OECD Digital Government Studies

Open Government Data Report

ENHANCING POLICY MATURITY FOR SUSTAINABLE IMPACT

OECD

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BETTER POLICIES FOR BETTER LIVES

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Foreword

The OECD work on open government data (OGD) was established in 2013 in response to the growing interest of OECD member and partner countries for support in the design of good policies and practices on open government. OGD is an instrument for greater government transparency and openness and a valuable resource for improved public service delivery, business development, civic innovation and data-driven journalism, among others. For OGD to deliver the expected results there is a pressing need to establish the right frameworks and policy environment.

Open government data has helped highlight and reinforce the links between government data and its use. This has emphasised the importance of defining sound data policies and data governance models, within broader efforts to support the digital transformation of public sectors.

The OECD Open Government Data project has been completed by the Reform of Public Sector Division (GOV/RPS), which is part of the OECD Directorate for Public Governance (GOV).

Digital government and open data policies are cross-cutting by nature, which connects them to other policy areas also relevant for good governance. These include public sector budgeting, expenditure and performance, public trust, public service delivery, public sector integrity and public contracting, public sector employment, innovation and digital skills, justice, gender and open state policies.

The OECD Open Government Data project also contributes to the OECD Going Digital project which supports governments and policy makers advance in the digital transformation of their public sectors, economic activities and societies overall.

This report draws upon the *2014 OECD Recommendation on Digital Government Strategies* and the OECD analytical framework for open government data which was first laid out as part of the *2013 OECD Working Paper on Open Government Data: Towards Empirical Analysis of Open Government Data Initiatives*. This analytical framework set the foundation for the development of the *OECD Open Government Data survey*, which has been administered across OECD member and partner countries in 2013, 2014 and 2016/17.

The data collected in the 2014 and 2016/17 versions of the survey were used for the development and publication of the pilot version and the 2017 edition of the *OECD Open Useful and Reusable data (OURdata) Index*, and the policy insights discussed in this report.

This report also benefited from the participation of national delegates from OECD member and partner countries in the OECD Working Party of Digital Government Officials (E-Leaders), the OECD Expert Group on Open Government Data, and the OECD extensive expertise on digital government, dating back to 2003, reflected in the publication of e-government, digital government and open data policy reviews in countries such as Sweden, Norway, Sweden, Mexico, Argentina, Brazil, Denmark, and

Spain; and thematic reports such as the *2017 OECD Compendium on the use and publication of open data for anti-corruption*.

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Barbara-Chiara Ubaldi (GOV/RPS) wrote Chapters 1 and 2 and provided contributions and revisions to all chapters. Jacob Arturo Rivera Perez, Policy Analyst, Digital Government and Government Data policies (GOV/RPS) drafted Chapters 3 to 8 and managed the development of this report. Alyson Rygh, Secondee, Digital Government and Open Data policies, contributed to sections of Chapter 7. Reginald Dadzie, Junior Consultant (GOV/RPS) provided data analytical support and developed content for all chapters. Liv Gaunt and Julie Harris provided editorial support.

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Executive summary

Apps to check the weather, the best route to a destination or to compare real estate values, all rely on the availability of open data. These examples prove how the release of government data as open data can improve the everyday lives of citizens. We all use, and often depend on, these apps to organise our days and make personal decisions. Similarly, businesses are finding new ways to innovate thanks to government data released as open data. These opportunities help demonstrate the benefits of open government data, and contribute to citizens' trust in government to modernise in order to meet the needs of digitally transformed economies.

As a result, governments that have succeeded in advancing their open data policies cannot fail to secure their long term resilience. As open data policies mature, so does awareness of the need to establish adequate governance frameworks to deliver sustainable results. Such frameworks include institutional arrangements, policy levers, and funding models facilitating co-ordination across government.

No real impact can be achieved if a silo-based approach prevails, because mashing, linking and reusing data are necessary to enable open data to deliver results. Given the horizontal nature of open data policies, their effective design and implementation requires approaches that enable the connection of actors and decisions within and outside the public sector.

Countries' experiences, and data from the OECD *OURData Index*, show that despite differences of administrative cultures, the governments achieving better results are those that allocate the responsibility to co-ordinate open data policies close to the centre of government. They are followed by those that assign it to a line ministry with responsibilities linked to the digital agenda and/or public sector modernisation mandates. This facilitates shared accountability and can facilitate stronger linkages with related policy areas such as public sector innovation, open government and public sector integrity.

A decade ago open government data policy and practice efforts were geared towards increasing access to public sector information. Now, as the global maturity of open data has grown, so has the awareness of the need to foster a culture of value creation and problem-solving approaches. These can help target efforts to release valuable data for re-use, and prioritise improved government rather than aiming simply to provide more data. The concept of "publish with purpose" is what best represents this new emerging discussion.

Nevertheless, the importance to foster data openness by default remains. While data quality, such as completeness and machine-readability, improve the accessibility and reusability of open government data, openness by default is a broader concept that exceeds the technical realm.

As governments are increasingly recognising data re-use as a requirement for value creation, there is a growing understanding that quality government data draws upon improved data governance and management of the data value chain. Creating value from

open government data (OGD) means increasing data quantity and improving the capacity to identify high-value data to increase re-use. It also requires understanding the process barriers so government data can contribute to the public service value chain. Accompanying data availability, accessibility and quality with integrated data and IT infrastructure models can support digital and data-driven transformation and reforms of the public sector and support the successful adoption of emerging technologies that depend on the availability of quality data.

