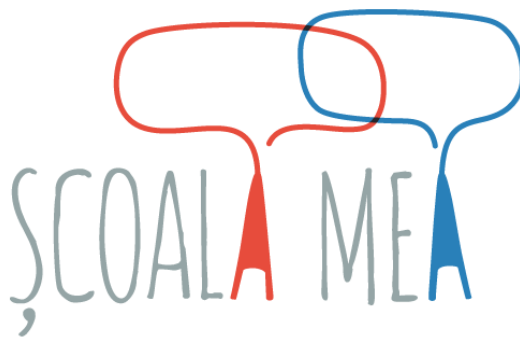# OPEN DATA READINESS ASSESSMENT IN EDUCATION

ȘCOALA MEA

Social accountability for the education reform in Moldova.
Evaluation for 2016.

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■ Introduction

Open data readiness assessment is carried out as part of "Scoala Mea - Empowered citizens enhancing accountability of the education reform and quality of education in Moldova" Project. The main goal of the project is to encourage Moldovan citizens to engage with local, regional and national authorities in evidence-based policy and budget dialogue regarding the reform of educational sector, the quality of services and the development priorities of primary, lower secondary and upper secondary schools, and to create an environment where the social accountability initiatives could develop. In this context, the data opening in educational system is both a condition and a factor in the development of the social audit of schools. Thus, taking into account the crucial importance of the data opening in the social audit of schools, the aim of this assessment is to present a complex picture of the availability of open data in education, which could be used first of all to foster development of social audit in schools.

This assessment was conducted on the basis of the methodology developed by the World Bank for the assessment of open data at the Government level[1]. Thus, the assessment was performed on eight dimensions: (i) Leadership, (ii) Policy and legal framework, (iii) Institutional framework, responsibilities and skills of the staff, (iv) Data of the Ministry of Education, (v) Demand for Open Data, (vi) Open Data Ecosystem, (vii) Financing, (viii) National ICT infrastructure and skills.

Each analysed dimension is presented in three sections: *Evidence, Assessment, Recommendations*. The evidence of open data availability was identified based on the available information and the opinions of the Government officials and stakeholders. Each evidence has been marked with the symbol **(+)** if it is positive or **(-)** if it is negative for data opening. In their turn, evidences are grouped in sub-dimensions which describe the respective dimension. The assessment of each dimension is presented in one of three colours:

- Green (G) - denotes a condition that facilitates significantly the open data;
- Yellow (Y) - represents a situation in which evidences do not indicate crucial obstacles, but neither favour the opening of data (with some improvements it could facilitate it);
- Red (R) - evidences denote critical obstacles in the process of data opening.

Recommendations for each dimension are formulated in terms of removing obstacles and achieving a favourable situation as regards data opening.

At the end of the assessment, constraints related to the use of open data for social audits in schools are presented.

Until the moment, two assessment were performed, in 2014 and in 2014. The third report, for 2016, includes: recorded progress during the year, assessment of how recommendations were implemented, as well as new recommendations.

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[1] The World Bank's Open Government Data Working Group has developed an 'Open Data Readiness Assessment' (ODRA) methodological tool for conducting an action-oriented assessment of the readiness of a government - or even an individual agency - to evaluate, design and implement an open data initiative, http://opendatatoolkit.worldbank.org/docs/odra/odra_v3.1_methodology-en.pdf

■ Assessment of open data in education

By the Government Order No 4 of 29 April 2011[2] to ensure "transparency of the decision-making process and citizens' participation in the governance, as well as the access of citizens and businesses to government public data", the www.date.gov.md portal was launched. The e-Government Centre, subordinated to the State Chancellery, was appointed as responsible for portal maintenance, coordination of activities for its development and provision of the necessary methodological support to the public authorities. Subsequently, this initiative was included as a basic pillar in the Strategic Program for Technological Modernization of the Governance (e-Transformation)[3].

Furthermore, the Republic of Moldova has joined in April 2012 the global initiative for Open Government Partnership (OGP) in the second group of countries, following the development process of the Government e-Transformation Initiative related to "transparency, access to public sector information, accountability, citizen's involvement, fighting corruption and provision of high-quality public services"[4]. In the OGP context, the open data are regarded as a tool that ensures the right to information, contributing to transparency and accountability[5]. According to the Republic of Moldova agenda in the OGP, the Government approved in the session of December 1st, 2016, the Open Government Action Plan for 2016-2018.

At the same time, data opening in education depends not only on the general policies initiated by the Government on this subject, but also on the policies of the Ministry of Education as well as on other factors that are not under direct control of authorities. Development of civil society, mass media, Information and Communication Technology (ICT) sector and IT skills is not less important in shaping the supply and demand of open data. Thus, the success of opening data in education is defined by all these factors, which can change their importance in opening data at the different stages of the of Open Government concept implementation.

In order to cover the whole range of factors that determine or influence the opening data in education, the assessment was carried out based on the methodology developed by the World Bank[6], which contains 8 dimensions: (i) Leadership, (ii) Policy and legal framework, (iii) Institutional framework, responsibilities and staff skills, (iv) Data of the Ministry of Education, (v) Demand for Open Data, (vi) Open Data Ecosystem, (vii) Financing, (viii) National ICT Infrastructure and Skills. While assessing the impact of factors on these dimensions, it was taken into account their importance at the moment for the availability of open data in education. Thus, **three levels of importance** were set: very important, fairly important and important, which were taken into account when formulating recommendations and conclusions on the availability of open data.

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[2] Government Order No 43 of April 29, 2011, http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=338417

[3] Strategic Program for Technological Modernization of Governance (e-Transformation), approved by Government Decision No 710 of 20 September 2011, http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=340301

[4] Information on the Republic of Moldova in the OGP, http://www.opengovpartnership.org/country/moldova

[5] „Open Government Partnership = Access to information as a right + Transparency and accountability as a public policy + Open data as an instrument.", European Public Sector Information Platform: Topic Report no 2013/10, The influence of the Open Government Partnership (OGP) on the Open Data discussions, Bogdan Manolea, Veronica Cretu.

[6] The World Bank's Open Government Data Working Group has developed an 'Open Data Readiness Assessment' (ODRA) methodological tool for conducting an action-oriented assessment of the readiness of a government - or even an individual agency - to evaluate, design and implement an open data initiative, http://opendatatoolkit.worldbank.org/docs/odra/odra_v3.1_methodology-en.pdf

1. LEADERSHIP

Importance: Very high

Context: Open Data Programs require the implementation of change - often including legal, institutional, technological and cultural changes - and may affect stakeholders both inside and outside government. Focused, strong, sustained, political/senior leadership is therefore critical to helping a government overcome resistance and inertia of all kinds, to helping incentivize actors to make the necessary changes in a timely and effective manner and to achieving the desired objectives and benefits of an Open Data Program.

Evidence 1.1 Is there a visible leadership at the level of Ministry of Education (MoE) on data opening?		

2016	(-)	No public statement (in the Government sessions or during public events) of the minister on
2015	(-)	the commitment to open data was identified, although this could be considered an important
2014	(-)	signal of support.

2016	(+)	According to the Order of the MoE No 96 of 26 February 2015 on approval of Open data
2015	(+)	catalogue and of how-to notes on filling open data documents, deputy ministry of education
2014	(-)	was appointed as responsible for the opening data process, Information and Communication Technologies Centre in Education was assigned as responsible for filling open data documents and e-Transformation and Computerization Division was assigned as responsible for publishing open data documents on the date.gov.md portal. But the Order reflects names of people which are not in the corresponding positions. At the same time, by the Order of the MoE No 847 of 27 September 2016 on data updating in the Mapping system of primary, secondary and high schools[7] and Order of the MoE No 920 of 1 November 2016 on the extension of deadline for updating Educational Management Informational System[8] deputy minister of the education and e-Transformation and Computerization Division were appointed as responsible for data updating. At the same time, it is worth to mention that according to the pattern setting of e-Transformation units, approved by the Government Decision No 499 of 6 July 2012, point 6 from Chapter II states that it "is an internal autonomous unit subordinated directly to the management of the authority".

2016	(-)	Compared to previous period, there are no public documents and interventions identified for
2015	(+)	2016 that the minister/ministry is supportive of open data concept in a proactive way.
2014	(+)	

2016	(-)	There are no provisions in the normative acts drafted and promoted by the MoE during 2016
2015	(+)	that contain commitment to the principles of open governance.
2014	(+)	

2016	(-)	Compared to 2015, in the activity reports of the MoE for 2016 there are not mentioned actions
2015	(+)	performed by the MoE to improve the quality of the informational and data management
2014	(-)	system. Only in the Report on 2016-2018 Government Action Plan implementation for quarter

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[7] http://ctice.md/ctice2013/wp-content/uploads/2016/10/Ordin-nr.847-din-27-septembrie-2016-Actualizarea-date-din-SIME.pdf
[8] http://ctice.md/ctice2013/wp-content/uploads/2016/11/Ordin-920-din-01.11.16-SIME.pdf

III, 2016 (Education sector), there are action on publication of school files and budgets for general education institutions, but these are recurrent actions[9].

