

The process for managing the data quality falls under the responsibility of the organisation collecting the data (monitoring). Where organisation process data before exchanging them to the reporting organisation (usually the Ministry of Agriculture, Regional Development and Environment), the responsibility for providing quality analyses falls on them.

In addition, the Quality Management Department of the State Hydrometeorological Service is responsible for the development of the Quality Management System, which covers quality management activities of the State Hydrometeorological Service. Nonetheless, other institutions/agencies/organisations are in charge of the development of their own environmental monitoring system. As such, there is no guarantee that quality standards are neither implemented neither supported by equivalent processes and technologies/systems.

National statistics

The reference metadata documents published on the website of the National Bureau of Statistics of the Republic of Moldova contains a dedicated section related to quality control. Unfortunately, the website only publishes such document for "Statistics of emissions of pollutants in the air, formation and domestic waste[78]". As such, it does not address other environmental data, for instance related to soil, water, radiation, etc.

---

[75] Examples: « Durability of wood and wood-based products. Determination of emissions in the environment of wood treated with preservatives. Wood-based products exposed according to Uze Class 3 (Uncovered, not in contact with soil). Half way method », « Construction products. Assessment of the emission of dangerous substances. Sampling Supplement ».

[76] Official name. Website : https://standards.cen.eu

[77] Also, no reference is made when referring to « international statistics ».

[78] Official title of document: Statistics of emissions of pollutants in atmospheric air, formation and use (neutralisation) of production and consumption waste (including toxic).

The quality of statistical data is assured by the fundamental principles of official statistics approved by the UN Economic Commission for Europe in 1992, as well as by the Law on Official Statistics of the Republic of Moldova No.93 from 26.05.2017.

The quality control process is briefly described and seems[79] to be applicable for other environmental data.

1) The first stage of data validation is carried out by the specialists of the State Ecological Inspectorate.
2) The second stage of validation is carried out by the specialists of the territorial statistical bodies. Quality checks are performed; in particular on temporal coherence (with data from previous periods), validity as well as on data coherence (e.g. with other sources, across tables, paragraphs, etc.).

Environmental quality monitoring in the State Hydrometeorological Service

The Environmental Quality Monitoring Department of the State Hydrometeorological Service is responsible for the implementation, maintenance and documentation of the quality management system within the scope of its activity. Its effectiveness is set in accordance with the international standard SM SR EN ISO/CEI 17025:2006, as established by the requirements of National Accreditation Centre.

In particular, the following measures are undertaken to ensure quality:

- Existence of a quality policy[80];
- Motivation and continuous improvement of the professional practice level of the staff
- Knowledge and compliance of normative and legislative documents;
- Provision of sampling, measuring and testing equipment in good conditions;
- Management of customer and stakeholders' feedback;
- Performing periodic review of the quality management system in order to improve it;
- Accreditation of testing laboratories in compliance with the National Accreditation Centre;
- Quality Management System effective documentation, procedures, quality records, and guides.

There is no mention whether the quality management system can be used by other institutions and organisations. As such, one can assume that the system is limited to the State Hydrometeorological Service and does not cover all environmental information monitored by other organisations.

1.1.3.3 *Interoperability*

Interoperability in the Republic of Moldova is a new topic. As such, the Law no 142 of 19 July 2018[81] set up the rules for interoperability.

The Interoperability Governmental Platform MConnect[82] facilitates the exchange of data between the authorities to increase the efficiency and quality of delivery of public services. Through the interoperability platform, the public authorities exchange data in real time without requesting it from citizens and the business environment in the form of certificates, reports, etc.

In this context, the Republic of Moldova will build a Semantic Catalogue. This Catalogue is going to be an Information System, operational for a free of charge, accurate and coherent use of the data

---

[79] There is no formal indication of this, but the fact a department is responsible for quality control indicates that quality control mechanism can be applied uniformly by the department.

[80] These are not made publicly available.

[81] http://www.egov.md/en/legislation/Law-no-142-july-19-2018-data-exchange-and-interoperability

[82] Extract taken from: http://www.egov.md/en/projects/mconnect

European Environment Agency

exchange and interoperability Government Platform MConnect. The Semantic Catalogue will describe the definitions of data structures and will represent a source of semantic assets to be used exclusively for electronic data exchange and for the harmonisation of electronic data format for future adjustments or development of information systems in the public area.

The Semantic Catalogue will be part of the MConnect data exchange and interoperability government platform administered by the E-Government Centre. The data structures, elements and definitions included in the Semantic Catalogue will be linked to a semantic inventory, officially called Semantic Assets, which will be applied and shared by all the producers or consumers of data via MConnect.

Note: the introduction of the Semantic Catalogue is a part of a larger project conducted jointly by the UNDP and eGA ("Enhancing democracy in Moldova through inclusive and transparent elections" – EDMITE Project).[83]

---

[83] http://www.undp.md/jobs/jobdetails/1622/

1.1.4 Institutional framework for environmental information managements and stakeholders' involvement

The institutional framework in the Republic of Moldova responsible for the environmental matters is undergoing substantial changes.

The two biggest changes brought to the Republic of Moldova in the recent years are the integration of the Ministry of Environment into the Ministry of Agriculture, and the total revamp of the legal and organisational framework around waste management. These changes are creating issues from an environmental information reporting perspective. Overall, responsibilities are well established at the level of the former Ministry of Environment (newly Ministry of Agriculture, Regional Development and Environment - MARDE). Yet, at the level of subordinated institutions, it is to be acknowledge that the legal and institutional framework is less clear. In some cases, responsibilities can easily be understood as overlapping, at least for the public[84].

The following diagram illustrates the main public institutions responsible for environmental information as well as open data and e-governance.

Figure 1. Environmental and e-government stakeholders of Moldova
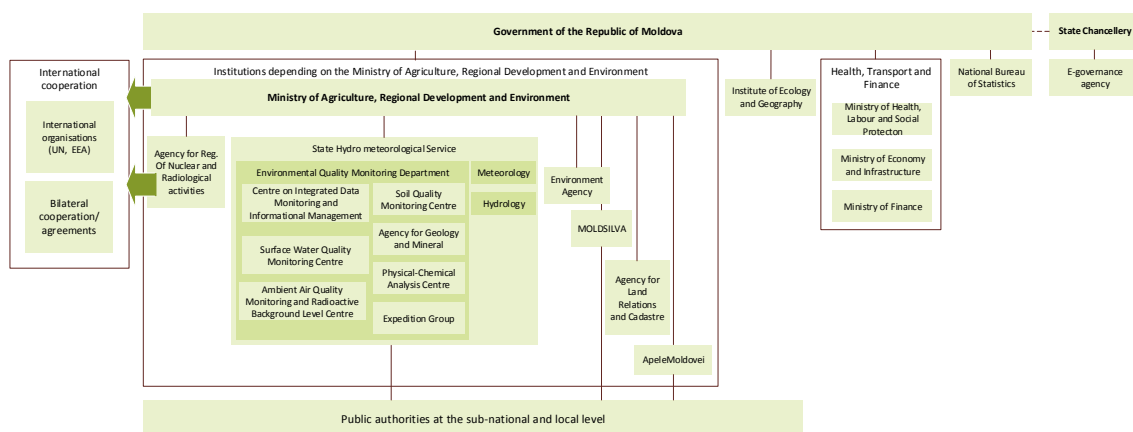
Ministry of Agriculture, Regional Development and Environment (MARDE) - http://www.madrm.gov.md[85]

In 2017, as part of the government reform in the Republic of Moldova, the Ministry of Environment was incorporated into the Ministry of Agriculture, Regional Development and Environment (MARDE).

The Ministry of Agriculture, Regional Development and Environment develops and promotes the Republic of Moldova's state policy on environmental protection and rational use of natural resources. The Ministry of Agriculture, Regional Development and Environment cooperates with many agencies and institutions that directly report to it[86].

State Ecological Inspectorate (SEI) - ies.gov.md

---

[84] This is the case for instance for the Agency for Geology and Mineral and Soil Quality Monitoring Centre, which are both collecting data on soil.

[85] The website of the MARDE hasn't been updated taking into consideration the integration of the Ministry of Environment. Hence, for environmental information, it is necessary to refer to the old website: http://www.mediu.gov.md.

[86] The complete list can be found here: http://madrm.gov.md/ro/content/organiza%C8%9Biile-din-sfera-%C8%99tiin%C8%9Bei-%C8%99i-inov%C4%83rii

European Environment Agency

The State Ecological Inspectorate is subordinated to the Ministry of Agriculture, Regional Development and Environment. It controls the issuance of special water use permits and pollutant emission permits in the atmosphere[87]. It also performs ecological control regarding the compliance with the environmental legislation. The inspectorate has territorial units (four ecological agencies in Chisinau, Balti, Cahul and administrative Territorial Unit Gagauzia, and 31 ecological inspections in districts). The inspectorate does not publish environmental information on its website.

The order nr.5 of 14.01.2019[88] from the Ministry of Agriculture, Regional Development and Environment sets the responsibilities of the Environmental Protection Inspectorate:

- waste and chemicals management[89]
- protection of atmospheric air
- management of water resources
- soil protection
- protection of forest
- protection of the green spaces in urban and rural areas
- protection of fish
- protection of hunting resources

Environmental Agency - http://www.mediu.gov.md/

The Environment Agency is the administrative authority subordinated to the Ministry of Agriculture, Regional Development and Environment, responsible for the implementation of the State policy in the field of environmental protection. It was created on the basis of the Government Decision no. 549 of 13.06.2018 on the establishment, organisation and functioning of the Environment Agency.

The Environmental Agency has for mission to ensure to the population of the Republic of Moldova a healthier, better and more sustainable environment. The Environmental Agency carries out its mission by exercising the following tasks:

- environmental pollution prevention
- atmospheric air protection and climate change
- protection and regulation of the use of water resources
- protection and regulation of the use of animal, vegetal, and aquatic (biological) resources
- conservation of biodiversity and management of State-protected natural areas
- waste management
- Biosafety

---

[87] Cf. Law no.280-XVI of December 14, 2007 for the amendment and completion of some legislative acts, art. IV on the Water Code no. 1532-XII of 22nd June 1993; and art. XXI concerning the Law no.1422-XIII of 17 December 1997 on the protection of atmospheric air as well as on issuance of special water use permits and pollutant emission permits in the atmosphere.
[88]
http://madrm.gov.md/sites/default/files/Documente%20atasate%20Advance%20Pagines/Orin_MADRM_nr.5_14.01.2019_Aprobarea_Listelor_de_verificare_IPM.pdf
[89] Monitoring of wastes for the production of indicators and impact assessment reports was already define in the Law on Waste no 209 of 27.07.2916. The order issues is in line with this Law.

European Environment Agency

State Agency MOLDSILVA - http://www.moldsilva.gov.md

The State Agency MOLDSILVA is subordinated to the Ministry of Agriculture, Regional Development and Environment by Law. It is regulated by the Decision No. 150 from 02.03.2010 for the approval of the Regulation on the Organisation and Operation Agency "Moldsilva"[90].