Governments have a key role in data publication, but the focus is shifting from a data-supply and publishing perspective towards the use of open data as a collaborative tool. For example, in the earlier stages of open data policies, the establishment of portals was driven by the demand for increased access to public sector information. This required significant efforts in the back end to locate, clean and open up data-sets to make public access easier. Data cleansing initiatives were prioritised rather than focusing on setting data governance frameworks and policy instruments (e.g. publication guides and standards) to support advances.

This approach is gradually changing and open data portals are evolving based on the growing understanding of the value of data as a core enabler of the digital transformation of societies, business activities and the public sectors.

Improving access to government data provides opportunities for government and non-government innovators to create new ways to tackle problems. This implies engaging and unleashing the power of non-institutional stakeholders such as the private sector, journalists, academia, the non-profit sector, and the public in general, throughout the open data policy process. Open data can thus become the "platform" that fuels the development of useful applications and solutions. Leveraging this has implications and might be a long and complex process, which also presents risks. It entails a significant shift in governments' operations requiring the perception of their role to shift from data owners and solution providers, to data stewards. Central open government data portals are slowly but increasingly being understood as vehicles to enable the use of Data as a Platform (DaaP) but also, and more importantly, as enablers of governments as platforms.

Moving to a collaborative, problem-solving approach has proven challenging for some countries. While some have used data as a platform to favour public value co-creation, in others multi-stakeholder engagement is low or absent, particularly where transparency-driven models for open government data policies prevail.

The strategic sharing of OGD, combined with digital technologies, can support good governance and improve public trust. Examples include enabling better public service delivery, improving citizen engagement, enhancing government openness, and providing a data-driven basis for stronger government accountability and public sector integrity.

In order to justify and secure investments in open data, governments are strengthening their capacity to argument and demonstrate the value of open data to produce economic benefits for the public sector and the economy at large, for example by facilitating new business opportunities. Yet, international discussions have focused on the need to improve assessment of the progress and impacts of open data policies. From a government perspective, it remains critical to support investment to open up government data counting on a sound business case, to provide clear value propositions and present the potential benefits of facilitating open data use, and on ex-post assessments tools to show the realisation of such benefits.

Background: The OECD Open Useful and Reusable data (OURdata) Index

The OECD Open Useful and Reusable data (OURdata) Index works as a decision-making instrument built for policy makers at all levels, contributing to a more informed and evidence-based policy design. First launched in 2015 and updated in 2017, it was created as an effort to support the development, implementation and impact of sound open data policies, benchmarking open data policies across OECD countries and partner economies, and measures governments' efforts to enhance the availability, accessibility and reuse of open government data (OGD).

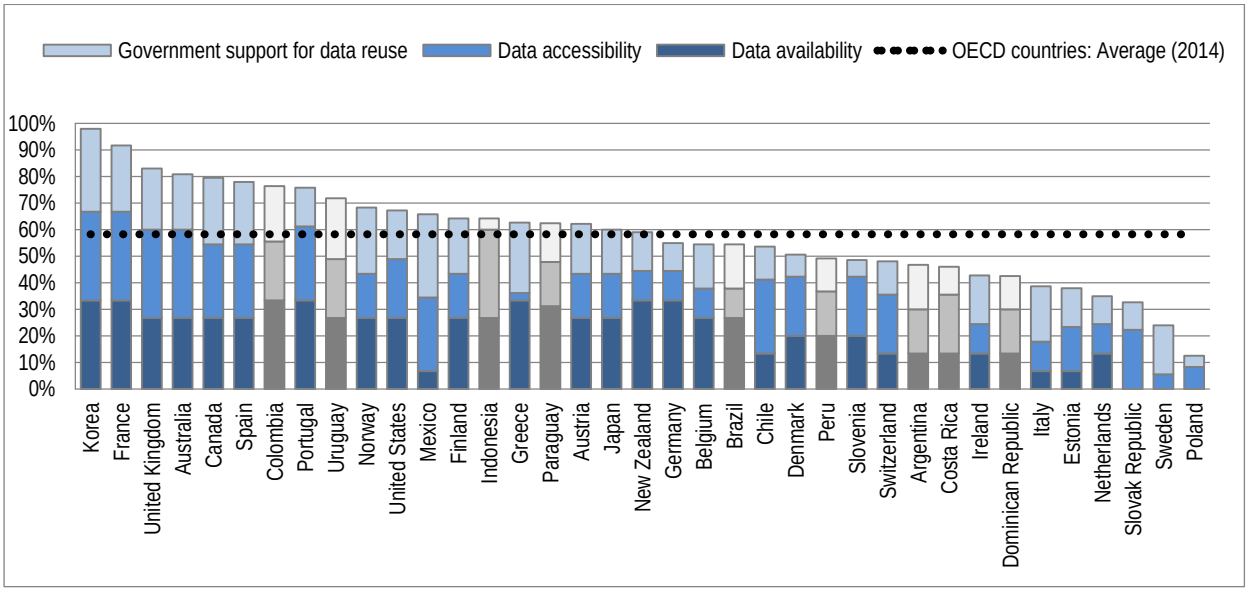
The 2014 pilot edition of the OURdata Index

The 2014 edition intended to provide an overview of the state of open government data policies at the time across OECD countries and partner economies. It was published in 2015 and drew upon the analytical framework first set out in the OECD working paper, "Open Government Data: Towards Empirical Analysis of Open Government Data Initiatives" (Ubaldi, 2013) and the data collected through the 2014 OECD Open Government Data Survey (2.0). This underlying analytical framework served also as a basis for the development of the OURdata Index for the Latin American and Caribbean (LAC) region, published in December 2016 as part of *Government at a Glance: Latin America and the Caribbean 2017* (OECD, 2017a).