Evidence 1.2 **Is there any open data management (organizational) structure that would be responsible for development and implementation of open data/open governance initiatives in all institutions within the ministry?**

2016	(+)	By the MoE Order No 847 of 27 September 2016 on data updating in the Mapping system of primary, secondary and high schools[10] and Order of the MoE No 920 of 1 November 2016 on the extension of deadline for updating Educational Management Informational System, e-Transformation and Computerization Division is appointed at the level of the ministry as responsible for data opening and updating process. Compared to previous year, in 2016 only one consultant position in the Division is not filled, the head of Division being hired in April. At the moment, this division is demonstrating a pro-active attitude in organizing the opening data process using EMIS.
2015	(+)	
2014	(-)	

2016	(+)	E-Transformation and Computerization Division within the MoE is responsible for coordination of educational policies drafting, monitoring and evaluation as regards ICT implementation and didactic support, provision of methodological support and strengthening of the strategic planning capacity concerning ICT and educational records. It also coordinates the ICT implementation in subordinated institutions, rayon / municipal departments for education, youth and sports.
2015	(+)	
2014	(+)	

2016	(+)	No interest groups or individuals who would be against the open data initiative are identified in the MoE. Rather, due to problems related to the personnel turn-over and institutional memory, especially of that which is directly responsible for process coordination, technical and operational constraints appear in the management and development of open government initiatives within the ministry.
2015	(+)	
2014	(+)	

Evidence 1.3 **Are there any promotional activities, implementation plans on open data?**

2016	(+)	Action plans on EMIS updating were approved by the Order No 847 of 27 September 2016 and No 920 of 1 November 2016. At the same time, in the annual work plan of the MoE for 2016[11] there are action regarding open data and EMIS implementation.
2015	(+)	
2014	(-)	

2016	(+)	Within the "Strengthening education policy and increasing its support among direct and indirect beneficiaries" and "Strengthening society effort to affirm an open, participatory, performance-based education" projects, implemented with the support of Soros Foundation Moldova, the Open Data in Education portal was developed. This portal grants access for public to the School files, which contain information about pupils' cohort, qualifications of teaching staff, execution of the budget, results of tests and national exams for about 1373 general education institutions. In 2016, in the framework of „Civil society monitoring of education reform", functionalities of the portal were extended to view the information in the form of infographs. At the same time, within "Scoala mea" project, implemented by Expert-
2015	(+)	
2014	(-)	

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[9] http://edu.gov.md/sites/default/files/raport_pag_tr.iii_2016.pdf

[10] http://ctice.md/ctice2013/wp-content/uploads/2016/10/Ordin-nr.847-din-27-septembrie-2016-Actualizarea-date-din-SIME.pdf

[11] http://edu.gov.md/sites/default/files/plan_me_2016_1.pdf

Grup, a number of events were organized at the local and national level to discuss the importance of community involvement in educational reform, the topic on data opening in education being also tackled.

2016	**(+)**	The ministry is supporting the initiative of opening data in schools, as part of "Empowered
2015	**(+)**	Citizens Enhancing Accountability of the Education Reform and Quality of Education in
2014	**(+)**	Moldova" Project. According to the Order of the Ministry of Education no 1201 of 28 November

2014, educational institutions display on mandatory basis on informative boards and web-pages, if available, school files which contains data on students, qualification of teachers, annual budgets and results of tests on completion of primary education, of national exams on graduation of secondary education and baccalaureate exams.

Evidence 1.4 Is there a political context at the Government level that facilitates the opening of data at MoE?

2016	**(+)**	There is plenary support and firm commitment to implement the open data and open
2015	**(+)**	governance concept at the Prime Minister's level. The Government public data portal
2014	**(+)**	www.date.gov.md was launched by the Prime Minister's Provision No 43 of 29 April 2011.

2016	**(+)**	There is E-Government Centre at the central level, subordinated to the State Chancellery,
2015	**(+)**	which is directly responsible under the open data component for creating and maintaining the
2014	**(+)**	open data portal and providing necessary support to authorities in order to open their data.

2016	**(+)**	According to the Government Decision No 710 of 20 September 2011 regarding the approval
2015	**(+)**	of the Strategic Program for Technological Modernization of the Governance (e-
2014	**(+)**	Transformation), the Government approved in the session of 1 December 2016 the Action Plan

on Open Government for 2016-2018. At the same time, e-Government initiatives are included in the Action Plan of the Government for 2016-2018.

2016	**(-)**	Although there is firm support for open government at the level of the Prime Minister, central
2015	**(-)**	public authorities are reluctant to open owned data. This is proved by the implementation
2014	**(-)**	manner of open government initiatives by the public authorities, which are not eager to make

fully use, with a pro-active approach, of the opportunities created by the existing general framework related to open government.

2016	**(+)**	At the ministerial level, there is already awareness of the relation between open governance
2015	**(+)**	as a driving force for other objectives, such as transparency and accountability, economic
2014	**(-)**	growth and improvement of public services quality.

2016	**(-)**	No parliamentary group that would rise awareness and really promote openness and
2015	**(-)**	transparency in governance was identified.
2014	**(-)**	

2016	**(-)**	In the National Participation Council, whose mandate expired in 2014, there was a sectoral
2015	**(-)**	working group aimed at monitoring the reforms related to e-Governance. During 2016
2014	**(+)**	discussions were initiated for its revival, however the National Participation Council still

remains inactive.

2016	(+)	There are capacities at the society level to perform an independent assessment of data opening.
2015	(+)
2014	(+)

2016	(+)	National Bureau of Statistics has the capacities to support open data policy. In February 2015, NBS has published its open data catalogue on date.gov.md portal, and updated during 2016 all 54 data sets in education on the portal.
2015	(+)
2014	(+)

CONCLUSIONS

Compared to 2015, in 2016 limited progress was recorded in the *Leadership* dimension, most recommendations remaining unimplemented. Thus, orders to update data in the educational management informational system were approved, responsible deputy minister of education for open data being appointed, responsible subdivision for opening data being designated (e-Transformation and Computerization Division and its head) and opening data activities were included in the working plan of the MoE, personnel in e-Transformation Division was hired as well as Action Plan on Open Government 2016-2018 was approved. Nevertheless, it is worth mentioning that no declaration at the level of MoE was identified on firm commitment to open data. Moreover, no document, normative acts and public declarations were identified which would demonstrate attachment to open data and to open government.

ASSESSMENT of leadership

Table 1. Assessment of leadership

Evidence area	Importance	Assessment	
		R/Y/G	**Comments**
Leadership (MoE)	Very high	Yellow	The spirit of openness for open data initiatives is supported by the MoE through the actions to organize and support the process, but neither pro-active attitude exist nor public declarations are issued in this regard
Management structure	High	Green	E-Transformation and Computerization Division was designated as responsible for the process management, being staffed, including with the head of Division
Open data promotion	High	Yellow	Actions to promote open data are planned, but not reported as implemented
Context	High	Green	The existence of the e-Government Centre and date.gov.md portal facilitates a lot data opening at MoE
PER TOTAL	Very high	Yellow	

RECOMMENDATIONS on leadership

Table 2. Recommendations on leadership

Actions	In charge	Comments
1. Promotion of opening data in education concept in public statements	Minister, Deputy minister	**Status:** *Stated in 2015. Not completed.*
2. Update documents of the MoE on appointing responsible persons for opening data within the MoE	Minister	**Status:** *Stated in 2015. Not completed.*
3. Full involvement of the State Secretary of the MoE (after his/her hiring) in coordination process	Minister	**Status:** *Stated in 2015. Not completed.*

4. Inclusion of actions regarding data promotion / opening in the planning documents of the MoE for the next period (working plan, Strategic Development Program, sectoral expenditure strategy)	eTCD, PAMED	**Status:** *Stated in 2015. Not completed.*

2. LEGAL AND POLICY FRAMEWORK

Importance: High

Context: The long-term success and sustainability of an Open Data Program depends greatly on the enabling policy and legal framework. Open Data requires that a range of policy and legal issues be addressed – for example, with respect to the licensing and reuse of data, ensuring privacy and data protection, and anonymizing personal and personally identifiable data. It is important to identify at an early stage the existing policies, laws and regulations with respect to a core set of issues, and to identify actual or perceived obstacles in order that policy or legal change can be initiated early if essential.

Evidence 2.1. **Are there any policies on open data, (re)use of public sector information?**

2016	(+)
2015	(+)
2014	(+)

The policy framework at the Government level serves as a driving force for data opening in education - Law No 305 of 26 December 2012, on re-use of public sector information (the law is enforcing the Directive 2003/98/CE of the European Parliament and of the Council of 17 November 2013 on re-use of public sector information) and Government Decision No 886 of 8 November 2013 approving Methodological Norms to enforce this Law, Government Decision No 700 of 25 August 2014 approving the Conception on principles of governmental open data, Government Decision No 701 of 25 August 2014 approving the Methodology on publishing governmental open data.