The State Agency Moldsilva is the central public administration body on state policy in forestry and hunting in the country. The general task of the Agency is to implement the constitutional prerogatives and international ratified obligations in the policy area of forestry and hunting.

In the context of this document it is important to note that MOLDSILVA is responsible for:

* modernisation of the existing information resources and elaboration of a modern Forest Information System as part of the National Information System (improvement of information system, integration of geographical data/GIS implementation, etc.)
* conducting studies to combat disease and forest pests through biological and integrated methods

Environmental information are limited on the website.

Agency "ApeleMoldovei"[91] - http://www.apelemoldovei.gov.md

The Agency ApeleMoldovei is subordinated to the Ministry of Agriculture, Regional Development and Environment. It is the administrative authority in charge of the implementation of State policy on water resources management, improvement of water infrastructure and water supply and sanitation. The agency's responsibilities are regulated by the government decision no. 882 of 22.10.2014[92]. In particular, in the scope of this document, the agency is responsible for:

* water cadastre (State Water Cadastre and data bank in the field of water supply)
* gathering and analysing environmental information on the state of the managed area
* sharing statistics collected and analysed to the hierarchically superior public authorities
* to present proposals on the adhesion of the Republic of Moldova to international treaties, projects of bilateral or multilateral agreements in the field of water management, water supply and sewerage

The agency has subordinated organisations which report to it on their activities. The system and/or medium used for exchanging information with other institutions is neither stated in the Law, neither on the official website.

State Hydrometeorological Service (SHS) - http://www.meteo.md[93]

The State Hydrometeorological Service is an institution subordinated to the Ministry of Agriculture, Regional Development and Environment Ministry of Agriculture, Regional Development and Environment, which is functioning according to the Government Decision on hydrometeorological activity in the Republic of Moldova, No.401 from 3 April 2003, adopted by the Government of the Republic of Moldova.

The task of the State Hydrometeorological Service is to lead the environmental monitoring of surface water, atmospheric air, radiations and soil quality. The State Hydrometeorological Service is responsible for providing the population, central and local public administrations, and private entities

---

[90] http://lex.justice.md/viewdoc.php?action=view&view=doc&id=333903&lang=1

[91] http://www.apelemoldovei.gov.md/

[92] http://lex.justice.md/md/355243/

[93] The website old.meteo.md is still active, which creates confusion.

with hydro meteorological and environmental quality information. Besides, it also publishes weekly, monthly, seasonal and annual reports over the weather.

The State Hydrometeorological Service has 3 departments collecting environmental information: Meteorology, Hydrology and Environmental Quality Monitoring. The latest has 7 subdivisions[94]:

- Centre on Integrated Data Monitoring and Informational Management (CIEMIM) - http://www.meteo.md:
  - The Centre on Integrated Data Monitoring and Informational Management has its responsibilities defined by the Law of the Republic of Moldova on hydrometeorological activity No. 1536-XIII of 25.02.1998 and is the final level of the environmental quality monitoring network in the frame of the State Hydrometeorological Service. The main activity of the Centre on Integrated Data Monitoring and Informational Management is the development of an environmental quality monitoring database, which is systematically completed with updated information on the state of the air, surface water and soil pollution. The results obtained by using the data processing software are used to prepare monthly bulletins on environmental quality.
  - When a high or extremely high pollution level is detected, a Warning Bulletin (early warning) is prepared and distributed according to the Scheme approved by the Ministry of Agriculture, Regional Development and Environment. It is also posted on the official web page of the State Hydrometeorological Service -www.meteo.md.

It is to be noted that the legislation listed on the website does not provide a reference describing the responsibilities of the institution.

- Ambient Air Quality Monitoring and Radioactive Background Level Centre (AAQMRBLC)
  - Provides annual results on the radioactive situation
  - The centre AAQMRBLC is cooperating with the International Atomic Energy Agency in the frame of the IAEA-WMO program[95].
- Surface Water Quality Monitoring Centre (SWQMC):
  - Control the water quality of the transboundary rivers – Prut and Nistru
  - Carries out observations and laboratory analysis. The results are assessed and included in the annual report of Surface Water Quality
- The Soil Quality Monitoring Centre (SQMC):
  - Soil quality monitoring through an observational network of lands
  - According to the Stockholm Convention on Persistent Organic Pollutants, the centre carries out the monitoring of Persistent Organic Pollutants
- The Physical-Chemical Analysis Centre (PCAC) was founded recently and it is accredited by the national accreditation system of Republic of Moldova and follows the standards SR SM EN 17025:2006. The Centre carries out advanced chromatographic analysis of organochlorine pesticides (OCP), polychlorinated biphenyls (PCB), polyaromatic hydrocarbons (PAH), volatile organic compounds (VOC), pollutants included in the EU Water Framework Directive[96], priority substances included in the Stockholm Convention, etc. Also, the Centre considers the possibility to extend the list of analysed pollutants.
- The Expedition Group (EG) is responsible for the systematic collection of soil samples every spring before sowing and every autumn after harvesting from 8 households of 8 districts. The Group also

---

[94] /mbient-air-quality-monitoring-and-radioactive-background-level-center/

[95] Global Network of Isotopes in Precipitation, http://www-naweb.iaea.org/napc/ih/IHS_resources_gnip.html

[96] The EU Water Framework Directive - integrated river basin management for Europe, http://ec.europa.eu/environment/water/water-framework/index_en.html

collects surface water samples from 72 monitoring sections, which are set up on 34 big and small rivers, six reservoirs and 2 natural lakes.

- The Quality Management Department is responsible for the implementation of the Quality Management System.

Agency of Geology and Mineral Resources (AGMR) - http://agrm.gov.md/

The Agency of Geology and Mineral Resources is the central administrative authority under the Ministry of Agriculture, Regional Development and Environment, specialised in researching, recording, regulating and controlling the use of mineral resources. It aims to implement the State Policy in the field of geological research, rational use and protection of the subsoil in the Republic of Moldova. In the context of this report, key functions and missions of the Agency are:

- Creation and maintenance of unique records of the use of subsoil
- Maintenance of "State Geological Register"[97]
- Examination of geological information and reserves of mineral resources[98]
- Creation and maintenance of the unique system for recording geological information and reserve of mineral resources
- State Cadastre of mineral deposits and mineral deposits
- State Cadastre of the sub-sectors, for the purposes not related to extraction of useful mineral substances

Agency for Regulation of Nuclear and Radiological Activities (ANRANR) - http://www.anranr.gov.md

The Agency is an administrative authority set up by the government subordinated to the Ministry of Agriculture, Regional Development and Environment. In the context of this project, the agency is particularly responsible for:

- Elaboration and realisation of state policy in the nuclear and radiological field

- Monitoring of the implementation and enforcement of international treaties

- The management of the National Register of radiation sources and authorised natural and legal persons

- The compilation and transmission of national reports to the international bodies responsible for the international treaties to which the Republic of Moldova is a party

National Bureau of Statistics (NBS)[99]

The National Bureau of Statistics is an administrative authority created under the Government for leading and coordinating the activity in the statistics area. Its activity are regulated by the Law on Official Statistics No. 93 dated 26.05.2017, other legislative and normative acts[100], and its management decisions and orders.

---

[97] Government Decision no. 1003 of 23.10.2010 regarding the approval of the Technical Concept of the Automated Information System "State Geological Register".

[98] Reporting defined by the government decision no. 1131 of 12.10.2016.

[99] http://www.statistica.md/index.php?l=en

[100] The legislative and normative acts ruling the activity of the NBS are available on its official page www.statistica.md, under About NBS (http://www.statistica.md/pageview.php?l=en&idc=323&).

European Environment Agency

The Law on Official Statistics regulates the organisation and operation of the unique system of official statistics, establishing the general principles for collecting, processing, centralizing, diminishing, and archiving statistical information (Article 1).

The National Bureau of Statistics publishes environmental data in low quantity. Currently, statistical data are collected from companies and government institutions. The National Bureau of Statistics collaborates with the Ministry of Agriculture, Regional Development and Environment to provide environmental statistics.

The National Accreditation Centre - http://www.acreditare.md

The National Accreditation Centre of the Republic of Moldova is a public institution, monitored by a specialised body of the central public administration in charge of quality infrastructure. It has been established by the Law No. 235 of 01.12.2011 on accreditation and conformity assessment activities.

Agency for Land Relations and Cadastre of Moldova (ALRC) - www.arfc.gov.md

The Agency for Land Relations and Cadastre of Moldova (ALRC) is a public authority carrying out execution, control, supervising, and other functions in the field of land relations, geodesy, mapping, cadastre and GIS activities, and to some extent LIS activities also, both of them building up the National Spatial Data Infrastructure (NSDI).

The ALRC is a founder of four state enterprises: i) State Enterprise "CADASTRU"; ii) State Enterprise Institute of Geodesy, Engineering Research and Cadastre "INGEOCAD"; iii) State Enterprise Project Institute for Land Management "IPOT" and iv) State Enterprise "Soil Protection and Land Development."

The ALRC is the national contact point for the NSDI implementation and it is responsible for the establishment, maintenance and management the NSDI national geoportal, monitoring and reporting of spatial data infrastructure at all levels.

Academy of Sciences - Institute of Ecology and Geography (IEG) - http://www.ieg.asm.md/

The Institute of Ecology and Geography of the Academy of Sciences of the Republic of Moldova was founded in accordance with the Republic of Moldova Government Decision "On the measures for optimisation the infrastructure of science and innovation sphere" No. 1326 of December 14, 2005 by unifying the National Institute of Ecology of the Ministry of Ecology and Natural Resources and the Institute of Geography of the Academy of Sciences of the Republic of Moldova.

In the context of this document, it is important to mention that this institute is responsible for:

- Implementation of the environmental and natural resources' Geographical Information System;
- Studying of dynamics and tendencies of modifications (geo-)ecosystems components under natural and anthropogenic factors' influence.
- Creation of a database for integrated monitoring

No specific information on the website is published about the Geographical Information System nor on the database for integrated monitoring. Last, the Institute of Ecology and Geography hosts the National Focal Points INFOTERRA - UNEP (NFP INFOTERRA - UNEP - United Nations Environment Program), which contributes to the evaluation and modernisation of the environmental informational system in the Republic of Moldova.

E-governance Agency (eGA) - http://www.egov.md

The Public Institution E-governance Agency is the central e-government organisation. It is a non-profit organisation pursuing public benefit. The Institution is a legal entity, with administrative and financial

European Environment Agency

autonomy, settlement and authorised accounts in banking institutions, and its own stamp. The Agency has the following basic functions:

- strategic planning, project management and implementation of information and communication systems for the Government

- preparation of the roadmap for ICT development in the Republic of Moldova, design of the basic infrastructure, development of qualified workforce and promotion of the technological progress

- promotion of e-transformation and increase of the use of ICT by citizens

- design the e-Government architecture

- to participate in the development of technical standards and regulations on e-Government and their implementation

- to provide assistance for the implementation of public e-services projects

- to develop and manage the Government portal, the unified system of e-document flow, email system and the public keys authentication centre for the public administration authorities, in line with the relevant regulatory and decision making framework

- to ensure the technical and technological maintenance of the official websites of the public administration authorities

- to develop, design and manage ICT solutions aimed at enhancing the efficiency, transparency and quality of the public authorities' processes

- to design, implement and manage the unified e-Government information and communication infrastructure

The agency does not have any specific activities related to the area of environmental information sharing.