The 2016 OECD LAC OURdata Index enabled a comparison between selected OECD countries, partner and other economies in the region (namely, Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Mexico, Paraguay, Peru and Uruguay,) in relation to the state of open government data in OECD countries (see Figure 0.1).

Figure 0.1. 2014 OECD OURdata Index

Results for 2014 OECD countries and other economies (Colombia and Indonesia) and LAC countries (2016)



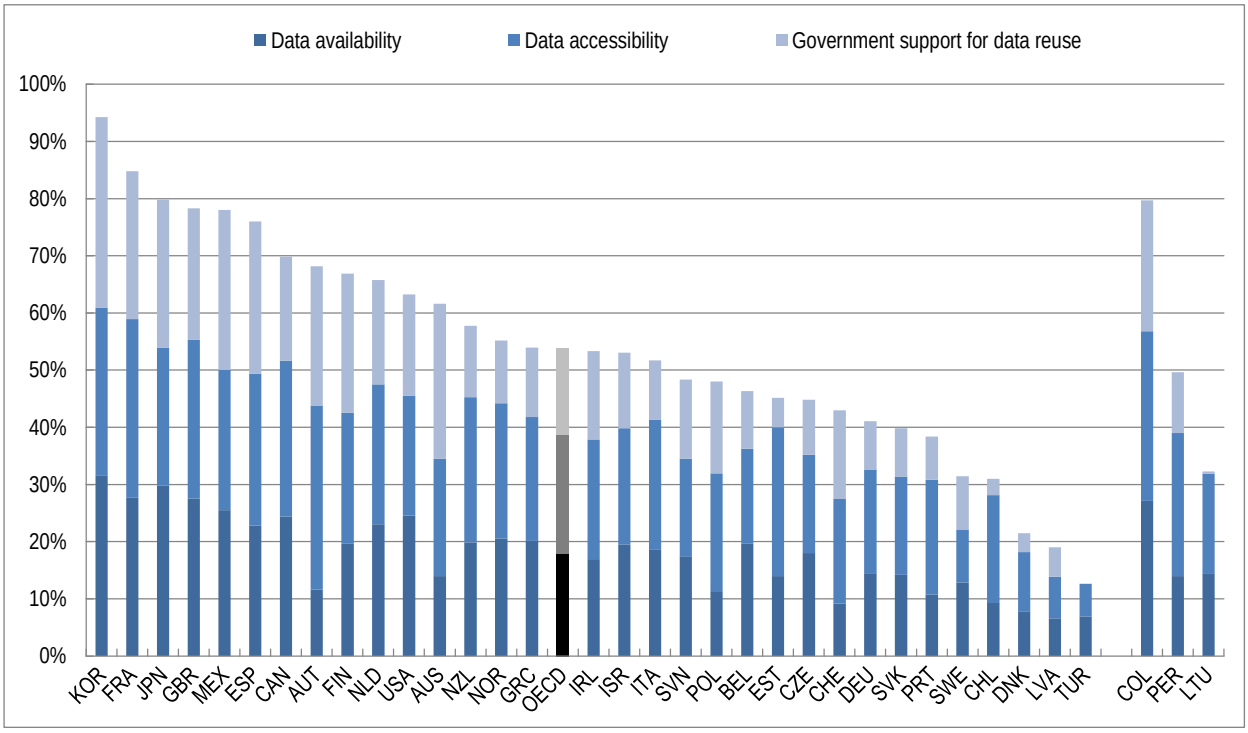
Note: Data for the Czech Republic, Hungary, Iceland, Israel and Luxembourg are not available. 2014 was a "pilot" version covering the following dimensions: data accessibility and data availability on the national data portal, and government's efforts to support data reuse.
OECD countries: a) Data for Australia, Austria, Belgium, Canada, Chile, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Japan, Korea, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom and the United States are for 2014; b) Data for the Czech Republic, Hungary, Iceland, Israel and Luxembourg are not available; c) Turkey does not have a one-stop-shop open data portal.
Partner and other economies: a) Data for Indonesia are for 2015; b) Data for Argentina, Brazil, Colombia, Costa Rica, Dominican Republic, Paraguay, Peru and Uruguay are for 2016; c) Guatemala, Panama and El Salvador did not have a one-stop-shop open data portal by 2016.
Source: OECD (2015), *Government at a Glance 2015*, OECD Publishing, Paris, http://dx.doi.org/10.1787/gov_glance-2015-en and OECD (2017a), *Government at a Glance: Latin America and the Caribbean 2017*, OECD Publishing, Paris, https://doi.org/10.1787/9789264265554-en with data from country responses to the OECD Open Government Data Survey 2.0 (2014).

The 2017 edition of the OURdata Index

The 2017 edition of the OURdata Index (see Figure 0.2) took into consideration policy developments at the international level and major policy advancements across OECD countries and partner economies. These included, for instance, the principles of the International Open Data Charter (IODC) and the G20 Open Data principles for anti-corruption.