2016	(+)
2015	(+)
2014	(+)

The document can be re-used by: *reproduction, copying, publication and submittal under the relevant legislation; dissemination and redistribution; adaptation, modification, transformation and extraction of data from the document with the purpose to create derived documents; exploitation for commercial purpose*, provided that the source of the document is confirmed, including any statement of assignment specified by public authority or institution that posted the document on the single governmental open data portal and, if possible, to provide a "link" to these Terms.

2016	(+)
2015	(+)
2014	(+)

Re-using of data is free of charge. However, certain fees may be established for re-use of data for commercial purposes, as well as for services of copying documents requested in writing.

2016	(-)
2015	(-)
2014	(-)

The term "Commercial purpose" is not exhaustively defined in normative acts, situation which could lead to unjustified fees for access to information. It should be noted that methodological norms on re-use of public sector information includes only examples of data usage for commercial purposes - by combining with other documents or by including the document in own product or application.

2016	(-)	Open data catalogue of the MoE was published in March 2015 on the date.gov.md portal.
2015	(+)	However, annual report on re-use of data still remains undrafted and unpublished on the web
2014	(-)	page of the MoE (according to points 21 and 22 of Methodological Norms to enforce the Law No 305 of 26 December 2012 on re-use of public sector information).

2016	(-)	There are no policies on open data in education developed by the MoE, currently it is
2015	(-)	implementing the decisions at the Government level. Thus, the MoE does not have a pro-active
2014	(-)	policy on open data, but is limited to implement some fragmented activities imposed by Government. There is action plan on Open Data in education, but it has to be developed and approved.

2016	(+)	There is a favourable organizational and technical framework for the MoE to develop and
2015	(+)	implement its own policies on open data.
2014	(+)	

2016	(-)	Data controller bears responsibility for personal data protection (Articles 29 and 30 of Law No
2015	(-)	133 of 8 July 2011 on personal data protection). Concurrently, according to the Terms of
2014	(-)	accessing and reusing public sector information, specified in the Annex No 1 of Methodological Norms for the implementation of the Law No 305, the re-user is accountable for any irregularities[12]. Thus, according to the current wording it can be interpreted that re-user will be responsible, including for a potential disclose of personal data, even if they are taken from a source which by definition is "open", therefore it should not contain personal data.

Evidence 2.2 What are the policies / laws on state secrets and access to information?

2016	(+)	There is a legal framework that can be characterized as favourable to the development of the
2015	(+)	open governance concept, including open data. The main acts underlying the legal and
2014	(+)	regulatory framework on the access to information and on the development of concept on open data are:

    1.   Law No 171 of 6 July 1994 on Commercial Secret;
    2.   Law No 982 of 11 May 2000 on Access to Information;
    3.   Law No 1069 of 22 June 2000 on Computer Science;
    4.   Law No 467 of 21 November 2003 on Computerization and State Information Resources;
    5.   Law No 245 of 27 November 2008 on State Secret;
    6.   Law No 133 of 8 July 2011 on Personal Data Protection;
    7.   Law No 305 of 26 December 2012, on re-use of public sector information;
    8.   Law No 91 of 27 June 2014 on digital signature and electronic document;
    9.   Government Decision No 1123 of 14 December 2010 on approval of Requirements to security of personal data while processing them in informational system on personal data;

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[12] Excerpt from the Annex 1 of Methodological Norms for the implementation of Law No 305, approved by GD No 886 of 08 November 2013, "The holders shall guarantee that the document is available for free, according to the clauses envisaged by these Terms, but they do not guarantee that the document does not contain any error or irregularity, nor that they will provide documents on a continuous basis. The holders are not responsible for the loss, injury or damage of any kind caused by third parties, resulting from the re-use of documents. The re-user is the only responsible for documents re-use. He/she shall not mislead third parties or distort the content of the documents, their source and data on last update."

10. Government Decision No 710 of 20 December 2011 on approval of the Strategic Program for Technological Modernization of the Government (e-Transformation);
11. Government Decision No 857 of 31 October 2013 on the National Strategy for the Information Society Development "Digital Moldova 2020";
12. Government Decision No 886 of 8 November 2013 on approval of Methodological norms for the enforcement of Law No 305 of 26 December 2012 on re-use of public sector information;
13. Government Decision No 700 of 25 August 2014 on approval of the Conception on open government data principles;
14. Government Decision No 701 of 25 August 2014 on approval of the Methodology for publishing open government data.

2016	(+)	The Government has approved the Conception on open government data principles by the Government Decision No 700 of 25 August 2014. It provides basic guiding principles for the public authorities on data publishing.
2015	(+)	
2014	(+)	

Evidence 2.3 What policies / laws help or hinder the civil society and the public to use information?

2016	(+)	The Parliament of the Republic of Moldova has aligned relevant legislation to the European Union law, by adopting the Law on re-use of public sector information No 305 of 26 December 2012, and subsequently by approval of the Government Decision No 886 of 8 November 2013 on approval of the Methodological norms to enforce the Law No 305 of 26 December 2012 on re-use of public sector information.
2015	(+)	
2014	(+)	

2016	(-)	Even if such cases were not identified at the MoE, in other public institutions it is a common practice not to reveal data to the public due to the lack of some mechanisms to "isolate" personal data (or commercially sensitive data) from the rest of the document (or information). Thus, under the pretext of protecting personal or commercial data, the access to the public interest information is often limited. The most known case in this sense was the interdiction to make the names of companies' founders publicly available as it represent personal information.
2015	(-)	
2014	(-)	

2016	(+)	Methodological norms to enforce the Law No 305 of 26 December 2012 on re-use of public sector information, approved by Government Decision No 886 of 8 November 2013 force the central public administrative authorities to publish annually reports on documents re-use.
2015	(+)	
2014	(+)	

CONCLUSIONS

There was no progress on *Legal and policy framework* dimension. At the general level, the legal and policy framework is favourable for data opening, but at the level of the Ministry of Education there is no a coherent and pro-active policy on this subject, existing a draft medium-term planning document that need to be developed and approved. At the same time, a general problem is opening data which include personal information.

ASSESSMENT of legal and policy framework

Table 3. Assessment of legal and policy framework

Evidence area	Importance	Assessment	
		R/Y/G	Comments

Policies on open data	Very high	Yellow	General legal framework is favourable, but the educational policy framework needs to be developed
Policies on access to information	High	Green	The general legal framework fosters data opening in education
Use of open data	Very high	Yellow	Data security policies are the bottleneck
PER TOTAL	High	Yellow	

RECOMMENDATIONS on legal and policy framework

Table 4. Recommendations on legal and policy framework

Actions	In charge	Comments
1. Develop a medium plan on data opening in education	Deputy minister, eTCD	**Status:** *Stated in 2014. Not completed.* Including subordinated institutions.
2. Develop and include vision, priorities and activities concerning data opening in education in the strategic planning documents of the MoE	eTCD, PAMED	**Status:** *Stated in 2015. Not completed.*
3. Develop and approve by the minister of education the list of open data in education according to the plan (p.1)	eTCD, PAMED	**Status:** *Stated in 2014. Partially completed.* Currently the list is not approved by the Ministry of Education.
4. Post on MoE web page the act by which the open data catalogue was approved	Deputy minister, eTCD	**Status:** *Stated in 2015. Not completed.*
5. Draft and post on MoE web page the annual report on re-use of documents	Deputy minister, eTCD	**Status:** *Stated in 2015. Not completed.*

3. INSTITUTIONAL FRAMEWORK, RESPONSIBILITIES AND SKILLS

Importance: High

Context: As well as political and senior leadership, middle management level skills and leadership are important to success: creating an Open Data Program requires agencies to manage their data assets with a transparent, organized process for data gathering, security, quality control and release. To effectively carry out these responsibilities, agencies need to have (or develop) clear business processes for data management as well as staff with adequate ICT skills and technical understanding of data (e.g., formats, metadata, APIs, databases). Engagement among agencies and at all levels of government to set common standards and remove impediments to data interoperability and exchange is also vital, and requires mechanisms for inter-agency collaboration.

In addition to handling the "supply side" of creating an Open Data Program, agencies need the structures and capabilities to engage with communities that reuse Open Data including developers, companies, non-governmental organizations, other agencies and individual citizens.

Evidence 3.1 Is there an Agency that has the mandate, required technical skills and experience to manage the Open Data portal?

2016	(+)	There is a single portal where open data are posted by all central public institution -
2015	(+)	date.gov.md – administrated by the e-Government Centre, which is a public institution
2014	(+)	founded by the State Chancellery. The institution has a significant political support of the Prime Minister and the Secretary General of the Government. As of August 2015, the executive director of the e-Government Centre has the status of Prime Minister adviser for electronic government issues.

2016	(+)	The Centre was created in 2010 and thanks to effective knowledge management and strategic
2015	(+)	partnerships with countries and institutions with relevant expertise, the Centre have a strong
2014	(+)	position in leadership and Open Data management.