It is important to note that the organisation is not regulated by Law nor governmental Decision. The State Chancellery is the Founder of the organisation and appoints the board members.

Cooperation with other stakeholders

Aarhus centres[101]:

There are two Aarhus Centres in Moldova. The first one was inaugurated in the capital city of Chisinau in 2012, which was followed by the opening of a Public Environmental Centre in Bender in 2013. The two Aarhus Centres of Moldova focus on access to environmental information, environmental research and raising awareness about the Aarhus Convention. In short:

- The work of the Public Environmental Centre is dedicated to promoting the principles of the Aarhus Convention in Transdniestria (Moldova), through the development of dialogue between civil society, public authorities and the expert community on a wide range of environmental issues.
- The mission of the Aarhus Centre Chisinau is to raise the level of public awareness on environmental issues and encourage participation in decision-making. In particular, the centre is responsible for:
    o Promoting the implementation of the Aarhus Convention through an active behaviour and dialog among the Government, NGOs and the general public;

---

[101] More information here : https://aarhus.osce.org/moldova

  o Promoting accessibility to environmental information and increasing public participation in the decision-making process
  o Promoting national implementation of the Protocol on Strategic Environmental Assessment (SEA) to the Convention on Environmental Impact Assessment in a Transboundary Context

In particular, the centres work on climate change, water and waste management issues. Their primary focus is on drafting Law and raising awareness about environmental information and issues.

Non-governmental Organisations (NGOs):

There are multiple Non-governmental Organisations in the Republic of Moldova, but it's hard to assess their actual number due to the absence of an official portal for NGOs. The most important among them, which deal with environmental issues are:

- **Eco-Tiras** – International Environmental Association of River Keepers created by environmental NGOs of the Dniester River basin, shared by the Republic of Moldova and Ukraine, to help and advice authorities and population to manage the river in sustainable way, using Integrated River Basin Management Approach. The organisation unites 51 NGOs-members.[102]

- **INQUA-Moldova** – is a non-governmental and non-profit public organisation and is one of the oldest public organisations in the Republic of Moldova. The organisation is a leader in innovative environmental researches and programs and is widely known in the Republic of Moldova and abroad as a community of high professional (international) experts and specialists who are able to conduct projects with a high degree of complexity. Their activities are focused to empower the local and regional society to manage and care for their environment.[103]

- **Ecological Movement of Moldova (EMM)** – is a national, non-governmental, non-profit organisation formed on November 15, 1990. The EMM is a member of the International Union for Conservation of Nature. The movement is national representative of the Centre "Naturopa" of the Council of Europe and United Nations Environment Programme of the United Nations. The EMM has the mission to contribute to the creation of an ecological vision and consciousness of the citizens, greening of the society and changing collective mentalities for the benefit of the environment through environmental education, training and sustainable development.[104]

- **EcoVisio** – the organisation is dedicated to gradual realisation of the full potential of the Republic of Moldova and its neighbourhood as a model region for sustainable development.

- **Ecocontact -** its mission is to promote sustainable development in the Republic of Moldova in the social, economic and environmental fields. In addition, it also contributes to the development of the cooperation of the Republic of Moldova with other countries, and particularly in areas related to environmental protection. Since 2013, EcoContact hosts the Aarhus Centre, which provides the local population with information and legal expertise on environmental matters. The Centre is created with the support of OSCE Mission in Moldova.

---

[102] https://www.eco-tiras.org/index.php/mission-mainmenu-27
[103] https://inqua-moldova.com/
[104] http://mem.md/en/
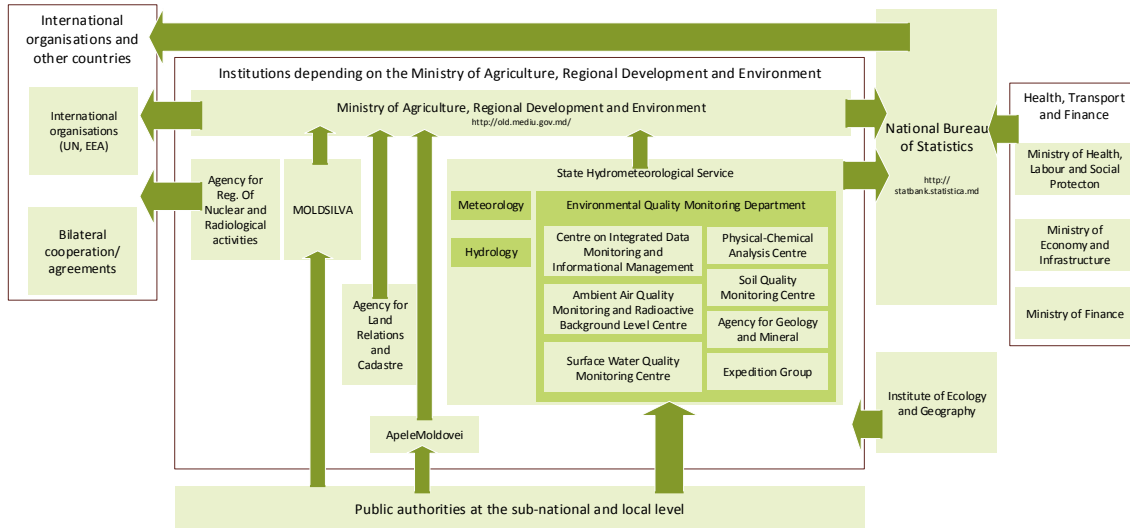
1.2 Environmental data flow

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

Figure 2. High-level environmental data flow, Republic of Moldova

Environmental information is mostly centralised under the Ministry of Agriculture, Regional Development and Environment (MARDE). In general, the State Hydrometeorological Service hosts the central environmental monitoring actors. Each department / subdivisions is responsible for collecting, analysing and sharing environmental information at their level.

There is no central environmental system and the responsibility for implementing specific systems (e.g. water monitoring, air monitoring) falls on agencies/institutions. The same logic applies for the management of cadastres. The Ministry of Agriculture, Regional Development and Environment and the State Hydrometeorological Service share information with the National Bureau of Statistics which produce an environmental annual report and provides access to the Statistical Databank of the Republic of Moldova. Data related to health, transport, energy (outside of radiations) and finance are managed separately. These data are nonetheless exchanged with the National Bureau of Statistics.

The Ministry of Agriculture, Regional Development and Environment and few other institutions share environmental information with other countries or international organisations. As such, sharing of environmental information at international level is not centralised. It is to be noted that the Ministry of Agriculture, Regional Development and Environment is experiencing major difficulties while dealing with collected environmental data and information, because of the lack of a system that would enable to collect, receive, process and generate sound environmental reports.

In this context, it is absolutely necessary to gradually develop and integrated environmental information system that would make possible: to connect all the existent databases; digitalise databases stored on paper; share information between databases of different institutions; and to collect data electronically/digitally.

The following table depicts the environmental information and main stakeholders:

Table 3. Collection and storage of environmental information: responsibility of public authorities of the Republic of Moldova

	A. Air pollution and ozone depletion	B. Climate change	C. Water	D. Biodiversity	E. Land and soil	F. Agriculture	G. Energy	H. Transport	I. Domestic Waste & waste Hazardous	J. Environmental financing
Ministry of Agriculture, Regional Development and Environment (MARDE)									■	■
• **Agency "ApeleMoldovei"**			■							
• **State Ecological Inspectorate**	■		■						■	
• **State Hydrometeorological Service**	■		■		■					
○ **Centre on Integrated Data Monitoring and Informational Management**							■*			
○ **Ambient Air Quality Monitoring and Radioactive Background Level Centre**			■							
○ **Surface Water Quality Monitoring Centre**					■					
○ **Soil Quality Monitoring Centre**					■					
○ **Physical-Chemical Analysis Centre**					■					
○ **Agency for Geology and Mineral Resources**					■					
○ **Expedition Group**							■*			
• **Institute of Ecology and Geography****	■	■	■	■	■	■		■	■	
• **State Agency MOLDSILVA**				■						
• **Agency for Regulation of Nuclear and Radiological Activities**						■				
Agency for Land Relations and Cadastre					■					
Ministry of Economy and Infrastructure							■	■		
Ministry of Finance										■

Legend: * Only concerns radiations   ** Supports as geographic data and system owner

1.2.1 Environmental administrative information, statistics and assessment reports

1.2.1.1 *Statistics and reports*

Since 2005, cooperation between the National Bureau of Statistics and the Ministry of Agriculture, Regional Development and Environment has been substantially strengthened and formalised through a number of joint regulations. This progress was reflected in the work carried out by the two bodies on environmental statistics and indicators and, furthermore, in the increased use of environmental statistics in the policy development process.

Public access to statistical data, including environment-related data, has improved considerably – statistical data are available free of charge on the NBS website (www.statistica.md). Furthermore, since 2010, a publication containing environment related statistics for the country, "Natural resources and the environment", has been prepared annually by the NBS and is available online.

The State of the Environment Report (SoER) of the Republic of Moldova produced by the Ministry of Agriculture, Regional Development and Environment is the most comprehensive environmental report in the country. According to the Law on Environmental Protection of 1993, State of the Environment Reports have to be produced annually. It is to be noted that the annual frequency was not maintained in the past years; the last report was produced in 2011 for the period 2007–2010. All State of the Environment Reports are available to the public in electronic format on the Ministry of Agriculture, Regional Development and Environment website. The Institute of Ecology and Geography prepares the document after consultation with the responsible departments in the Ministry of Agriculture, Regional Development and Environment. Other institutions, such as the SHS, AGRM, Agency "Apele Moldovei" and NBS provide information and data to support the various chapters. The flow of data and information feeding into the report is not regular and neither does a source database exist to enable the sustainable production and updating of the report. The report has a rather scientific approach and its use in the decision-making process or by the general public is difficult to assess. The report currently makes no use of environmental indicators.

The following table presents the environmental reports available in the Republic of Moldova.

Table 4. Environmental assessment reports

Environmental reports are published by the Ministry of Agriculture, Regional Development and Environment, the National Bureau of Statistics and international organisations such as the United Nations and multilateral environmental agreements.