The principles of the International Open Data Charter were reflected in the 2016/17 edition of the OECD Open Government Data Survey (3.0) to strengthen the usefulness and relevance of the OURdata Index analytical framework as a tool to assist governments in taking more informed policy decisions and sustain implement the principles of the charter.

Figure 0.2. 2017 OECD OURdata Index



Note: Data not available for Hungary, Iceland and Luxembourg. Information on data for Israel: http://dx.doi.org/10.1787/888932315602.
Source: OECD (2017b), *Government at a Glance 2017*, OECD Publishing, Paris, https://doi.org/10.1787/gov_glance-2017-en with data from country responses to the OECD Survey on Open Government Data 3.0 (2017).

The OECD 2017 OURdata Index measures government performance in detail according to each stage of the data value chain. Progress made towards: 1) higher data availability; 2) efficient data accessibility; and 3) greater support for data reuse and impact (the three main sub-composites of the OURdata Index) are all assessed in line with the specific measurements and benchmarking part of the aforementioned sub-composites. These measurements guided the content and analysis presented and discussed in this report.

In measuring these three different elements or pillars (data availability, data accessibility and government support for data reuse), the OURdata Index captures not only the availability of different formal, legal, regulatory and policy requirements but contrasts them with policy implementation efforts, therefore identifying both policy achievements and implementation gaps. An intensive data-cleaning process and evidence provision / collection requirements ensure the soundness of the results of the 2017 Index. As a result, countries can assess and compare their performance in different areas of OGD policies and practices and pinpoint in which stage of the open data policy cycle further efforts should be made.

The data used for the construction of the 2017 composite index is based on Section 1 of the 2016/17 OECD Open Government Data Survey 3.0, administered across a total of 35 countries, including 32 OECD countries and 3 partner and other economies.[1] This section of the survey is composed of 80 questions representing 170 data points (with some data points corresponding to sub-questions). However, for the construction of the

2017 OURdata Index, 140 data points were used in practice. Each data point used measures a specific principle and/or sub-principle of the International Open Data Charter.

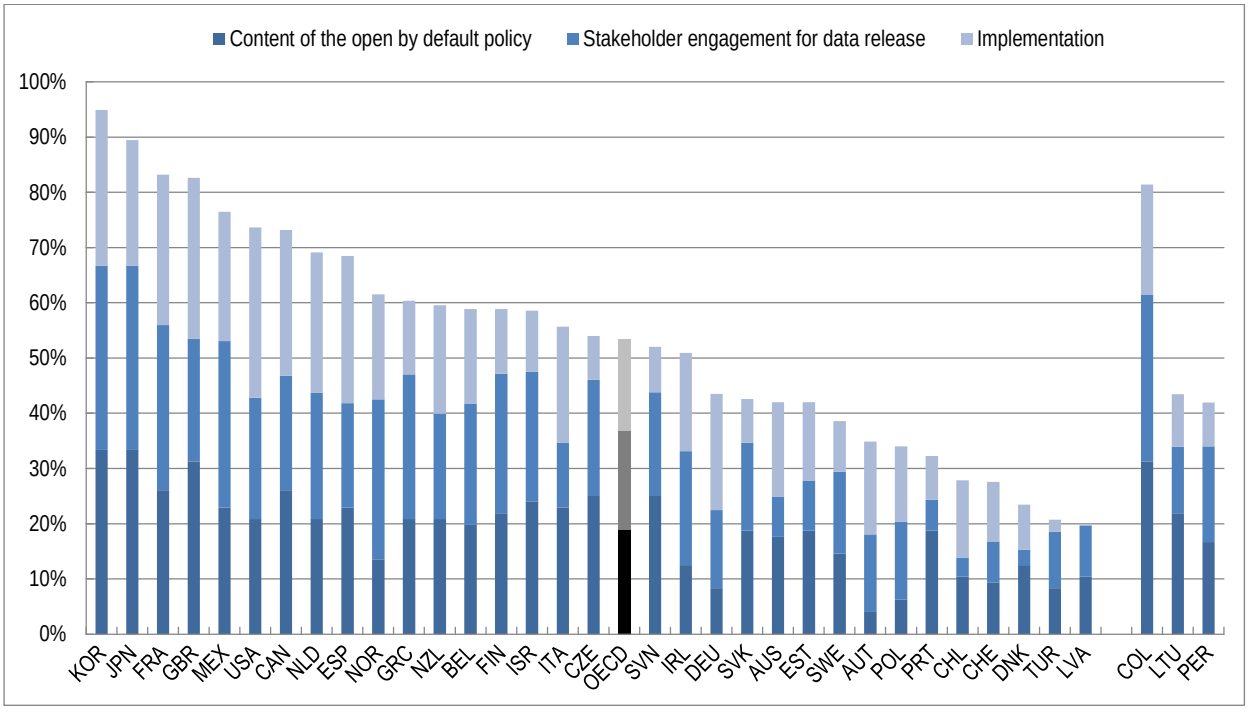
The above-mentioned survey included a second section that measured specific policy elements that were not included as part of the 2017 Index final results. This second section was administered across a total of 34 countries, including 31 OECD countries and 3 partner and other economies,[2] and provided further detail in terms of policy design, implementation, challenges and impact.

The data and information collected through both sections of the 2016/17 survey informed the policy insights presented and discussed in this report.