2016	(+)	E-Government Centre is responsible to implement Open Data in central administration
2015	(+)	authorities, offering full organizational, methodological and technical support.
2014	(+)	

2016	(+)	E-Government Centre has the role of main promoter of Open Data portal for beneficiaries and
2015	(+)	authorities.
2014	(+)	

Evidence 3.2 Does the MoE have a structure dedicated to data management in education?

2016	(+)	There is e-Transformation and Computerization Division in the structure of the MoE, which is
2015	(+)	responsible for coordination of the drafting, monitoring and evaluation of education policies
2014	(+)	related to ICT implementation and didactic support, provision of methodological support and strengthening of the strategic planning capacity on ICT and educational records. It also coordinates the ICT implementation in subordinated institutions, rayon / municipal departments for education, youth and sports.

2016	(+)	E-Transformation and Computerization Division within the Ministry of Education was staffed,
2015	(-)	including the head of Division, who was hired in April 2016.
2014	(-)	

Evidence 3.3 Does the MoE have informational systems (system) and/or other viable and effective mechanisms for data collection and management?

2016	(+)	MoE has launched the Educational Management Information System (EMIS)[13], which is used
2015	(+)	for primary, lower secondary and upper secondary schools mapping. With the support of Soros
2014	(+)	Foundation Moldova, EMIS was developed to grant access for public to School files, which contain information about pupils' cohort, qualifications of teaching staff, execution of the budget, results of tests and national exams for about 1373 general education institutions. However, it should be mentioned that EMIS was developed before the Education Code entered into force, hence the structure of this platform should be adjusted. Afterwards, the platform,

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[13] According to the Government Decision No 270 of 13 April 2007 approving the Concept of Educational Information System.

adjusted and extended, could became an integrated informational system in education. At the same time, it will have to be connected to other information systems, including those of other ministries and agencies. Having the purpose to strengthen the quality, openness and use of education statistics to better inform the ongoing education reforms, the World Bank is granting 365 thousand USD beginning 2016 to (i) strengthen statistical and analytical capacity of the MoE, the Center for Information and Communication Technologies in Education, local authorities and schools in using EMIS, (ii) improve quality and reliability of data collected through EMIS and (iii) to open data in education sector.

2016	**(+)**
2015	**(+)**
2014	**(+)**

There is Information and Communication Technologies Centre in Education subordinated to the MoE, which is responsible for ICT management in education, including EMIS. Nevertheless, it is worth mentioning that due to uncompetitive salaries, it is difficult to retain IT specialist that would properly develop and administrate informational systems. Thus, even if the Center for Information and Communication Technologies in Education is the owner and administrator of databases in education, these cannot be accessed or process according to necessities, including at metadata level. The Center will benefit of World Bank support to facilitate the development of digital services in education.

2016	**(-)**
2015	**(-)**
2014	**(-)**

At the moment, there is no integrated informational system or systems with a high level of integration. Also, currently the information produced in other ministries, e.g. Ministry of Finance, Ministry of Health of Ministry of Labour, Social Protection and Family. The MoE has developed a draft Government decision on approval the Conception of Automated Information System in Education according to the new Education Code, which was launched for public consultations in October 2015, but the process did not advanced.

2016	**(+)**
2015	**(+)**
2014	**(+)**

The existence of a large number of IT-skilled people allows relatively easy to organize data collection and production in the educational system.

Evidence 3.4 Is there any process to assess the quality of the provided services?

2016	**(+)**
2015	**(+)**
2014	**(+)**

There are processes at the national level to evaluate the quality of service provided in relation to open. Evaluations are performed by experts or independent organizations. This topic is also addressed through Independent Reporting Mechanism under the Open Government Partnership. At the same time, some evaluations by the e-Government Centre, as a component of the e-Governance progress.

2016	**(-)**
2015	**(-)**
2014	**(-)**

The MoE does not have its own process to evaluate the quality of provided services in relation to open data, e-services etc.

Evidence 3.5 Is it clear who is responsible for what data in the MoE and in the educational system?

2016	**(+)**
2015	**(+)**
2014	**(+)**

By the Government Decision No 899 of 27 October 2014 on approval of the Regulation regarding mapping system of primary, secondary and high schools, the subject of legal relations this system creation and functioning were defined. At the same time, the order of the

> MoE No 1139 of 12 November 2014 was approved, according to which persons responsible for data updating in EMIS at the level of the MoE were appointed.

CONCLUSIONS

There are some achievements on *Institutional framework, responsibilities and skills* dimension, as regards the staffing the unit responsible for data opening at the level of the MoE (e-Transformation and Computerization Division) and launched a World Bank financed project to develop EMIS, open data in education and enhance institutional capacity in this respect. However, a major weakness lasts in regard to the evaluation of the quality of provided services, related to open data.

ASSESSMENT of institutional framework, responsibilities and skills

Table 5. Assessment of institutional framework, responsibilities and skills

Evidence area	Importance	Assessment	
		R/Y/G	Comments
Existence/role of government Agency responsible for data opening	High	Green	E-Government Centre provides open data infrastructure and methodologically coordinates the opening data process
Unit responsible for data in the MoE	Medium	Green	There is a unit designated to coordinate data opening process, staffed with personnel
Informational infrastructure	Very high	Yellow	There is no an integrated informational system in education, although there are technical possibilities to extend EMIS for the entire sector
Assessment of services quality	Medium	Yellow	MoE does not perform such an assessment
Distribution of duties	Medium	Green	There are government decisions and orders of the MoE which describe legal relations and those responsible for the process
PER TOTAL	High	Green	

RECOMMENDATIONS on institutional framework, responsibilities and skills

Table 6. Recommendations on institutional framework, responsibilities and skills

Actions	In charge	Comments
1. Adjust the information system to the Education Code and develop it for the entire educational system	Deputy minister, eTCD	**Status:** *Stated in 2014. Not completed.* The World Bank will support the strengthening of the information system
2. Develop the information system in order to facilitate access and processing of data and metadata, including by their aggregation/ disaggregation according to necessities	Deputy minister, eTCD	**Status:** *New action.* This action could be integrated in the World Bank support for EMIS strengthening.
3. Setup internal evaluation (within the MoE) of the quality of services related to data opening	Deputy minister, internal audit, eTCD	**Status:** *Stated in 2014. Not completed.* eTCD has a technical role in the evaluation process, so this activity is advisable to place under control of deputy minister

4. DATA IN EDUCATION

Importance: High

Context: Open Data programs can build on established digital data sources and information management procedures within government where they already exist. Where data is only available in paper form it will be hard to release as Open Data and in reusable format quickly and cheaply. Conversely, good existing information management practices within government can make it much easier to find data and associated metadata and documentation, identify business ownership, assess what needs to be done to release it as Open Data and put processes in place that make the release of data a sustainable, business-as-usual, downstream process as part of day-to-day information management.

Evidence 4.1	**What are the policies on the management of education information?**	

2016	(-)	At the level of educational system there is not any comprehensive policy on collection, storage and use of data. At the same time, the Education Management Informational System (EMIS) was launched to automate the processes of collecting, updating and storing in a very high stage of finality (it is not commissioned yet), which is intended to automate the processes of collecting, updating and storing data on general education in the Republic of Moldova. EMIS could be extended for the entire educational system, in this respect a project being initiated and financial sources being planned beginning 2016.
2015	(-)	
2014	(-)	

2016	(-)	Open data in educational system are posted on www.date.gov.md by the MoE and the NBS, but the information on public expenditures in educational system is managed by the Ministry of Finance (in BOOST, which is not updated since 2015). Thus, there is no holistic view of the data, moreover there is no clarity on their interaction in order to exclude discrepancies and overlaps.
2015	(-)	
2014	(-)	

2016	(+)	To protect personal data, there is in place general legal and institutional framework necessary to ensure protection of personal data.
2015	(+)	
2014	(+)	

2016	(+)	By Order of the MoE No 1056 of 10 October 2014, the Regulation on ensuring security of personal data processed by the Ministry of Education while using the Mapping system of primary, lower secondary and upper secondary schools, in order to implement de provisions of the Law No 133 of 8 July 2001 on personal data protection was approved. At the same time, the National Centre for Personal Data Protection has registered the operator of personal data and/or or personal data recording system, by Decision No DD-1415710498630 of 11 November 2014, and personal data processing activities were authorised by Decision No DA-1415710116318 of 11 November 2014.
2015	(+)	
2014	(-)	

2016	(+)	Procedures to control, standardize and archive EMIS data are part of the system. At the same time, NBS data are delivered according to data production procedures established at the level of the NBS.
2015	(+)	
2014	(+)	

2016	(-)	
2015	(-)	

2014	(-)	For the rest of data (except EMIS and NBS provided data), no processes to ensure data quality and their archiving were identified. There are visible incomplete data in some data sets that reveals problems in ensuring the authenticity of the published data.