Type of Report	Report
National environmental report	The statistical collection "Natural resources and the environment in the Republic of Moldova" provides statistics over the state of the environment and the use of natural resources in the Republic of Moldova.
	The collection contains data on atmospheric air protection, climate change, resource use of aquatic resources, biodiversity, the existence of land resources, the formation and use of waste and production consumption, hunting household, violations of environmental legislation, etc.
	Frequency: annual
National environmental reports	MARDE: http://www.green-economies-eap.org/resources/Report_EN.pdf
	Most reports are outdated, dating in general from 2010. The only exception is the report "Information on the state of green areas as at 31 December 2016".
Specialised reports - climate (national communications to UNFCCC)	United Nation Climate Change: https://unfccc.int/sites/default/files/resource/Moldova_CN4_En_web_070218.pdf
Specialised reports - air	Institute of Ecology and Geography: http://www.ieg.asm.md/en/node/29
Specialised reports - water	Apele Moldovei: http://www.apelemoldovei.gov.md/
Specialised reports - biodiversity	MARDE: https://www.cbd.int/doc/world/md/md-nr-05-en.pdf
Specialised reports - waste	MARDE: http://www.serviciilocale.md/public/files/deseuri/2013_01_24_NATIONAL_WASTE_MANAGEMENT_STRATEGY_2013-27_ENG.pdf
Indicator-based reports	MARDE: http://www.green-economies-eap.org/resources/Report_EN.pdf
National Statistical Yearbook	National Bureau of Statistics: http://www.statistica.md/pageview.php?l=en&idc=263&id=2193
National Statistical Yearbook on environment	National Bureau of Statistics: http://www.statistica.md/pageview.php?l=en&idc=263&id=2193

European Environment Agency

Type of Report	Report
Report on sustainable development	United Nations: http://md.one.un.org/content/dam/unct/moldova/docs/pub/mdg/3rdMDGReport_Eng.pdf
Ad hoc report	The website http://statbank.statistica.md enables anyone to select the data and the year they want to consult.

Overall, environmental reporting in the Republic of Moldova remains rather poor and needs improvement in terms of frequency, availability and "public friendliness".

European Environment Agency

1.2.1.2 Indicators

National indicators

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

Table 5. Air pollution indicators

National entity	Monitoring indicators
State Hydrometeorological Service	A2 - Air quality in urban areas.
	Consumption of ozone-depleting substances, data on greenhouse gas emissions.
	The degree of atmospheric air pollution in 2014 on the territory of the Republic of Moldova.
State Energy Inspectorate	Emission volume of pollutants in atmospheric air from stationary sources, 2013.
National Bureau of Statistics	Emission of pollutants in atmospheric air by stationary sources of economic agents by ingredients, 2001-2017;
	Emission of specific polluting substances in atmospheric air by stationary sources of economic agents, 2001-2017;
	Capture (neutralisation) by the purification plants of polluting substances at the emissions by stationary sources of atmospheric air pollution of economic agents, 2001-2017;
	Polluting substances emitted in atmospheric air by road transport by substances, 2001-2016;
	Emission of pollutants in atmospheric air by stationary sources of economic agents, in territorial aspect, 2008-2017;
	Emission of pollutants in atmospheric air by stationary sources of economic agents by ingredients, in territorial aspect, 2017.

Table 6. Water indicators

National entity	Environmental data
"Apele Moldovei" Agency	The boundaries of river basins and sub-basins and the special maps in which they are determined;
	List of surface water bodies, areas and protection strips managed by the administrative authority for water management;
	List of hydro technical constructions managed by the administrative authority for water management;
	State of the hydro-technical constructions of storage lakes;

National entity	Environmental data
	List of Irrigation Systems in the Republic of Moldova;
Agency for Geology and Mineral Resources	Groundwater level
State Hydrometeorological Service	BO5 and ammonium concentration in rivers;
	Concentration of nutrients in freshwater;
	C-10 - Biochemical oxygen demand and concentration of ammonium nitrogen in rivers;
	C-11 - Nutrients in fresh water – Rivers;
	C-11 - Nutrients in freshwater – Lakes;
	Annual average concentrations of water concentrations in the control sections on Prut, Nistru, Ialpug, Cogilnic, Raut, Bic, Botna, Ichel. Natural and accumulation pools.
National Bureau of Statistics	The main indicators of water use, 2001-2017;
	Discharge of sewage, mine and phreatic drainage waters in natural water basins, 2001-2017;
	Discharges of some pollutants with residual water in surface aquatic basins, 2005-2017;
	Number of samples investigated by sanitary-chemical indicators, 2005-2017;
	Water abstraction, in territorial aspect, 2008-2017;
	Water use (without repeated and circulating water), in territorial aspect, 2008-2017.

Table 7. Land and soil indicators

National entity	Environmental data
Agency for Geology and Mineral Resources	Register of deposits of useful solid mineral substances;
	Register of Mining Perimeters;
	The State Balance of Reserves of Useful Mineral Substances.

Table 8. Biodiversity indicators

National entity	Environmental data
National Bureau of Statistics	Land fund, as of January 1, by Categories of land and Years, 2001-2018;

European Environment Agency

Main indicators of the forest fund, 2005-2017;

Conduction of foresting works, 2005-2017;

Forest cutting, 2005-2017.

UNECE environmental indicators

The Republic of Moldova publishes UNECE environmental indicators in a series of reports. The website of the ENI SEIS II East provides an assessment of environmental information available as well as links to national environmental indicators reports. Overall assessment:

UNECE Environmental Indicator	Moldova
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	

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

As in the table above, the Republic of Moldova misses transparency in terms of environmental financing. Yet, in general, financing is an issue mentioned in the National Strategy and also in the National Waste Management Strategy. In particular, nothing regarding the improvement of financial systems is mentioned at this level[105].

---

[105] At a smaller scale, the agency Moldsilva has introduced in its strategy environmental information transparency through the creation of a financial system.

1.2.2 Environmental data sharing arrangements

This section describes the main actors in the environmental data sharing and the flow of environmental information between them. It is to be noted that most institutions are subordinated to the Ministry of Agriculture, Regional Development and Environment, and hence the data sharing arrangements are set by the Ministry of Agriculture, Regional Development and Environment itself.

In general, there is still poor coordination at the institutional level (both national and local) and non-systematic data exchange between them. Currently, none of the institutions involved or responsible for environmental information data is using a networked relational database for storing and exchanging data.

There are, however, good examples of long-term cooperation between environmental bodies, as is the case in the procedure for the development of the State Water Cadastre. Three institutions share this responsibility: the Agency "ApeleMoldovei" (Water Basin Management Department), SHS and AGMR. Each institution, for its particular domain, creates and maintains the electronic data fund as input to the elaboration of the Water Cadastre. It is foreseen that the e-governance programme will facilitate data exchange and sharing among these bodies while preparing the Water Cadastre.

Besides, the issuance of permits for water use is another example of current efforts to improve information exchange among institutions, making use of modern technology (e-governance). In particular, this procedure requires approvals from several governmental institutions such as the SEI, Agency "ApeleMoldovei", AGMR and NCPH. With the support from the United States of America - under the Millennium Challenge Fund - an electronic platform for the authorisation of water use is under development. This new information system will connect virtually all entities involved in the authorisation procedure, facilitate information sharing among the entities involved, and substantially reduce the complexity and duration of the process.

Table 9. Environmental data sharing arrangements

Institution	Component of the environment	Inter-institutional cooperation for data exchange
Ministry of Agriculture, Regional Development and Environment http://www.madrm.gov.md/	• Agriculture • Natural resources • Water • Fauna • Flora • Soils and lands • Waste • Climate	MARDE coordinate the activity of 7 offices and 3 units for implementation (e.g. Carbon Finance Office or Climate Change Office). Furthermore, the MARDE cooperates with many agencies and institutions that are directly subordinate to it (e.g. Agency "ApeleMoldovei" or State Hydrometeorological Service).

Institution	Component of the environment	Inter-institutional cooperation for data exchange
Agency "Apele Moldovei" http://www.apelemoldovei.gov.md	• Water supply • State policy on water resources management	The Agency is subordinate to the MARDE.
State Ecological Inspectorate (SEI) http://ies.gov.md/	• Air • Water	The institution is subordinate to the MARDE. SEI performs the State Ecological Expertise and State control regarding compliance with environmental legislation requirements on behalf of the MARDE.
State Hydrometeorological Service (SHS) http://meteo.md/	• Water • Air • Energy (radiations) • Soil	The SHS is subordinated to the MARDE. It is responsible to provide population, central and local public administration bodies, and economic entities with hydrometeorological and environmental quality information. There are also international agreements for information exchange: - Information exchange, for the yearly publication "Radioactive situation on the territory of Russian Federation and neighbouring countries" - Bilateral Cooperation Agreement between Republic of Moldova and Ukraine the mutual exchange of information and data on water quality of the Nistru and Prut rivers in the transboundary sections. - Bilateral Cooperation Agreement between Republic of Moldova and Romania.
Institute of Ecology and Geography (IEG) http://ieg.asm.md	• Energy/biodiversity (radiobiology) • Climate	The IEG works under the MARDE. The IEG is responsible for the creation of an informational database for integrated environmental monitoring.
Agency of Geology and Mineral Resources (AGMR) http://agrm.gov.md	• (Sub)soil • Mineral Resources	The AGMR is subordinated to the MARDE. The agency is responsible for the creation and maintenance of unique records of the use of subsoil and "State Geological Register".
Agency for Regulation of Nuclear and Radiological Activities (ANRANR) http://anranr.gov.md	• Energy (radiations)	The agency is subordinated to the MARDE. The ANRANR is responsible for the creation and the maintenance of the National Register of Radiation Sources.

European Environment Agency

Institution	Component of the environment	Inter-institutional cooperation for data exchange

Centre on Integrated Data Monitoring and Informational Management (CIEMIM)	- Environmental information and quality
	  o Water
	  o Air
	  o Soil
	  o Radiation
		Subordinated to the MARDE.
		- Reports and Early Warning Bulletins are prepared and distributed according to the rules set by the MARDE[106].
		- Information on environment quality are distributed according to formal agreements of collaboration with different institutions at national and international levels[107].

National Bureau of Statistics (NBS)	- Air - Water - Land - Forest - Waster - Climate	The National Bureau of Statistics publishes an annual report on the state of the environment. This publication is prepared on the basis of the data exchanged from economic agents and public administrations. In particular: - Ministry of Agriculture, Regional Development and Environment - State Ecological Inspectorate - State Hydrometeorological Service - Forestry Agency - "Moldsilva" - Ministry of Health, Labour and Social Protection - Institute of Ecology and Geography (Department of Cadastre)
State Agency Moldsilva http://www.moldsilva.gov.md/	- Biodiversity, land and soil (Forestry and Hunting)	The Agency Moldsilva is the central public administration on state policy in forestry and hunting in the country. The National Bureau of Statistics contains information from the agency Moldsilva, but nothing about biodiversity.

---

[106] In fact, the official website of the CIEMIM refers to the former Ministry of Environment. It is not clear whether agreements have changed after the creation of the MARDE.