Each pillar of the Index (data availability, data accessibility, and government support for data reuse) has three sub-pillars, which were determined by the OECD Secretariat drawing upon OECD country practices and taking into consideration expert judgment and factor analysis (see Figure 0.3, Figure 0.4 and Figure 0.5). There are nine parameters in Pillar 1, eight parameters in Pillar 2 and seven parameters in Pillar 3 (see Figure 0.6).

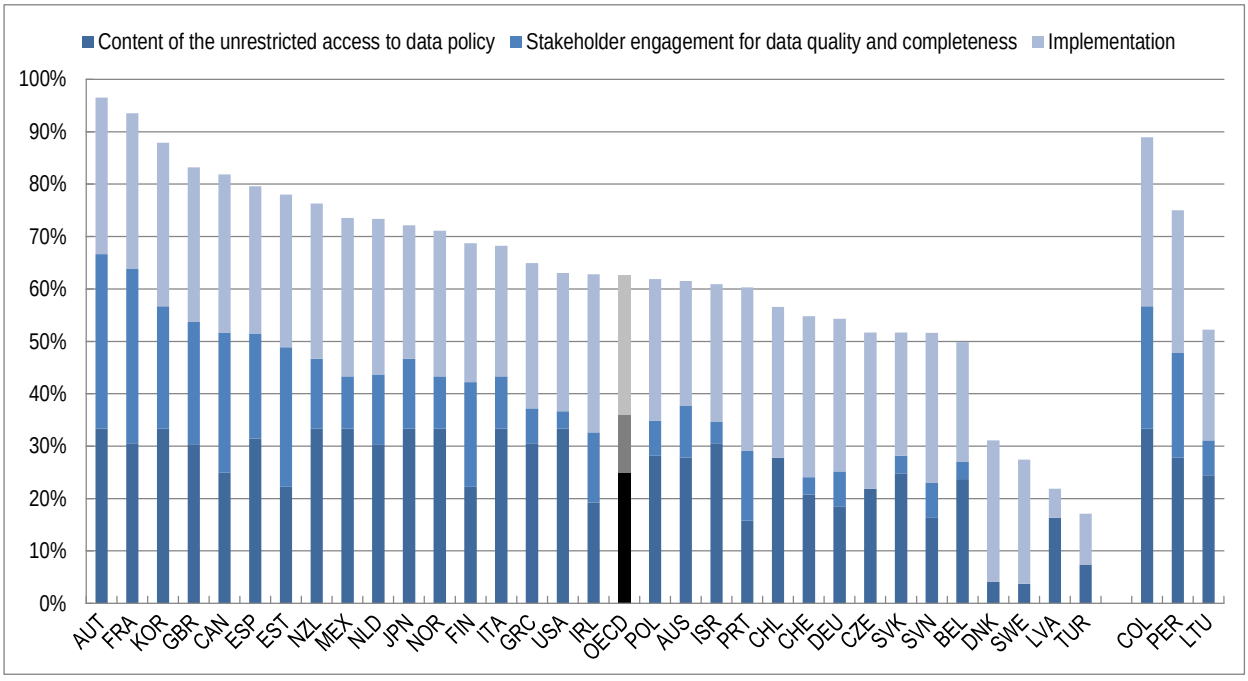
More information on the development and underlying analytical framework of the 2017 edition of the OURdata Index will be made available in a forthcoming OECD working paper (OECD, forthcoming).

Figure 0.3. OECD OURdata Index Pillar 1: Data availability



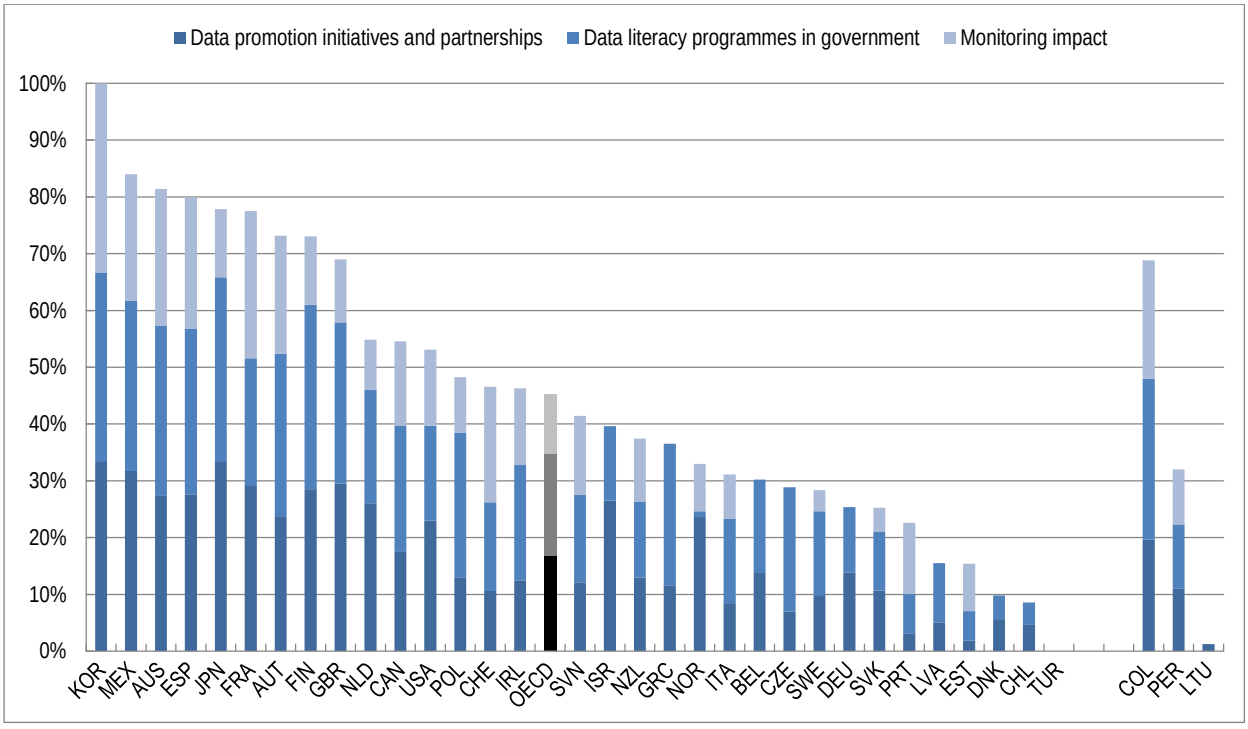
Note: Data not available for Hungary, Iceland and Luxembourg. Information on data for Israel: http://dx.doi.org/10.1787/888932315602.
Source: Country responses to the OECD Survey on Open Government Data 3.0 (2017).