Evidence 4.2 Does the MoE have a coherent image of the data and information that it owns, collects and distributes in education?

2016	(+)	In April 2015, Open Data Catalogue of the Ministry of Education was published on date.gov.md portal, which specifies necessary elements for their management (responsible person, owner, updating frequency, sharing method, etc.).
2015	(+)	
2014	(-)	

2016	(+)	There are systems under development or already operational which ensure data management (included in these systems) in order to meet own and beneficiaries' needs, but a regulation that would state their interaction when providing open data is needed.
2015	(+)	
2014	(+)	

2016	(+)	The fact that EMIS is in place, which now covers general educational sector, is a big opportunity because it can be extended on all areas of education, completed with an application on management of educational institutions (central office and subordinated institutions) and it could become the only integrated system for the sector.
2015	(+)	
2014	(+)	

Evidence 4.3 Data storage and level of digitization

2016	(-)	There is no assessment of the amount of digital data. Concurrently, considering the existence of EMIS for the general education sector, without comprising other data that are related to preschool, extracurricular, specialized, higher education, etc. it can be assumed that the amount of digital data is about 40% -50%. A consultant is being engaged in the framework of the World Bank grant to map open data.
2015	(-)	
2014	(-)	

2016	(-)	The information before 2012 is even less digitized, because EMIS data are introduced beginning 2012.
2015	(-)	
2014	(-)	

2016	(+)	Due to EMIS, data storage from this system is performed automatically on a separate storage device in a secured room at the Information and Communication Technologies Centre in Education (ICTCE).
2015	(+)	
2014	(+)	

2016	(+)	ICTCE is subordinate to the Ministry of Education.
2015	(+)	
2014	(+)	

Evidence 4.4 What data are already open?

2016	(+)	According to the information on the date.gov.md portal, so far (December 2016) 57 sets of data have been opened by the MoE and 54 by the NBS in the education sector. At the same time, there is mapping system of primary, lower secondary and upper secondary schools at the level of the MoE. Also, the Ministry of Finance has a database BOOST, where disaggregated data are open regarding expenses in the public sector, including in education.
2015	(+)	
2014	(+)	

2016	**(+)**	The information presented by MoE, in the .csv or .xlsx format, can be previewed and is
2015	**(+)**	available as well through API[14]. The information can be downloaded free of charge. The
2014	**(+)**	information presented by NBS can be downloaded in various formats and can be formatted on user queries.

2016	**(-)**	Most of the information presented by the MoE is not updated according to data description,
2015	**(-)**	thus the overwhelming part of the information refers only to the 2009-2010 academic year.
2014	**(-)**	Some data are presented since 2008-2009, the rest of data - since 2009-2010.

2016	**(-)**	Some data sets presented by MoE are not fully completed. This creates an overall negative
2015	**(-)**	impression on data accuracy. No data quality assurance procedures were identified, and the
2014	**(-)**	lack of those is also confirmed by divergences between presented data with the NBS data.

2016	**(-)**	The MoE data have no metadata description which would be easy to access. Thus, it is difficult
2015	**(-)**	to understand what some indicators represent, which are data sources, collection
2014	**(-)**	methodology etc. This limits a lot the proper use of data, makes it difficult to use data from multiple sources and their combination.

2016	**(+)**	The NBS data are described, presenting methodology and explanatory information, they can
2015	**(+)**	be accessed on user queries, and most of them are updated in accordance with the description
2014	**(+)**	of the data.

Evidence 4.5 Are there any capacities at the ministerial level or outside it with sufficient skills in "data management" that could serve as leadership for new initiatives on open data?

2016	**(+)**	At the MoE and at the national level, there are capacities (NBS, eTCD, ICTCE, IT teaching staff,
2015	**(+)**	e-Government Centre) that could allow data collection, transmission of informational flows,
2014	**(+)**	information analysis and publishing. At the same time, to achieve qualitatively this goal, punctual and periodical trainings are needed.

2016	**(-)**	Data collection by persons who do not have direct responsibilities stated in job descriptions
2015	**(-)**	concerning data collection (or management), do not have a financial support and diminishes
2014	**(-)**	data quality. At the moment, data are introduced by IT teaching staff, even if they do not have such responsibilities. Each educational institution and rayon department for education should designate responsible persons for statistical data collection and systematization.

CONCLUSIONS

On *Data in education* dimension, there is no progress registered. However, there are numerous shortcomings regarding the vision, policy, assessment of data volume, description, publishing and updating of data in education.

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[14] API (Application Programming Interface) is an interface between software and facilitates their interaction, IT Dictionary, http://www.it-area.ro/dictionar/API

ASSESSMENT of data opened by the Ministry of Education

Table 7. Assessment of data opened by the Ministry of Education

Evidence area	Importance	Assessment	
		R/Y/G	**Comments**
Policies on data management	Very high	Red	It is necessary to formulate a holistic vision on data collection, stocking and use at the level of educational system, ensuring the quality of data
Clarity on data ownership	Medium	Green	There is an Open Data Catalogue of the Ministry of Education, which contains necessary elements for data management
Data digitization	Very high	Yellow	Small amount of digitized data
Data already opened	High	Yellow	A large part of information is not updated, without description cannot be used with other sources
Capacity, skills	High	Yellow	There is potential, but the clarity on training and remuneration of some persons is lacking
PER TOTAL	High	Yellow	

RECOMMENDATIONS on data opened by the Ministry of Education

Table 8. Recommendations on data opened by the Ministry of Education

Actions	In charge	Comments
1. Draft a comprehensive policy on collection, storage, quality assurance and use of data in education, which will include the responsibility and interaction among institutions which hold such data, first of all NBS an MoE	Deputy minister, eTCD	**Status:** *Stated in 2014. Not completed.* The user should receive a coherent information on the sector, no matter what institution submit data
2. Take an inventory of the data held in the educational system	Deputy minister, eTCD	**Status:** *Stated in 2014. Not completed.* It could be an activity preliminary to the development of an informational system at the educational system level
3. Data updating according to their description	eTCD	**Status:** *Stated in 2015. Not completed.*
4. Extend categories of collected data and increasing their protection level, especially in the case of pupils with disabilities and of data regarding social and economic status of parents	Deputy minister, eTCD	**Status:** *Stated in 2015. Not completed* Changing the Order of the MoE No 1056 of 10 October 2014
5. Publish annual (or biannual) reports on open data, at least in the form provided by the Annex 7 of GD No 886 of 08 November 2013	eTCD	**Status:** *Stated in 2014. Not completed.* It is a legal obligation
6. Inclusion of modules on open data in education in the teacher training programs	eTCD	**Status:** *Stated in 2015. Not completed.*

5. DEMAND FOR OPEN DATA

Importance: Very High

Context: The value of data is in its use. A strong demand-side "pull" of data is important not only in creating and maintaining pressure on government to release data but also in ensuring that the wider Open Data Ecosystem develops and that Open Data is turned into economically or socially valuable services for citizens. The "pull" can come from civil society, the private sector, international organizations, donors and individual citizens, and from the government itself.

Evidence 5.1 What is the level and nature of demand for data in the civil society and media?

2016	(+)	There are (although few, but there is a positive trend) Non-Government Organizations that monitor and analyse educational sector. At the same time, the existing demand level can be characterized as incipient. This is primarily due to the fact that social audit on education is at an early stage.
2015	(+)	
2014	(+)	

2016	(+)	Education is a popular topic that enjoys the press attention, but the level of analysis and depth is moderate to low. The most common topics are: Baccalaureate, reorganization of schools, teachers' salaries, and topics related to financing of education, expenses related to school.
2015	(+)	
2014	(+)	

2016	(-)	Currently, the information presented on the open data portal does not contain comprehensive and relevant data so that journalists and/or citizens could easily draw conclusions, monitor, react or participate in the decision-making in education.
2015	(-)	
2014	(-)	

2016	(+)	Along with the implementation of "My School - Social Accountability for the Education Reform in Moldova" project (Expert-Grup) and making publicly available "school file" for 1373 general education institutions within the "Strengthening education policy and increasing its support among direct and indirect beneficiaries", „Strengthening society effort to affirm an open, participatory, performance-based education" and „Civil society monitoring of reforms in education sector" projects (Soros Foundation Moldova), a stable demand for social audit in education could be created.
2015	(+)	
2014	(+)	

2016	(+)	By "My School" and "BudgetStories.md" projects - Expert-Grup uses actively and visibly open data in education.
2015	(+)	
2014	(+)	

Evidence 5.2 What is the level and nature of demand for data in business/private sector?

2016	(-)	No structured demand from the private sector concerning education data was identified. Business sector does not understand its own benefits of open data in education. At the same time, based on the interviews it can be concluded that there were some requests from the NGOs that were/are interested in developing various applications (including websites) dedicated to data (information) in education.
2015	(-)	
2014	(-)	

2016	(-)	There are insufficient examples of data used for commercial purposes, neither in other
2015	(-)	sectors.
2014	(-)	

2016	(+)	At the same time, there is a relatively developed IT sector, which under favourable conditions
2015	(+)	would be able to develop products based on open data in education.
2014	(+)	

Evidence 5.3 What is the level of presence and involvement of MoE in social media and other digital channels?