[107] Information is shared with the World Organisation of Meteorology and with each EaP country. Source : http://www.meteo.md/index.php/cooperare/instituii-naionale-i-internaionale-de-profil/

European Environment Agency

1.2.3 Licensing norms

In general, public information are governed by the following Laws:

- Law no. 305 from 26 September 2012, on the reuse of public sector information;
- Law no. 982-XIV from 11 May 2000, on access to information;
- Law no. 190-XIII from 19 July 1994 on petitions;
- Law no. 133 from 8 July 2011, on protection of personal data;
- Law on Commercial Secrets No. 171-XIII from 6 July 1994;
- Law no. 245 from 27 November 2008, on state secret;
- Law on Administrative Contentious No. 793-XIV from February 10, 2000
- Government Resolution Nr. 700 from 25.08.2014 open data concept;
- Government Resolution Nr. 701 from 25.08.2014 on approving the open data publishing methodology.

The following tables describes the licences available on the main environmental portals:

Table 10 - Licensing norms per portal

Portal	Licensing
Date.gov.md	There is no official licences mentioned, nor a reference to an international renowned licence such as CC-Common. Hence, the Republic of Moldova published the conditions for use and re-use of information published on its website[108]. More information can be found on the website.
National Bureau of Statistics	Reusing the content of the website, completely or partly, in original or modified, as well as its storage in a retrieval system, or transmitted, in any form and by any means, unless otherwise stated, can be made under the license Creative Commons Attribution 4.0 International License.
MARDE (http://www.mediu.gov.md)	No licence mentioned. Datasets published on the open data portal are also not subject to licence.

---

[108] http://date.gov.md/en/terms-and-conditions

1.3 Progress so far

1.3.1 Main initiatives

The main initiatives related to the e-government, open data and environmental information in the Republic of Moldova are presented below.

Governance-Transformation Project (GeT)[109]

The project development objective was to transform the delivery of selected public services using ICT. The project consisted of two components:

- E-Leadership Capacity and Enabling Environment: this provided support to the E-Government Centre (eGC)[110]. It supported the centre through e-leadership training and civil servants capacity building; strategic communications and partnerships; development of policy, technical, legal and regulatory frameworks; and project management.

- Shared Infrastructure and e-Services Development: establishment of the M-Cloud (Government Cloud Computing Infrastructure); and (b) development of a selected number of e-Government services and shared applications to be delivered through multiple channels, including government portals and mobile phones.

Open Data initiative

The Open Government Data initiative in the Republic of Moldova is part of the larger governance e-transformation efforts, launched in 2010. The eGC, in collaboration with USAID, prepared a report on open data and launched the open data initiative with the open data portal www.date.gov.md in April 2011. The Republic of Moldova was the first country in the region to launch an open data portal. In September 2011, the Open Data Initiative became the key element in the promotion of open government within the larger Governance e-Transformation Strategy, which is implemented by the eGC of the Republic of Moldova with the support of the World Bank.

Environmental Strategy for the years 2014-2023

The vision of the Environmental Strategy is oriented towards an extensive environmental protection sector reform. It includes the development of a new institutional, administrative and environmental management system, which shall be adjusted to the EU requirements to ensure environmental sustainability and increase the quality of the environment.

The general objective of the Strategy is the creation of an efficient environmental management framework, which would contribute to the increase in the environmental factors' quality and guarantee the right of the population for a clean, healthy and sustainable environment.

Refactoring of waste management institutional and legal framework

The Law no 209 of 29 July 2016 on Waste[111] redefined the responsibility and legal framework in terms of waste management. In particular, it delegates the responsibility of waste management

---

[109]http://documents.worldbank.org/curated/en/672011507844559743/Moldova-MOLDOVA-eTRANSFORMATION
[110]eGC was recently transformed into E-Governance Agency http://www.egov.md/en/communication/news/e-government-center-becomes-e-governance-agency
[111] http://lex.justice.md/md/368030/

to the Ministry of Agriculture, Regional Development and Environment. It also transposes the Directive 2008/98 / EC of the European Parliament and of the Council of 19 November 2008. In this context, the Ministry of Agriculture, Regional Development and Environment adopted the National Waste Management Strategy 2013-2023.

Based on this Strategy, the Moldovan Government undertakes to develop a new legal and institutional framework on waste management regulation under the EU legislation. The implementation of the National Strategy for Waste Management is a priority for the period of 2013 – 2027. The initiative is being evaluated periodically.

Refactoring of water management institutional and legal framework

The Water Law[112] No. 272 of 23 December, 2011 and some 20 sub-Law regulations supersede the Water Code (1993), and create a legal framework for the management, protection and efficient use of surface water and groundwater. This legal framework is partially harmonized with the EU directives.

The Government also adopted some new strategies for the water sector, which are reflected in the National Development Strategy «Moldova 2020», the New Environmental Strategy for 2014-2023 (April 2014), the strategy for "promoting sustainable development and green economy" and the New Water Supply and Sanitation (WSS) Strategy for 2014-2028[113].

Action plan for the agency Moldsilva

The agency is responsible for the monitoring and protection of the forestry and biodiversity. In 2017, the vice-Minister of the environment signed the agency strategy[114]. In particular, the strategy aims to:

- Reinforce collaboration with the former Ministry of Environment (i.e. Ministry of Agriculture, Regional Development and Environment now, but nothing has been transposed)
- Reinforce the legal framework
- Introduce a system for managing the budget of the agency (environmental financing)
- Initiate and participate to environmental information awareness among the public

---

[112] http://lex.justice.md/md/342978/
[113] Law on water supply and sanitation no. 303 of 13.12.2013
[114] http://www.moldsilva.gov.md/public/files/1111/Plan_de_actiuni_2017_Agentia_Moldsilva.PDF

1.3.2 International rankings

International rankings are important, as they assess progress made against other countries on the basis of internationally acknowledged methodologies. In general, the Republic of Moldova has made significant progress in terms of e-government and open data.

E-government development index (EGDI)[115]

As a composite indicator, the EGDI is used to measure the readiness and capacity of national institutions to use ICTs to deliver public services.

In 2018, the Republic of Moldova scored 0.659 and was ranked in #69 out of 193 countries. The figure below shows the change of EGDI.
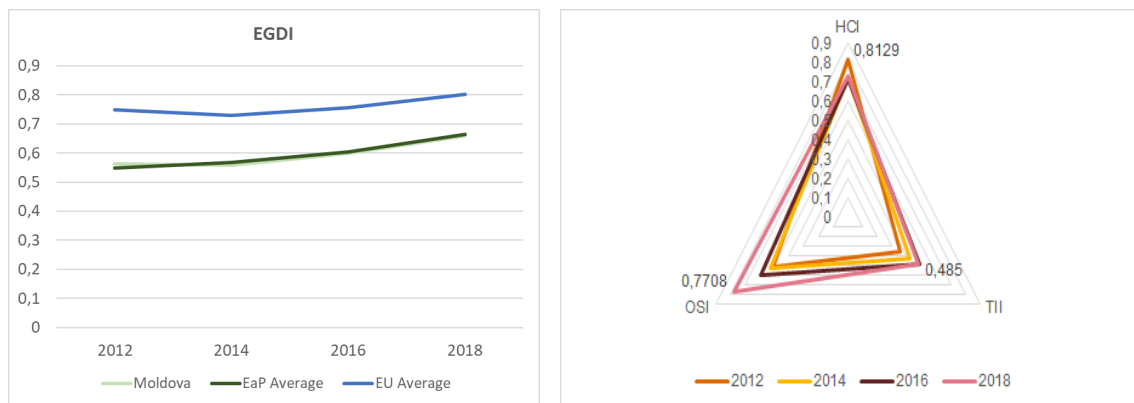

Figure 3. EGDI indicator for the Republic of Moldova

The figure above shows the change in value of EGDI components between 2012 and 2018. The values indicated in the graph show the highest value of a given indicator in 2012-2018. Online Service Index (OSI) has increased significantly in the last two years to the level of 0,7708 (29,7% increase). The Human Capital Index (HCI) has seen a significant decrease between 2012 and 2014 and has remained stable at around 0.72 since then. Telecommunication Infrastructure Index (TII) 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 0,4787.

The increase in e-government is explained largely by the e-transformation programmed followed by the Republic of Moldova. In particular:

- The M-Cloud was implemented as a shared computing infrastructure. More than 115 systems within 36 ministries were hosted on the M-Cloud at project closure. In total, 53.7% of the central government agencies migrated one or more of their services/applications to M-Cloud, above the targeted 25%;

- More than 1000 data sets became available on the Open Government Data website, above the targeted 600.

- A total of 634,147 people accessed public services via the government portal and mobile phones, above the targeted 300,000.

---

[115]https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/139-Republic-of-Moldova

European Environment Agency

- As measured by a citizen survey, 43.6% of the population accessed a government website at least once over the previous 12 months (closing date of the project 31 December 2016), above the target of 25%; this was measured through a citizen survey).

- More than half of the users were satisfied with the quality of services. In particular, the degree of users' satisfaction with the overall quality of transaction processing for the main public service (citizens portal) was 66%, slightly above the targeted 60%.

In terms of ICT, the International Telecommunication Union in its country report of 2017[116], states that mobile-broadband penetration in the Republic of Moldova is similar to the CIS region average. The territory and population is widely covered by 3G/LTE signal. Percentage of households with a computer is 71% while the CIS average is 67%. The percentage of households with an internet access is of 76% for a CIS average of 68%. Finally, the percentage of individuals using the internet is 71% against 46% in the CIS region.

It is to be noted that Moldova does not do better than the average of EaP countries. Nonetheless, it is to be noted that the gap with the European Union is becoming smaller.

Global Open Data Index (GODI)[117]

The GODI is the annual global benchmark for the publication of open government data, run by the Open Knowledge Network. No data are available for the Republic of Moldova.

Environmental Performance Index (EPI)[118]

The EPI ranks 180 countries on 24 performance indicators across ten issue categories covering environmental health and ecosystem vitality. These metrics provide a gauge at a national scale of how close countries are to established environmental policy goals.