Figure 0.4. OECD OURdata Index Pillar 2: Data accessibility



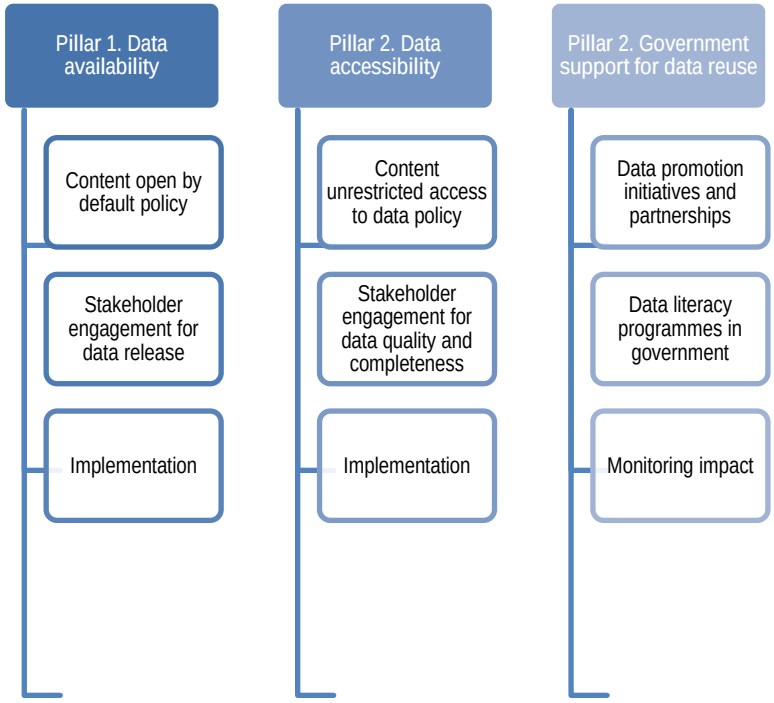
Note: Data not available for Hungary, Iceland and Luxembourg. Information on data for Israel: http://dx.doi.org/10.1787/888932315602.
Source: Country responses to the OECD Survey on Open Government Data 3.0 (2017).

Figure 0.5. OECD OURdata Index Pillar 3: Government support for data reuse



Note: Data not available for Hungary, Iceland and Luxembourg. Information on data for Israel: http://dx.doi.org/10.1787/888932315602.
Source: Country responses to the OECD Survey on Open Government Data 3.0 (2017).

Figure 0.6. OECD OURdata Index 2017: Pillars and sub-pillars



Source: OECD (forthcoming), "OECD OURdata Index 2017", *OECD Working Papers on Public Governance*, OECD Publishing, Paris.

Notes

1. Section 1 of the 2016/17 OECD Open Government Data Survey 3.0 was administered across the following 35 countries:

   OECD countries: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Israel, Italy, Japan, Korea, Latvia, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States.

   Partner and other economies: Colombia, Lithuania, Peru.

2 Section 2 of the 2016/17 OECD Open Government Data Survey 3.0 was administered across the following 34 countries:

   OECD countries: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Israel, Italy, Japan, Korea, Latvia, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom.

   Partner and other economies: Colombia, Lithuania, Peru.

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Ubaldi, B. (2013), "Open government data: Towards empirical analysis of open government data initiatives", *OECD Working Papers on Public Governance*, No. 22, OECD Publishing, Paris, http://dx.doi.org/10.1787/5k46bj4f03s7-en.

Chapter 1. Governing open data for sustainable results

The governance framework – with key components such as the institutional set-up and established roles and responsibilities, the existence of a strategy, the funding model and the legal and regulatory framework – is a critical success factor for the long-term sustainability and continuity of open data in any country. This chapter draws upon the analysis of the main trends across OECD and partner countries in how to establish solid governance so as to further develop open data maturity and continuity.