2016	(+)	Facebook, Odnoklassniki and Twitter are the main social media platforms used in Moldova.
2015	(+)	The Ministry of Education is now on Facebook, being an active user on this platform. The
2014	(+)	Facebook profile is well managed, advertisements, links and useful information are posted periodically (up to 5 posts per day). The page has 18,392 likes and it is on the 4ᵗʰ place among the most popular Facebook pages of state institutions, following the Ministry of Defence, Ministry of Foreign Affairs and European Integration, Ministry of Justice and Ministry of Interior.

2016	(-)	No policy of the MoE on its presence on 'social media' or on other digital platforms was
2015	(-)	identified. At the same time, "Guidelines on the use of social networks in the public sector",
2014	(-)	which was developed at the level of the Government, could be used to draft policy at the ministry level.

2016	(+)	The level of citizens' participation on digital platforms, especially of young persons, is
2015	(+)	increasing, digital platforms and digital access being the most dynamic as a form of citizen
2014	(+)	involvement.

2016	(-)	No analysis of the MoE was identified on topics that are most interesting to the public and on
2015	(-)	who are the data beneficiaries. At the same time, e-Transformation Division has intention to
2014	(-)	develop a module on this subject for the official web page of the ministry.

Evidence 5.4 What is the level of demand for data among MoE and other Government institutions and among institutions in the education sector?

2016	(+)	There is at least one potential demand for open data from other ministries, central
2015	(+)	administrative authorities and LPA. At the same time, the exchange of information among
2014	(+)	institutions mostly occurs on official request, without using open data.

2016	(-)	No policy on analysis of request of data coming from other institutions was identified. As a
2015	(-)	rule, requests for permanent data are sent to the National Bureau of Statistics.
2014	(-)	

2016	(-)	Provision of information within the educational sector and in relation to other public
2015	(-)	institutions does not have an integrated character. For example, financial data are insufficient
2014	(-)	

to analyse the situation of a school and, to fill in the gaps, it is necessary to address the Ministry of Finance.

Evidence 5.5 How responsive is the MoE to requests for data?

2016	**(+)**	The most common opinion is that the Ministry of Education is open to requests for
2015	**(+)**	information, especially when requests are approved by the top management of the institution.
2014	**(+)**	

2016	**(-)**	No analyses or processes related to the demand and supply of the data in the education sector
2015	**(-)**	exist, therefore there is no mechanism to meet effectively and efficiently requirements.
2014	**(-)**	

CONCLUSIONS

On *Demand for open data* dimensions, no progress was recorded. Open data in education are used mostly by non-government institutions to monitor and to analyse educational sector, but there are no evidences about their use in the private sector. At the same time, there is no analysis of demand and use of data by public authorities in the public policy cycle.

ASSESSMENT of demand for open data

Table 9. Assessment of demand for open data

Evidence area	Importance	Assessment	
		R/Y/G	**Comments**
Demand from the civil society and media	Very high	Yellow	There is a nascent demand, related especially to the social audit
Demand form the business sector	High	Red	The are no evidences, but it is not an obstacle to open data
Involvement of the MoE in 'social media' and other digital channels	High	Yellow	Has a positive dynamic
Inter-sector demand and among the MoE and other Government sectors	Medium	Red	Informational relations among sectors and the MoE, and among educational institutions do not traditionally occur through open data
MoE responsiveness to request for data	Very high	Yellow	'Responsiveness' of the MoE should be based on policies and instruments, rather than on will of the administration
PER TOTAL	High	Yellow	

RECOMMENDATION on demand for open data

Table 10. Recommendations on demand for open data

Actions	In charge	Comments
1. Perform analysis of demand for open data from civil society, media and citizens, private sector	eTCD	**Status:** *Stated in 2014. Not completed.* Necessary to cover demand for open data and MoE objectives

2. Develop tools for monitoring, evaluation and identification of the demand for open data from civil society, media and citizens, private sector	eTCD	**Status:** *Stated in 2014. Not completed.* At the moment some steps have been taken in this direction, but they do not have a systemic approach, due to which cannot achieve necessary effects	
3. Analysis and explanation of data for which there is high interest from citizens, media and civil society, as well as presentation of information in a comprehensive form using this basis	Subdivisions of the MoE, eTCD	**Status:** *Stated in 2015. Not completed.*	
4. Develop a concept on the presence in 'social media' and other digital channels	Communication and Public Relations Division, eTCD	**Status:** *Stated in 2014. Not completed.* It is a fast-evolving domain. This would enhance the efficiency and effectiveness of MoE communication	
5. Develop an identification and record keeping mechanism of demand for open data from authorities, including those from education	eTCD	**Status:** *Stated in 2014. Not completed.* It is an action to present complex information, when data from many public institutions are needed to have a clear image about the activity of an educational institution	

6. OPEN DATA ECOSYSTEM

Importance: High

Context: Experience among leading governments has demonstrated that Open Data initiatives are more sustainable and high-impact when Open Data efforts use an "ecosystem" approach – meaning governments invest not only in supplying data but also address the policy/legal framework, institutional readiness, capacity building (for government and infomediaries), citizen engagement, innovation financing and technology infrastructure. Governments need to play a multi-dimensional role in an Open Data ecosystem and create new types of partnerships with a wide range of stakeholders.

Evidence 6.1 **Are there any media institutions or journalists that have necessary skills to use open data in order to formulate useful information, easily understood by the wide public?**

2016	**(+)**	There are some journalists and media institutions, it is true that not so many, which are concerned with the public sector. Education, as a sector, is interesting for the press, but interventions are mainly based on the politicians' statements on reforms, wage level and education quality, rather than on open data analyses.
2015	**(+)**	
2014	**(+)**	

2016	**(+)**	Private media is dominant on the market. There are functional and active media associations.
2015	**(+)**	
2014	**(+)**	

2016	**(-)**	
2015	**(-)**	

2014	(-)	Concurrently, according to Freedom House, Freedom of the Press Report of 2016[15], Moldovan press is "partially free".

2016	(+)	The electronic media is ascending and along with it the number of information sources is increasing as well, including the publications of nongovernmental sector.
2015	(+)	
2014	(+)	

Evidence 6.2 Is the Ministry of Education involved in promoting data re-use activities?

2016	(-)	No activities of the MoE that would involve software developers in the use and re-use of open data in education were identified.
2015	(-)	
2014	(-)	

2016	(+)	At the same time, promotional activities were organized by the E-Government Centre regarding all data held by the Government.
2015	(+)	
2014	(+)	

2016	(-)	No records exist on (re)use of MoE open data by other Government agencies.
2015	(-)	
2014	(-)	

Evidence 6.3 Is there a software development industry?

2016	(+)	There is a relatively well developed ICT sector in the Republic of Moldova.
2015	(+)	
2014	(+)	

2016	(-)	Generally, the use of software based on open data is low, being even lower in education.
2015	(-)	
2014	(-)	

Evidence 6.4 Is there a community of educational and/or research institutions that has persons trained in data analysis and provide trainings in this area?

2016	(+)	There is a basis of high education that can be used to improve technical skill needed to analyse data.
2015	(+)	
2014	(+)	

2016	(+)	Computer science courses are included in the high school curricula.
2015	(+)	
2014	(+)	

2016	(-)	At the same time, there are few people from the public and non-government sector that are sufficiently trained to analyse educational data.
2015	(-)	

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[15] https://freedomhouse.org/report/freedom-press-2016/table-country-scores-fotp-2016

2014	(-)	

2016	(+)	The Ministry of Education can count on computer science teachers regarding its policies and
2015	(+)	activities in this area.
2014	(+)	

CONCLUSIONS

On *Open Data Ecosystem* dimension, the progress almost is lacking. Although there are media institutions which have a certain interest towards education sector, their interventions are limited to the declarations of political decision makers. Analysis of open data in education and formulation of conclusions regarding the impact of educational policies has a sporadic character, due to the fact that there are no activities to accelerate open data reuse and the capacities to analyse data are almost lacking.

ASSESSMENT of open data ecosystem

Table 11. Assessment of open data ecosystem

Evidence area	Importance	Assessment	
		R/Y/G	Comments
Media institutions	High	Yellow	Media sector is not well developed in terms of open data use, but it is developing, new segments have appeared, especially using the Internet
Promotion of the MoE data reuse	High	Red	MoE does not have a pro-active attitude on (re)use of open data
Software industry	Medium	Green	It is not very innovative, but the existing skills cover the existing demand
Academic / research community	Medium	Green	Even if the situation in this respect is not very hopeful in general, the existing conditions are good enough to facilitate data opening
PER TOTAL	Medium	Yellow	

RECOMMENDATIONS on open data ecosystem

Table 12. Recommendations on open data ecosystem

Actions	In charge	Comments
1. Develop measures to facilitate development of some communities of journalists, IT professionals, analysts for open data development	eTCD, Communication and Public Relations Division	**Status:** *Stated in 2014. Not completed.* It could be done with the support of the existing professional associations, initiative groups. Strengthening IT professionals and analysis of education data (e.g. creation of a forum for computer teachers)
2. Develop measures for a better adaptation of the IT and other related domain curricula to the existing demand and competition conditions	eTCD	**Status:** *Stated in 2014. Not completed.* This recommendation is mentioned as well in the White Book of ICT and other documents

7. FUNDING OF OPEN DATA INITIATIVES

Importance: Medium High

Context: Funding with respect to both the "supply side" and "demand side" of Open Data is important to ensure that the objectives of an Open Data Program are met.