In 2018, the Republic of Moldova ranked 112 out of 180 countries with the score 52. The EU average for the same indicator is 74 and the average for the EaP region is 58.
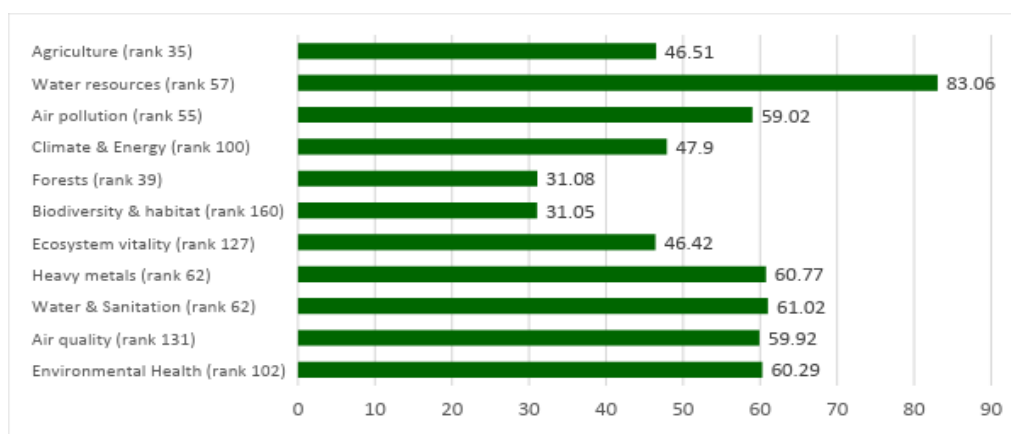

Figure 4. Indicators of EPI of the Republic of Moldova

---

[116] https://www.itu.int/en/ITU-D/LDCs/Documents/2017/Country%20Profiles/Country%20Profile_Moldova.pdf
Due to technical issues, statistics for 2018 are not available.
[117] http://2015.index.okfn.org/place/moldova/
[118] https://epi.envirocenter.yale.edu/epi-country-report/MDA

ODIN Score[119]

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

In 2017 the Republic of Moldova has 54 points (out of 100) in terms of data coverage and 80 points (out of 100) when it comes to data openness. This translates into combined result of 67 points (out of 100) in ODIN score (#14 in the world).

When it comes to environmental statistics the situation is as follows:

Table 11. ODIN Score for the Republic of Moldova between 2015-2017

	2015	**2016**	**2017**
Coverage	62	44	52
Openness	70	70	78
All elements	66	59	67

Open Data Barometer[120]

The fourth edition of Open Data Barometer was published on May 2017 and it covers time period under study between July 2015 and June 2016. This is the first edition of the report where the data on the Republic of Moldova are available. Covering 114 countries, the fourth edition of the report ranks governments on:

• Readiness for open data initiatives. (Average 53 out of 100 points);

• Implementation of open data programs. (Average 52 out of 100 points);

• Impact that open data is having on business, politics and civil society. (Average 7 out of 100 points).

These results gave the Republic of Moldova 39st place (2016) in the Open Data Barometer ranking with a combined score of 20 points. The following table summarise the Open data barometer results of the Republic of Moldova in the context of this report.

Table 12. Open data barometer categories for the Republic of Moldova

Data category	Is the data set open? Data set Quality (… / 100 points)
Map data	No. 30 out of 100 points.
Land Ownership data	No. 15 out of 100 points.
Detailed Government Budget	No. 65 out of 100 points.
Detailed Data on Government Spend	No. 5 out of 100 points.
Legislation	No. 15 out of 100 points.
Health sector performance	No. 75 out of 100 points.
Natural Environment Statistics	No. 80 out of 100 points.

---

[119]http://odin.opendatawatch.com/Report/countryProfile/MDA?appConfigId=4
[120]https://opendatabarometer.org/4thedition/detail-country/?_year=2016&indicator=ODB&detail=MDA

2 Technology enablers for environmental information sharing

2.1 Portals

This section provides insights over the platforms available for the publication of environmental information at a national and international level.

2.1.1 Open data portal

www.date.gov.md

The date.gov.md platform represents one of the key pillars of the Governance e-Transformation agenda and aims at facilitating citizens' access to data of central public administration authorities. The Open Data Initiative expresses the government's interest in developing transparent governance and applying innovations to help citizens.

The Republic of Moldova was the first country in the region to launch an open data portal. In September 2011[121], the Open Data Initiative became the key element in the promotion of open government within a larger Governance e-Transformation Strategy, implemented by the eGC of the Republic of Moldova with the support of the World Bank. Currently, the ownership of this portal is being transferred to the State Chancellery.

The portal is providing access to over 1000 datasets as well as useful information, news and videos on Open Data. The portal is available in English, Romanian and Russian. Nonetheless, the English version is not functioning well and has few datasets available.

Servicii.gov.md

The online one-stop-shop of Public Services to Citizens and Businesses. It was launched on May 10, 2012. The development of v 2.0 of the website was included in the public service modernisation action plan. The portal provides exhaustive information (service passports) on 635 public services on its informative interface, and access to 164 public e-services on its interactive interface. Since May 2012 (official launching) until December 31 2016, there have been reported:

- Total number of unique visitors: 673 402;

- Total number of visits: 1 097 331;

- Average duration of a session 4:04 min;

- Share of new visitors: 62%;

- Share of returning visitors: 38,6%.

On the website user can find a lot of health-related information (certificate of climate characteristics and background concentrations of air pollutions or instructions about registration of bio-destructive products).

---

[121] The portal went through an improvement process in 2014 and uses open source software for open data management. However, the portal needs new technical developments and improved features.

Figure 5. Public service portal

It is to be noted that the Republic of Moldova is currently aligning its service passport to the Core Public Service Vocabulary standard of the European Union. During this process, the country is also taking the opportunity to assess re-engineering possibilities of public services.

At the moment, the webpage "Servicii A-Z" enables accessing public services related to the environment – no category for "environment public services" is available.

2.1.2 Environmental portals

2.1.2.1   *National platforms*

www.meteo.md – State Hydrometeorology Service

The website of SHS is available in the Romanian, English and Russian languages. On the SHS website one can find the current weather, hydrological and environmental situation. There are warnings bulletins published as well as long-term climate forecasts. Information are presented rather in the form of visualisation, hence no file can be downloaded.

www.ieg.asm.md – Institute of Ecology and Geography

The website contains reports and results of research carried out as part of the activities of the institute. Information is available on projects in which the institute is currently participating, both nationally and internationally. The website also presents the institutional framework within which the institute functions. The website is available in Romanian, Russian and English languages.

www.clima.md – Climate Change Office

The website provides links to reports on climate change, and information on the Republic of Moldova National Strategy regarding climate change. The website also describes the international framework for action on climate change that the Republic of Moldova is a member of. The website is available in Romanian, Russian and English.

www.statistica.md and http://statbank.statistica.md – National Bureau of Statistics

The website of NBS is available in the national, English and Russian languages. The following databases relating to the environment can be found on the site:

•   Atmospheric air protection;

•   City infrastructure and cleaning activities;

•   Generation and use of waste;

•   Land and forest fund;

•   Meteorology;

•   Water use.

The portal is user-friendly and enables generating tables and charts on demand. It is possible to export the results from the website in multiple formats including Excel, html, CSV, etc. As such, data are easily re-usable.

2.1.2.2   *International platforms*

The ENI SEIS II East website provides a recurrent assessment of UNECE environmental indicators reporting and national environmental reporting. More information is available here: https://eni-seis.eionet.europa.eu/east/countries/moldova.

European Environment Agency

2.2 Portal maturity for environmental data

2.2.1 Statistics over availability of environmental data online

In the Republic of Moldova, environment data are published on multiple platforms. Usually, one portal hosts one type of data or reports. Besides, most environmental reporting available is outdated.

At this moment, one can assume that the most reliable source of environmental data is the National Bureau of Statistics.
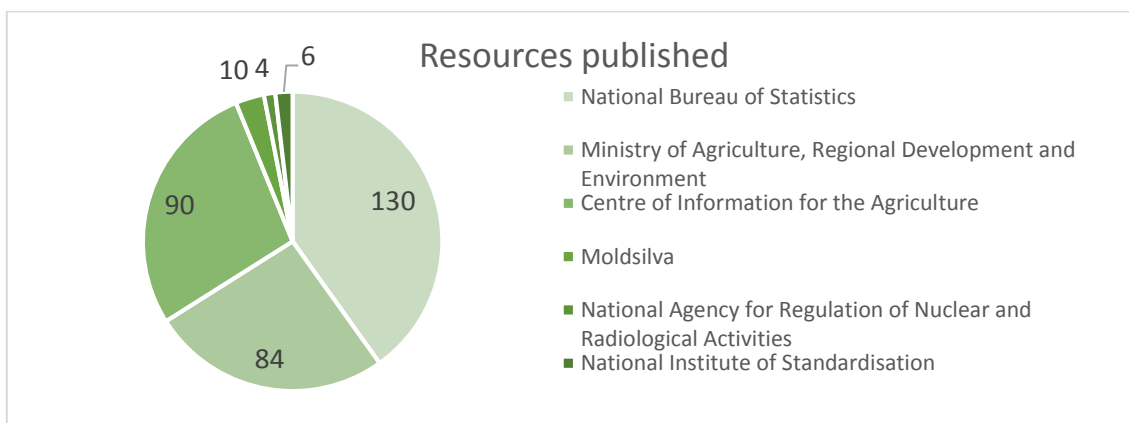
Open Data portal

The Open Data portal has grown significantly over the past years. Nonetheless, it still holds a small amount of datasets compared to some other EaP countries. Statistics regarding open data portal looks as follow (October 2018):

- Numbers of datasets to date: around 1000 datasets and not far from 8000 resources

- Publishing institutions: 46 central public administration agencies

- The most active agencies: the Ministry of Health, Ministry of Interiors, National Statistics Bureau, Ministry of Economy and Ministry of Education

- Number of downloads: over 3 millions[122]

As such, it is clear that much more work remains to be done to fulfil the promise of open data. In particular, it is necessary to raise awareness among public institutions for publishing more data on the portal.

The following diagrams presents the numbers of resources published for the environment. It is clear that very few environmental data are published on the open data portal.
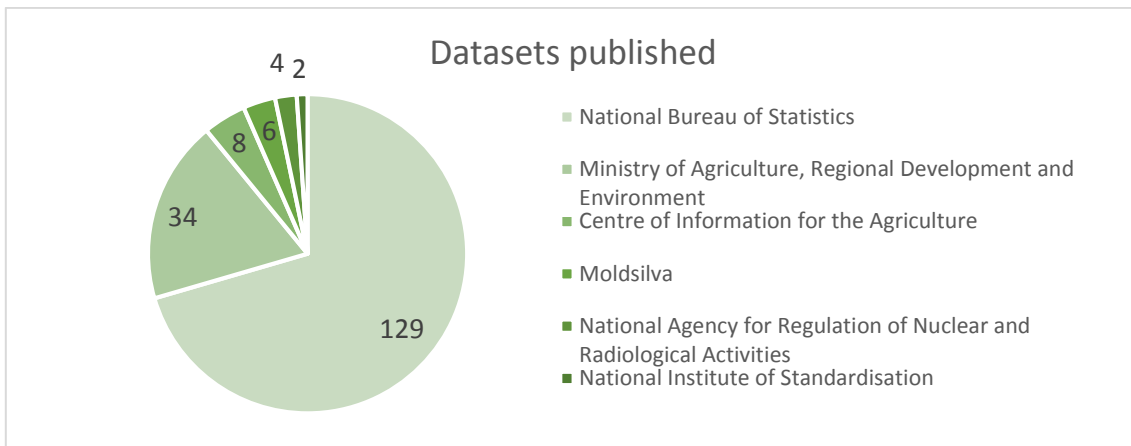
Figure 6- Resources and datasets published on the Open Data Portal

---

European Environment Agency

In total, only a few datasets relate to the environment; a look at datasets under the sections "land" and "ecology" on the open data portal show no more than 20 datasets.