Lithuania was not an OECD Member at the time of preparation of this publication. Accordingly, Lithuania does not appear in the list of OECD Members and is not included in the zone aggregates.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Introduction

In recent years, the considerable growth in data generation - including from governments – has brought to light the value of digital technologies and data as key strategic assets for governments. Government data can, through its reuse, lead to valuable results, thus changing the lives of economies and societies around the globe. Yet, reaping the full benefits of the opportunities linked to the value and use of data and technology requires that they are embedded as core components of continuous efforts to modernise and digitalise public sectors and that they support new ways of working and creating public value (OECD, 2014).

There are a growing number of good examples of open government data (OGD) reuse to bring more convenience to service users and create public value in social, economic and governance terms. By ensuring that services are delivered in more efficient and effective manners and in more transparent and accountable ways; by empowering more aware and informed personal decisions; by generating efficiencies for the public sector and creating new business opportunities, OGD has the potential to turn a public asset. However, with OGD flourishing across and within governments, discussing and stressing the role of the governance frameworks in place to secure that isolated and often siloed OGD initiatives are scaled up, shared, and lead to sustainable and systemic changes, and results become essential.

Many governments are increasingly becoming more aware of the need to set the necessary institutional, legal, regulatory and policy environment to secure long-term continuity and sustainability of efforts and results. Setting the right governance framework matters in order to move on from the experimentation phase and enable open data by default, so that data-driven value co-creation can become the new normal and become part and parcel of the inner machinations of government.

The absence of an adequate governance framework can lead to a number of implications and undesired consequences, which include lack of co-ordination across governments and public sector organisations, leading to the inefficient management of the entire value chain and fragmented policy implementation, and lack of clarity in terms of leadership, roles, responsibilities, and policy milestones leading to diffused policy accountability. Other implications include lack of tools and mechanisms to properly handle cases of human error; lost opportunities to develop new products and insights for improved public service delivery, leaving gaps occupied by the private sector.

Rethinking the governance framework to create the conditions enabling long-term sustainability of decisions and results is critical to support the type of data reuse that enables a multiplier effect on the value of data. Despite the fact that different administrative settings and environments may require different solutions and/or organisational and institutional set-ups, there are some components that form part of the overall framework that are common and that, in line with OECD best practices, would support policy impact. This includes establishing the mechanisms to facilitate the co-ordination and collaboration among different actors within and outside of public sector institutions, identifying key policy levers (e.g. funding mechanism, incentives, rewards) and policy instruments (e.g. strategy and action plan) and adopting monitoring and evaluation measures to follow up on results and foster shared accountability.

Authority (based on clear legitimacy drawing on solid political, financial and legal basis), specialised knowledge and autonomy are all interdependent elements to consider when

establishing the governance framework of an open data policy. This chapter explores the trends across OECD countries in relation to such governance.

Defining a structured path to support the sustainable implementation of OGD policies

Central open government data policies, strategies and action plans

The development of a strategy is essential to put the open data policy into action. While the policy defines a vision highlighting uses and benefits, the strategy sets clear strategic objectives and identifies the concrete actions supporting their delivery. A dedicated strategy can be a powerful policy tool to build on previous substantial achievements, to create a common understanding, sense of ownership and shared accountability to commonly defined goals and to link an OGD policy with related and relevant policy outcomes such as on open government, greater public sector integrity, timely public service delivery and public sector modernisation. However, in order to avoid having a strategy that simply functions as a political statement, it is critical to recognise the role of the strategy as a policy tool to identify a common destination and targets and to clarify or agree on a common path the entire administration will follow to get there.

In the early stages of OGD development, the OECD observes that many countries adopt a test-and-learn approach, in order to ensure agility in identifying activities and setting up key strategic partnerships, both nationally and internationally, to be able to continuously learn and scale up impactful open data practices while maintaining the needed level of flexibility (OECD, 2016a). However, reaching a certain level of maturity implies moving from an "agile, entrepreneurial and quick-policy-win-oriented model" that enables self-learning, flexibility and experimentation, towards one that solidly grounds policy goals and defines a clear implementation path of specific initiatives, bringing clarity to the course of action to be followed. This can help draw from the learning of a previous experimental stage and help scale up efforts from leading public sector organisations to those lagging behind.

A more structured, systematic and well-defined approach based on a dedicated strategy embedding a plan of action is critical to support sustainable policy implementation in the medium and long terms. For instance, earlier efforts such as the **United Kingdom**'s 2012 "Open Data White Paper" set forth a clear policy vision and defined the strategy to be followed by the United Kingdom in terms of the implementation of the OGD policy (HM Government, 2012). The UK strategy centred on three core areas of work: open data's enhanced access; building trust; and the smarter use of data across the whole public administration. Each of these core themes included a set of strategic objectives and the rationale of its contribution to the achievement of goals in core areas of work. A more recent example is that of **Ireland** where the Government Reform Unit at the Department of Public Expenditure developed a specific open data strategy for 2017-22.[1]

As underlined and explained later in this chapter, governments around the globe recognise the value of open government data as a horizontal policy core to broader digital transformation efforts. This is why rather than adopting a standalone OGD strategy, it has been integrated into broader digital government business lines and strategies.

As much as a strategy is an essential policy tool, the development of an open data action plan complementing the strategy could also help governments to move from desired outcomes to concrete actions. A plan of action is instrumental for identifying actions that can be realistically implemented, for prioritising them and advancing their

implementation, and for securing the monitoring of all elements of OGD policies and/or strategies.