Evidence 7.1 Existence of resources for the early stage of open data initiative

2016	**(+)**	At the central level, funding is provided to implement open data initiative as part of e-Government initiative to maintain open data portal operational.
2015	**(+)**	
2014	**(+)**	

2016	**(-)**	Although no request for open data concept development that would not have funding was identified at the MoE, this is not due to availability of resources, but rather to the lack of planned activities on the subject.
2015	**(-)**	
2014	**(-)**	

Evidence 7.2 Existence of financial resources to finance the development of various software that will use open data.

2016	**(-)**	No such resources were identified at the MoE or sectoral level, but even no request was made in this respect. A web page which contains information about schools, http://afla.md/, was identified, but it was not updated for three years. Moreover, the MoE cannot identify the administrator of the web page.
2015	**(-)**	
2014	**(-)**	

2016	**(+)**	There were and still are many donors' initiatives (including the World Bank) regarding the development of different software for open data use.
2015	**(+)**	
2014	**(+)**	

Evidence 7.3 Are there sufficient financial resources to develop the IT infrastructure and expenses for the management of initiatives on open data in education?

2016	**(-)**	No funds allocated from own sources (state budget) were identified to develop some important ICT project in education.
2015	**(-)**	
2014	**(-)**	

2016	**(+)**	The MoE budgets resources to ensure implementation of existing ICT platforms, including the open data initiative. However, due to the lack of a clear policy on open data developed at the level of the MoE, there is no clarity on whether these resources are sufficient to ensure enough well-trained staff to meet the requirements.
2015	**(+)**	
2014	**(+)**	

2016	**(+)**	The World Bank provided financial assistance to the MoE to develop the Education Information System. Already developed or still under development information systems were developed mainly with the support of external partners.
2015	**(+)**	
2014	**(+)**	

Evidence 7.4 Does the Government or the Ministry of Education have funds for innovation?

2016	**(+)**	There are several opportunities to finance innovation software. These facilities can be
2015	**(+)**	accessed through programs that support SMEs and innovations at the Academy of Sciences.
2014	**(+)**	

2016	**(+)**	There are sufficient opportunities to access resources for a more active involvement of NGOs
2015	**(+)**	in development of data use software, promotion of transparency and accountability.
2014	**(+)**	

2016	**(-)**	No government funds have been identified to implement innovative projects in education.
2015	**(-)**	
2014	**(-)**	

2016	**(+)**	Public-private partnerships in ICT is a relatively known and discussed topic in the IT sector. At
2015	**(+)**	the Government and at the Ministry of Information Technology and Communications level,
2014	**(+)**	several events (workshops) have been organized, including with external support.

CONCLUSIONS

On *Funding of open data initiatives* dimension, the recorded progress was very law. There is funding at the central level, mostly from foreign sources, to promote e-Government initiatives. At the sector level, informational systems were developed with the support of the World Bank, but the funding as well as demand for funding to develop software which would use open data is lacking.

ASSESSMENT of funding of open data initiatives

Table 13. Assessment of funding of open data initiatives

Evidence area	Importance	Assessment	
		R/Y/G	**Comments**
Funding of open data initiatives	Very high	Yellow	There is funding to maintain open data portal operational (e-Gov), while no resources were identified to implement initiatives in the sector
Funding of education software	High	Yellow	No resources have been identified, but there is a potential donors' support
Funding of IT infrastructure in education	High	Yellow	Important projects are funded with external assistance
Funding of innovations	Medium	Yellow	There are several funding opportunities at the Government level, but this is not sufficient and is difficult to access
PER TOTAL	High	Yellow	

RECOMMENDATIONS on funding of open data initiatives

Table 14. Recommendations on funding of open data initiatives

Actions	In charge	Comments
1. Assess the cost of activities related to open data, ICT infrastructure, software promotion and draft a financial plan to cover this cost	eTCD	**Status:** Stated in *2014. Not completed.* Most of the expenses for IT infrastructure and other expenses of the educational system will be included in the budgetary subprogram "Policies and Management in Education", and the part of the current expenses - to the respective subprograms of the educational sectors
2. Create partnerships and develop necessary public conditions for the civil society to establish these partnerships with the MoE or with subordinated institutions	eTCD, Communication and Public Relations Division	**Status:** Stated in *2014. Not completed.* This would facilitate fundraising for NGOs which use open data in education

8. NATIONAL INFRASTRUCTURE OF TECHNOLOGIES AND SKILLS

Importance: High

Context: In very practical ways, Open Data Programs normally rely for their success at least in part on the national technology infrastructure, in terms of technology and communications services and the ICT skills among officials, infomediaries and the general public.

Evidence 8.1 Existence of physical access and accessible price to Internet infrastructure

2016	(+)	There is a well-developed infrastructure of access to Internet, which covers the vast majority of the population, provided by cable and/or mobile networks. Internet upload and download speed is one of the highest in the world[16], ranking Moldova the 20th on the list. Moldova has an ICT Development Index of 5.75 and is part of upper medium group and a sub-index on access to infrastructure of 6.64[17]. Networks of optical fibre cover 90% of the country's localities, mobile networks cover 99% of the country and has reached a penetration level of 122%[18].
2015	(+)	
2014	(+)	

2016	(+)	The number of users is quite high and has a dynamic of high growth. According to the National Regulatory Agency for Electronic Communications and Information Technology, about 79% of households had Internet access at the end of 2015, compared to 58% in 2012. The number of subscribers to fixed Internet increased by 4.9% compared to 2014, while the number of mobile Internet users increased by 4.2%[19]. Broadband Internet connection services are affordable, Moldova being ranked 38th according to The Global Information Technology Report 2016[20].
2015	(+)	
2014	(+)	

2016	(+)	
2015	(+)	

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[16] http://testmy.net/rank/countrycode.down/.

[17] Measuring the Information Society Report, 2016, http://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2016/ŞISR2016-w4.pdf

[18] Strategy on competitiveness growth of the industry of information technology for 2015-2021, Government Decision no.254 of 14 May 2015.

[19] Evolution of electronic communications market in 2015, ANRCETI, http://www.anrceti.md/files/filefield/Evolutia_Pietei_2015(rom).pdf

[20] The Global Information Technology Report 2016, http://www3.weforum.org/docs/GITR2016/WEF_GITR_Full_Report.pdf

2014	(+)	There is free Internet access in some landscaped parks and squares, university campuses and other public places (cafes, airport, bus stations (for subscribers of one operator), public transportation). In general, there is a trend of extending the Internet access in public places.

Evidence 8.2 Does the Government use services and infrastructure shared by several institutions?

2016	(+)	As e-Government Centre was setup, activities of developing and sharing resources and digital services have been intensified.
2015	(+)	
2014	(+)	

2016	(+)	E-Government Centre has purchased services to implement a solution for interoperability in e-Governance in December 2013.
2015	(+)	
2014	(+)	

2016	(+)	In July 2012, e-Government Centre has purchased hardware, software and services related to M-Cloud (Stage-1). In April 2014, Software Licenses for M-Cloud Platform and Development of platform level services were purchased.
2015	(+)	
2014	(+)	

2016	(+)	There are a number of standards in this area, including standards on metadata, approved by the national organization responsible for standards - National Standardization Institute. There is also a Technical Committee (TC-28) responsible for standardization in Information Technology.
2015	(+)	
2014	(+)	

2016	(+)	By the Government Decision No 656 of 5 September 2012 the Programme on Interoperability Framework was approved.
2015	(+)	
2014	(+)	

2016	(+)	Centre of Special Telecommunication is responsible for the protection of data which are important for the state.
2015	(+)	
2014	(+)	

Evidence 8.3 How good are the ICT skills of the MoE staff, its top management and subordinated institutions?

2016	(+)	The top management and civil servants of the ministry have basic IT skills and use them.
2015	(+)	
2014	(+)	

2016	(+)	There trainings on e-Governance organized at the ministry level.
2015	(+)	
2014	(+)	

2016	(+)	Knowledges and skills to use ICT are taken into account when the civil servants of the ministry are appraised.
2015	(+)	
2014	(+)	

Evidence 8.4 How strong is the ICT industry in Moldova?