National Bureau of Statistics

The website publishes numerous environmental in the field of Atmospheric air protection,   City infrastructure and cleaning activities, Generation and use of waste, Land and forest fund, Meteorology, Water use. For each category, it is possible to select the indicators and the year.
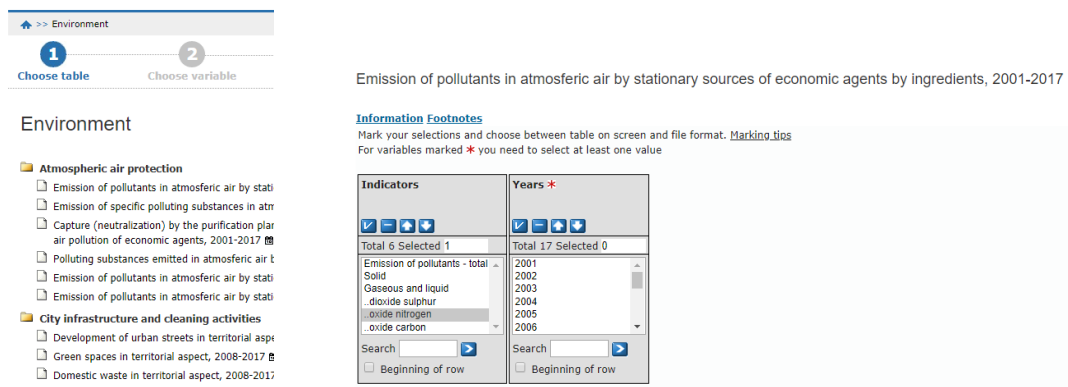

Figure 7 - screenshot of http://statbank.statistica.md

2.2.2 Re-usability of data

The situation in the Republic of Moldova is mixed. On one hand, the open data portal has few datasets available, but almost all of them are available in machine-readable format. And on the other hand, the National Bureau of Statistics provides a comprehensive platform for selecting, visualising and downloading environmental data in machine-readable format. Therefore, it appears clearly that there is a need for coordination between the National Bureau of Statistics and the Open Data portal owner (i.e. State Chancellery).
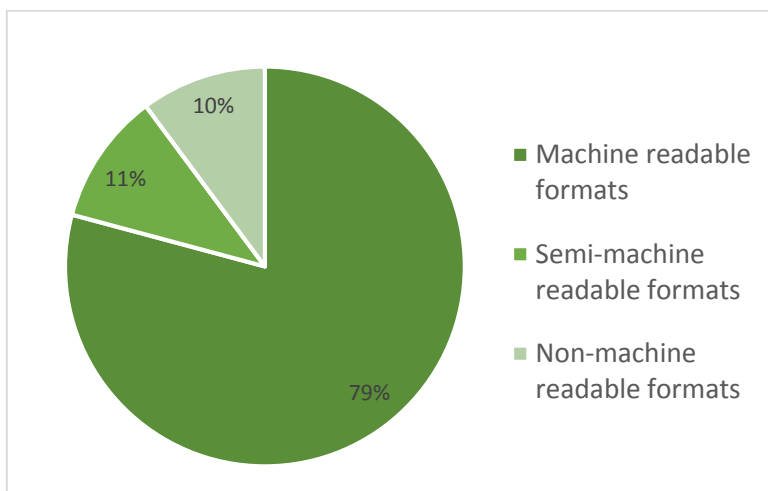
Open Data portal

Overall, data provided on the open data portal are machine-readable. Only 10% of data published are non-machine readable (i.e. pdf, zip, etc.). The following diagram provides statistics over machine readable format available on the open data portal.

Datasets are mostly available in Romanian or Russian, and can be downloaded in Excel format. Usually, annual data are provided in separate files, so the comparison of yearly data can be complicated. It is to

be noted that when metadata are available in English, usually the dataset is also in English; something that is not the case in every EaP countries.

*Figure 8 - **Formats of datasets on the Open Data Portal***

According to the Open Data Barometer, national environmental statistics of the Republic of Moldova are available online[123]. And, in fact, the Republic of Moldova scores quite high in terms of environmental information on the open data portal[124]. Nonetheless, our evaluation is more mitigated when comparing to other countries of the region and in the European Union.

In particular, the Open Data Maturity in Europe 2018 report groups countries according to their open data maturity, into Beginners, Followers, Fast Trackers and Trend Setters. Based on the scores and our evaluation, the Republic of Moldova would most likely belong to the group of "Beginners", at the bridge with the "Followers", characterised as a group of countries that have "successfully developed a basic open data policy" but still have limitations in open data availability and use.

National Bureau of Statistics

The website http://statbank.statistica.md provides a very good interface to select and visualise environmental information. Furthermore, the portal enables downloading the data in machine-readable format. One minus is the absence of cross analysis between environmental indicators (e.g. air and water pollution at one specific place). The portal should also provide a mechanism to view the data on a map.

In addition, the National Bureau of Statistics publishes statistical yearbooks, including one on environment. Yearbooks can be downloaded in *.pdf*, however, most of information in the yearbook is provided only in Romanian and Russian.

---

[123] https://opendatabarometer.org/4thedition/detail-country/?_year=2016&indicator=ODB&detail=MDA

[124] The Open Data Barometer does not provide information about the environmental data published, neither on the quantity.

3 Achieving a high level of maturity for environmental information management

3.1 Main challenges

3.1.1 E-government

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

Table 13. Major problems related to e-governance

Content	**Development of e-services** At the moment, the number of e-services available is still under 200. Hence, the country needs to provide more e-services to citizen and find innovative solutions to engage citizens into decision-making process, but also to simplify public service delivery. **Lack of digitalisation of public administration** Despite the programme on e-transformation, public administrations in the Republic of Moldova still use a lot of paper. In many cases, records are even only available on paper. This is especially true for environmental information.
Infrastructure	**Poor multilingual support** The absence of (good) translation in most government websites undermines international collaboration. **Development and promotion of interoperability standards** Efforts were made to build an interoperability platform. An initiative is ongoing to build a Semantic Catalogue. Nonetheless, many public administrations still have difficulties to exchange data. It is necessary to address this issue at national level. **Lack of integration between local statistical system and the geoportal** In order to leverage on statistical data, it is necessary to align the statistical system with the geospatial system. In addition, it is necessary to foresee the integration / interoperability of all portals containing environmental information.
Network	**In order to foster the implementation of e-services** and reduce resistance towards change, it is required to perform systematic awareness campaigns. **Lack of e-governance coordination among public administrations and Ministries** It is necessary to improve the collaboration of the e-Government agency under the Prime Minister with other public administrations and Ministries.

European Environment Agency

3.1.2 Open data[125]

The major problems and challenges related to open data are presented in the table below.

Table 14. Major problems related to open data

Content	**Poor multilingual support.** The absence of good translation on the open data portal, and also in most government websites undermines international collaboration.
	Lack of available datasets
	At the moment, few datasets are published (over a 1000). It is necessary to undertake measures to raise awareness in institutions to drive the supply of open data. Besides, there is no penalty for not sharing public information.
	Public institutions often publish aggregated data and then **charge for more detailed or raw data**. To some extent, this practice can be considered as part of the business model of multiple public state companies and/or subordinate to ministries.
Infrastructure	The government's **information infrastructure is fragmented** and not all of the information is collected and stored in information systems.
	This leads to discrepancies in information structure, multiple data formats, and inconsistencies in formats of documents.
	The **lack of a common set of classifiers** adds to challenges regarding the standardisation of the pool of public information held outside information systems and databases.
	Unclear API for retrieving public information
	The lack of API well described on the open data portal might undermine the expected economic potential of open data. Indeed, entrepreneurs can have difficulties creating application if they cannot obtain the public data.
	Several government applications **allow for data visualisation but limit the reuse** by not offering "raw" data for bulk download. As such, they might undermine the creation of expected opportunities such as the development by civil society or private sector of better applications or services, which in turn could compete with those provided by the government.
Network	**Lack of efficient communication between public authorities, NGOs and economic agents**
	It is necessary to improve the communication between public authorities, NGOs and economic agents.
	Lack of initiative for re-use of open data
	It is necessary to raise awareness among citizens and entrepreneurs in order for them to start creating an open data "economy" and establish tools for monitoring the re-use of data.

---

[125]https://www.europeandataportal.eu/sites/default/files/2014_moldova_open_data_initiative_in_moldova.pdf

European Environment Agency

3.1.3 Environmental information sharing[126]

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

Table 15. Major problems related to environmental information management

Content	**Lack of harmonisation of environmental information standards with international ones**
	The licensing scheme used at the moment is not harmonised
	For instance, the Open Data portal uses the CC-Common licence, while the Ministry of Agriculture, Regional Development and Environment does not specify any licence. On the other hand, the National Bureau of Statistics only refer to the legal framework in place. It is necessary to harmonise the licensing of public data across institutions. This is particularly true in a context where open data is a priority. Indeed, at some point, some data might be published on 2 portals with different licences.
	Lack of timely environmental reporting
	Even if efforts were made to create annual environmental reporting, the frequency in practice is not maintained. It is necessary to adopt a legal framework defining clear rules for environmental reporting and for its production based on share and reuse of environmental information.
Infrastructure	**Lack of an integrated, comprehensive and efficient environmental quality management system** that would bring together all data regarding quality of environmental components, ensure strengthening of cooperation and information exchange between different institutional actors.
	Digitalisation of environmental public institutions and administration
	At the moment, many environmental data are still available only on paper format. It is necessary to set up objectives to digitalise processes and information as much as possible.
	Lack of a national integrated environmental monitoring system, and lack of activities regarding development and implementation of environmental monitoring at regional and local level (scientific and natural reserves, biodiversity, large river basins and other).
	The number of portal on which environmental information is published is too high
	At the moment, environmental information is spread across websites. It is not clear which portal has the latest information. Hence it is necessary to choose a portal for environmental reporting and data. As a rule, environmental reports should not be published on different portals. Likewise, environmental data should be accessible from a single portal and eventually links ensured with other websites/portals through one single stop-shop.

---

[126] Republic of Moldova Decision No.301 on the Approval of the Environmental Strategy for the years 2014-2023 and of the Action Plan for its implementation, p. 20, 24, 30

European Environment Agency

Network	Although there are a lot of institutions dealing with environmental information **cooperation and sharing between them is still very poor**.
	It is necessary to put in place concrete measures to improve collaboration. These measures could be a combination of legal, organisational and technological actions. Legal: review of legal framework and formalisation of collaboration Organisational: implementation of collaborative processes Technological: provision of tools to simply processes and foster collaboration and sharing, and exchange information on a regular basis.

3.2 Environmental implementation roadmap

This section presents key areas[127] of development for the Republic of Moldova. It is to be noted that these initiatives should be undertaken taking into account regional and international collaboration. In particular, initiatives which were undertaken in other countries could be leveraged. In addition, the development of national standards would benefit if developed regionally and/or aligned to international standards. This especially is true for the design of information systems, metadata standards, portals and interoperability standards.

In addition, the following roadmap is based on the assumption that few elements are already in place for its smooth implementation. If some of these elements are not in place in the country, it is heavily recommended to first address issues related to these topics. In particular:

Long term Digital and Open Data strategy: a national strategy and action plan for Open Data should be in place. It should ensure scoping, management and funding of the national Open Data portal, as well as that sufficient resources are allocated to open data awareness raising activities with both publishers and potential re-users.

General interoperability framework: the country should have in place an interoperability framework or at least its foundation in place. This is especially required for building environmental information systems and ensuring smooth integration / exchange of environmental data.

Open Data policy: the open data policy provides the foundation for a structured approach for public sector information dissemination.

E-government, Open Data and geo-portals: the country should have effective e-government, open data and geo-portals on which environmental information can be shared / disseminated, and where services can be built.

Environmental strategy: this strategy should contain key objectives for fostering sharing and dissemination of environmental information.

Enforcement mechanisms for the collection, sharing and dissemination of environmental information.

It is clear that some of these measures are already in place in the Republic of Moldova (e.g. e-government portal, Open Data portal, etc.). Nonetheless, it is advised to look at these elements from a perspective of environmental information sharing and dissemination, and to update them where appropriate. It is to be noted that these elements are considered to be under continuous development and hence reviewed periodically.

---

[127] At this moment, the roadmap does not take into account potential interdependences of measure and timeframe for their execution.

European Environment Agency

3.2.1 Content

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

Measure	Priority	Description
		- decision-making procedure on non-confidential themes or datasets to be shared and published online and the relevant online portals (e.g. website of the public authority, environmental portals (one web access points for environmental information), geospatial portals, statistical, open data and other portals) - separation of non-confidential information as appropriate - data quality assurance mechanism - stakeholder communication, including public participation procedure in the design, use and update of the environmental information system(s)
		Adopt an environment data policy: - Types and scope of environmental information available - Basic terms of availability and accessibility, including open access and sharing policy - Stakeholder care and support - Licensing standards - Point of contact for access to environmental information
Timely and regular collection and delivery of environmental data in accordance with the Aarhus Convention, the Protocol on PRTRs (as appropriate) and the decisions and recommendations of the Meeting of the Parties to the Convention and the Protocol	High	This action will define practical arrangements for establishing pollutant release and transfer registers within integrated environmental information system(s).
Definition of metadata description standard for all environmental information	High	This action will aim to define standards for the publication/exchange of environmental data and the publication of environmental reports. As a result, it will be easier for institutions to exchange and manage environmental data, while also making easier for citizens to find information. An example could be implementation of EU DCAT-AP standard, which would also enable integration with the European Data portal. Refer to the best practice report to get more information about metadata standards for Open Data

Measure	Priority	Description
Develop and publish quality control mechanisms for environmental data	Medium	This action will: • Assess the current quality control mechanisms from the collection (monitoring) of environmental data to the publication (aggregation, sorting, enhancement) • Provide a standard mechanism for quality control and set minimum standards to respect during the data flow (data gathering, data preparation and cleaning, data publication). • Provide the legal framework for setting obligations at different levels, and penalties in regards with quality controls of environmental data • Implement the quality control mechanisms and set up an annual reporting process for the evaluation of the quality of environmental data To implement these actions, refer to the best practice report to get examples.
Transformation of data published to machine-readable format	Medium	The true potential of environmental data lies in their usability. Ensure the publication of environmental data in machine-readable format.
Inventory, re-engineering and publication of public services as e-services	Medium	Ensure that environment services are described and accessible through the electronic service portal, in accordance with the national standards. For more information about the standardisation of the description of e-services and the development of an electronic service portal, please consult the best practice report.
Harmonise licensing terms and conditions of environmental data to promote its public use and re-use	Low	This action will harmonise all licensing terms and conditions on the different portals used for publishing environmental data. More information about licensing are available in the best practice report.
Carry Open Data impact analysis framework in relation to the environment	Low	Carry on the assessment of the impact of environmental data on the environment, as part of the open data impact assessment framework. For instance, evaluate the following criteria: • Number of environmental data downloaded and re-used • User feedback received/collected • Apps developed using environmental data • Applications and apps developed using environmental data and having an impact on the environment (including re-use of environmental data in other disciplines, for instance transport).

Measure	Priority	Description
		More information about the general open data impact assessment can be found in the best practice report.

3.2.2 Infrastructure

Measure	Priority	Description
Establish a single and user-friendly web-access point for environmental information	High	The single access point can also be designed as an entry points for all environmental policy domains to support the implementation of decision VI/1 of the Meeting of the Parties to the Convention.

The portal should have a standard metadata tool and a tool for the verification of the metadata quality.

The portal should act as a public awareness and communication tool for environmental information.

Authorities should also consider which environmental data to publish to the "eco-portal", and:

• Ensure the continuous maintenance of the access point through the execution of an action plan to ensure the portal's sustainability over time
• Increase the discoverability of environmental data and information by having :
  - a content-driven structure of the menu and
  - advanced search functionality that allow the user to use multiple field search and filter options (e.g. file format) to refine a search; combining the keywords with Boolean operators;
  - offer the possibility to download datasets
  - Specific "Request data" button
  - Public consultations for addressing environmental data demand

The design of the web-access point should be done through the public consultation on its functionality and design.
More information about single access point can be found in the best practices report. |
| Enhance Interoperability of geospatial, statistical, health and environmental information systems | High | At the moment, different information systems and portals produce, consume and disseminate environment data. This action will:

• Undertake a comprehensive review of portals and information systems, including their interfaces and technological implementation

• Provide standards for the design of systems consuming, producing or disseminating environmental data

• Provide interoperability standard for exchange of environmental information between public information systems (e.g. health, environment, |

		energy, and statistics) and provide external APIs for external data consumers. • Provide mechanisms for consolidating environmental data across time and space These actions can be also addressed within an overarching national interoperability framework. Refer to the best practices for more details about this action.
Build an electronic registry of public environmental information	High	This action will aim to make a registry of environmental information available in each institution (i.e. metadata management system), and publishable in light of the legal framework defined. This action could be coupled with the standardisation of metadata for environmental information as well as the definition of standard "environmental information" access points which would enable the registry to collect automatically these information. The registry will be used by public servants to support the continuous development of environmental information systems and the dissemination of environmental information. In particular, it will map systems, databases, institutions, datasets and reports published.

Develop and/or continue to enhance an integrated system for environmental information management, including environmental information in accordance with the Aarhus Convention and the Protocol on PRTRs.		Development of an Integrated Environmental Management System, which will ensure management of data on environmental quality or long-range forecasting. To do so, this action will:
		
		• Make an inventory of all systems used for management of environmental information
		• Define 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 regarding the environment
		  - Document management
		  - Integration with external system (statistical, health, Open Data, transport, geospatial, energy, etc. as needed)
		  - Advanced visualisation tools and capability for integration with business intelligence tools
		• Implement the system
		• Train users and institutions on how to use it
		
		In particular, this action will foresee the development of an efficient system for integrating various types of environmental information at different levels (sub-national, national).

		Note: the system should provide a standard API and a possibility to upload data manually so that compatibility with legacy and external systems can be maintained.
Improve accessibility and use of available environmental data and information by improving the multi-lingual aspect	Medium	This action will provide a full translation to English/Russian of public institutions websites, yearly reports and environmental information metadata. An example of multilingual portal is the GEMET[128], which provides a thesaurus translated in 23 languages, including Russian.
Development of e-services for the environment	Medium	Continue describing the environment services according to the national standards (service passports). Development of environment services as e-services according to service interoperability standard (e.g. e-signature, e-payment). More information about the description of public services can be found in the best practices report.
Strengthening of technical capacity for environmental monitoring	Medium	Provision of modernised monitoring equipment.
Develop and/or continue to enhance an integrated system for environmental information management, including environmental information in accordance with the Aarhus Convention and the Protocol on PRTRs.	Low	Development of an Integrated Environmental Management System, which will ensure management of data on environmental quality or long-range forecasting. To do so, this action will: • Make an inventory of all systems used for management of environmental information • Define 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 regarding the environment - Document management - Integration with external system (statistical, health, Open Data, transport, geospatial, energy, etc. as needed) - Advanced visualisation tools and capability for integration with business intelligence tools • Implement the system • Train users and institutions on how to use it In particular, this action will foresee the development of an efficient system for integrating various types of

---

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

		environmental information at different levels (sub-national, national).
		Note: the system should provide a standard API and a possibility to upload data manually so that compatibility with legacy and external systems can be maintained.
Develop applications to engage citizens in environmental protection through technology, especially extending the scope of existing widely used one regarding meteo forecasts or citizens engagement tools	Low	This action should aim to create a series of apps and/or an "environmental data ecosystem" which would enable citizens to consult and interact with environmental data. For instance, through apps: • consult environmental information in real time according their location • the public could report poaching, mark polluted areas, etc. • the public could take part into environmental friendly events in their neighbourhood to fight pollution Integration of environmental data with popular national apps, where possible.

3.2.3   Institutional cooperation (network)

Measure	Priority	Description
Establish a collaborative institutional framework for the implementation of an Open Data concept	High	This action will strengthen the necessary institutional framework for managing open data. This action will emphasis on the need to create a strong cooperation between institutions in order to ensure the publication of public sector information (PSI).
Continuously ensure availability of adequate capabilities for handling environmental and open data issues	Medium	This action will assess existing capacity of organisations for dealing with environmental information. It will continuously address methods, procedures, mandates, tools & technical maturity, skills and resources for handling environmental data.
Promote international and regional cooperation on good practices, challenges and lessons learned in the implementation of the points of this roadmap	Medium	Identify forums and meetings where experience can be shared.
Building capacity for environmental monitoring	Low	Provision of human resources for performing environment monitoring. Professional development/ training plan for civil servants and/or data stewards or data officers working with data (organised in the frame of the

Measure	Priority	Description
		professional development programmes for civil servant). Capacity building – official training plan (Mandatory) for people responsible for data publication and recognised certifications for these people to increase the motivation and to be formally recognised as professional development training within the public bodies.
Develop a framework for measuring the social, political, environmental and economic impact of Open Data	Continuous	This action will develop a framework for measuring the social, political, environmental and economic impact of Open Data. The framework will be tailored to take into consideration environmental data.
Implementation of policies regarding improvement of public awareness	Continuous	Raise public awareness on environmental information, its accessibility and related issues.
Raise awareness about open government and open data among the citizens and economic operators	Continuous	Driving demand for open government and data through greater awareness. Undertake a series of activities for promoting re-use and sharing of environmental information: • Hackaton • Forums • Promotion campaigns • Develop incubators • Develop public private partnership Develop cooperation between national bodies and NGOs and the academic sector.