2016	(+)	In 2013, the ICT sector (service, production and trade) contributed with approximately 8% to GDP reaching MDL 7.7 billion[21] and employed over 22,000 people (in 2011)[22].
2015	(+)	
2014	(+)	

2016	(+)	The software industry, although is not very large, could grow very quickly, being able to cover local demand linked to the development of open data initiative. In 2011, the share of IT industry in GDP was of 0.82% or approximately MDL 720 million, employing 7600 people[23].
2015	(+)	
2014	(+)	

2016	(+)	There is a National Association of Private ICT Companies. It is an active organization, having a large presence in promoting the interests of the sector. The private sector shows a strong motivation for a greater involvement in local projects.
2015	(+)	
2014	(+)	

2016	(+)	There are few platforms for start-ups in information technology. However, there are development prospective as the ICT Centre of Excellence was launched at the end of 2015 with the support of USAID, project to which other important development partners could join.
2015	(+)	
2014	(-)	

2016	(-)	Government has few projects implemented by the private ICT sector. At the same time, there are 8 major state-owned enterprises in ICT.
2015	(-)	
2014	(-)	

2016	(-)	Even if the general level on the *skills* pillar is in the middle of world ranking (Network Readiness Index 2016), ranking the 71st out of 143, with a score of 4 points out of 7, the worrying situation is that two individual indicators related to education, *quality of schools' management* and *quality of education system,* rank Moldova the 118th and 97rd, respectively[24].
2015	(-)	
2014	(-)	

Evidence 8.5 How active is the MoE and its subordinated institutions on the Internet?

2016	(+)	The Ministry has a regularly updated website.
2015	(+)	
2014	(+)	

2016	(-)	Unless some cases, Ministry's website is only an „Advertisement Board", there is only one e-service.
2015	(-)	
2014	(-)	

2016	(-)	Not all the subordinated institutions, especially vocational schools, high schools and boarding schools, have website or are present on the Internet. At the same time, the existing web pages of many educational institutions are not consonant and present outdated and scarce
2015	(-)	
2014	(-)	

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[21] Strategy on Increasing the Competitiveness of the Information Technology Industry for 2015-2021, approved by the Government Decision No 254 of 14 May 2015.

[22] ICT Sector in Moldova: Policy White Book 2012, http://ict.md/files/White%20Book%202012%20Romanian%20Version%20FIN.pdf.

[23] Ibid. 14.

[24] The quality of school management indicator is part of Pillar 2 (Business and Innovation) while the quality of education system is part of pillar 5 (skills) of the Network Readiness Index from the Global Information Technology Report 2015, http://www3.weforum.org/docs/GITR2016/WEF_GITR_Full_Report.pdf .

information. There is no published information on the web page of the MoE about the activity of the subordinated state owned enterprises, according to normative provisions. In general, there is no progress compared to 2015.

2016	(+)	There is a Government website servicii.gov.md. By approving the "Actions Plan for Open
2015	(+)	Governance" and the "Strategic Program for Technological Modernization of Governance" the
2014	(+)	Government wants to digitize over 500 traditional services by 2020.

CONCLUSIONS

On the *National infrastructure of technologies and skills* dimension, a low progress is recorded. There is well-developed infrastructure for Internet access, the number of households connected to the Internet is growing, and the access to the Internet is free of charge in many public spaces. At the level of the MoE there are sufficient ICT skills, but digital channels for citizens' involvement are not sufficiently used. Alike, there are few initiatives to promote ICT projects.

ASSESSMENT of national infrastructure of technologies and skills

Table 15. Assessment of national infrastructure of technologies and skills

Evidence area	Importance	Assessment	
		R/Y/G	Comments
Interne / mobile infrastructure	High	Green	A wide and relatively affordable coverage, as well in terms of cost
Use of shared services and infrastructure	Medium	Green	Although not all shared platforms are functional, they are in a process of rapid development
Skills in the MoE	High	Green	There are fundamental skills, but an organizational power and continuous trainings are required
ICT industry	Medium	Yellow	ICT industry and in general IT is not considered as a constraint in the open data development, but neither cannot be seen as a force that contributes to this process
MoE presence on the Internet	Medium	Yellow	MoE presence on the *social media* and digital channels is still not sufficient to achieve a high level of involvement and participation of citizens
PER TOTAL	High	Yellow	

RECOMMENDATIONS on national infrastructure of technologies and skills

Table 16. Recommendation on national infrastructure of technologies and skills

Actions	In charge	Comments	
1. Develop a policy on external assessment (by civil society and using its resources) of the level and quality of presence of educational institutions on websites	Deputy minister, eTCD	**Status:** *Stated in 2014. Not completed.* This would allow independent assessments, which could serve as motivation and guidance to increase the presence of educational institutions on the Internet	
2. Strengthen the role of the MoE through eTCD, Communication and Public Relations Division and the rest of the MoE subdivisions	eTCD, Communication and Public	**Status:** *Stated in 2014. Not completed.*	

as a leader in opening national data at the national level, including by using own pages of educational institutions	Relations Division, MoE subdivisions	By its mission, the MoE has more intellectual resources to become the driving force in several Government reforms

■ Constraints to implement of social audit in schools

According to the "Empowered Citizens Enhancing Accountability of the Education Reform and Quality of Education in Moldova" project, social audit is being performed at the level of schools in a number of localities from the Republic of Moldova. The ultimate goal of social audit is to enhance the quality of education in available financial conditions. In order to achieve this goal, comprehensive information is required on all operational aspects of a school, as well as general information on the operation and performance of schools in the region and in the country. These include non-financial and financial indicators on school inputs, performed activities and achieved results, school management, on some results of the assessments and controls that take place in schools and on education policy documents. Therefore, information and data from multiple sources are needed, in some cases being necessary to combine data in order to obtain relevant indicators on the real activities of the school.

Table 17 reflects data availability according to the main groups of data needed to ensure an effective involvement of citizens in obtaining a quality education in schools having pre-set funding.

Table 17. Data availability in educational sector

	Types of open data	In Open Data	In EMIS
1	Identification data of the school (address, name, code, type, etc.)	Partially, but not critically	Full information
2	Data on school infrastructure and its characteristics	Only a small part, without characteristics of the infrastructure	Partially exist
3	Facilities available for teaching process	There is equipment (laboratories, TV, computers, web)	Partially exist
4	Data on teachers and workload (profile, experience, degrees, merits, etc.)	Partially, but it would be enough at an early stage	Full information
5	The number of pupils and structure of classes, subjects, extracurricular activities	Partially, but extracurricular activities are only on the list of extramural activities	Partially exist
6	Financial indicators (at least in the economic budget classification structure)	Partially, without sufficient details in MoE, but exists in BOOST	Partially exist
7	Reports on learning outcomes (grades, promotion, skills)	Partially existing	Full information
8	Reports on the external assessment (or/and internal assessment) on observing school standards (quality standards assessments)	Not existing	Not existing
9	School management (category, level of training, managerial degree)	Not existing	Full information
10	Auxiliary personnel (level of training, ratio per student and per teachers)	Not existing	Full information
11	Data needed for inclusive education	Partially existing	Partially exist

The analysis of open data in the education system has shown that the level of open data can meet the information requirements for social audits in schools, with some constraints. At the same time, along with the implementation of the System of standards for hub schools and the Education Management Information System (EMIS), the informational basis and data production opportunities will be considerably improved. A

temporary solution would be formulating requests for data required to the rayon departments for education and to schools.

At the same time, it is necessary to note that an easy access to data is possible only by developing an interface, via which the user could form tables required by concrete queries (requests), similar to the NBS' one. It is also necessary to fill the data with financial information, which could be taken from the Ministry of Finance. But, as regards financial information, there are some constraints related to data opening in treasury system, amendments of the legal framework regarding competences in education of authorities and additional funding from various sources (including the parents' contributions). In this respect, it is necessary a commitment of the State Treasury on opening data in education and data of rayon departments for education, so that data would be published monthly (or at least quarterly) in the disaggregated structure of budget classification.

Moreover, for a comprehensive coverage with data and information, besides data from the EMIS and the Treasury, it is necessary to publish assessment reports and other monitoring documents related to didactic process and school functioning (e.g. fire inspection report, etc.). Among these, surveillance and monitoring activities that are compulsory under the legal framework on schools and didactic process can be listed, and the results (reports) should be published in electronic form in the "school file", which will be centrally stored as a component of the EMIS. Ideally, to ensure an easy access to the data of a school, it is necessary to make it possible to access all data related to a school in one place.

Another constraint is the schedule for opening and updating data. For an effective social audit, it is very important for the information to be available at the right times, when draft decisions are developed, immediately after the reporting periods (monthly and/or quarterly, biannually, annually). The information published with delay basically becomes useless, and in some situations can be daunting even for citizens to get involved.

For an effective social audit, it is not enough to have access to information about only one particular school, but it is necessary to have available similar information for as many as possible schools. Therefore, opening data for schools must become a policy for the Ministry of Education, facilitating and encouraging at the same time the rayon departments for education and schools to have their own open data initiatives.