For instance, **Ireland** also included a specific action plan as part of their open data strategy. In **Slovenia**, a separate two-year action plan has been established to implement the 2015-2020 Public Administration Development Strategy. The action plan includes elements on open government data, such as increasing the number of OGD published on the portal to foster reuse or producing online material to help public sector organisations release their data. Most of the elements of the action have been implemented as it concerned the year 2015 and 2016.[2]

In **Poland**, the 2016 Public Open Data Programme (Poland's OGD strategy) includes in annex an action plan on the government datasets that should be released as open data on the portal. The action plan indicates specific datasets, such as data regarding the sanitary conditions of the quality of water intended for consumption, and the date before which they should be published.[3]

In **Estonia**, the Green Paper on Open Data published in 2014 came with an action plan that included requirements to release government data as open data.[4]

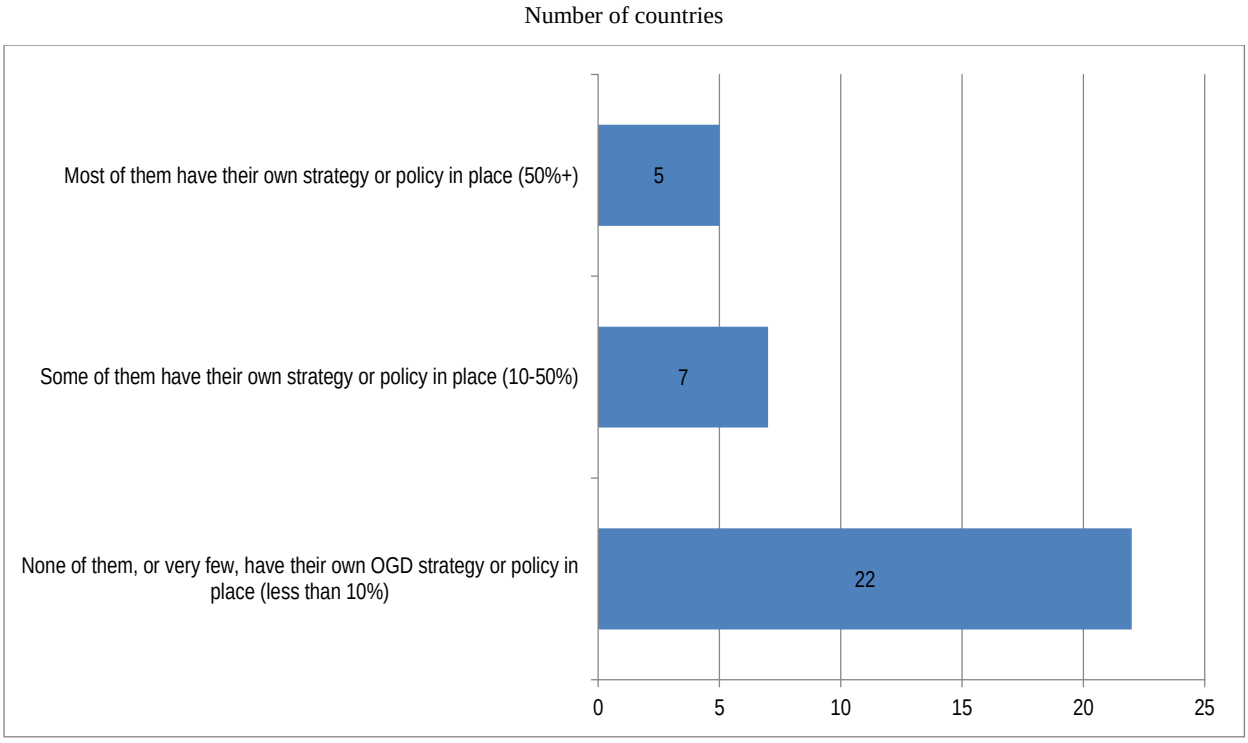
Other countries choose to set concrete actions as part of their Open Government Partnership (OGP) Action Plans, thereby acknowledging the importance of OGD as part of their open government strategies and initiatives. This is the case, for instance of the **Czech Republic, France, Italy and Lithuania** where open data plans have been established through the OGP National Action Plan. For example, in **Italy**, the 3rd OGP National Action Plan clearly specifies different commitments with respect to open government data. These commitments have specific timelines as well as expected results and a lead implementing administration to ensure accountability.[5]

The availability of such action plans helps to establish an accountability framework as well as to better measure progress towards the implementation of open data policies/strategies. Therefore, the absence of an open data action plan can undermine the effective and efficient implementation of open data policies and strategies even when these count on the necessary political support. Notably, with the exception of Turkey, the least performing countries in the 2017 Open Useful and Reusable data (OURdata) Index (see Background: The OECD Open Useful and Reusable data [OURdata] Index) do not have an open data action plan.

Institutional OGD policies and strategies

Data collected through the OECD Open Government Data Survey 3.0 (see Background: The OECD Open Useful and Reusable data [OURdata] Index) shows that in most countries central/federal line ministries do not have their own formal open government data policy or strategy. In effect, evidence shows that in 22 countries out of 34, none, or very few, of the central/federal line ministries and agencies have their own open government data strategy in place (see Figure 1.1).

Figure 1.1. Proportion of central/federal line ministries with their own formal OGD strategy/policy across OECD countries and partner economies



Source: Based on information provided by 31 OECD countries and 3 OECD partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0, Section 2, Question 4. To what extent do central/federal line ministries and central/federal agencies have their own formal OGD strategy or policy in place?

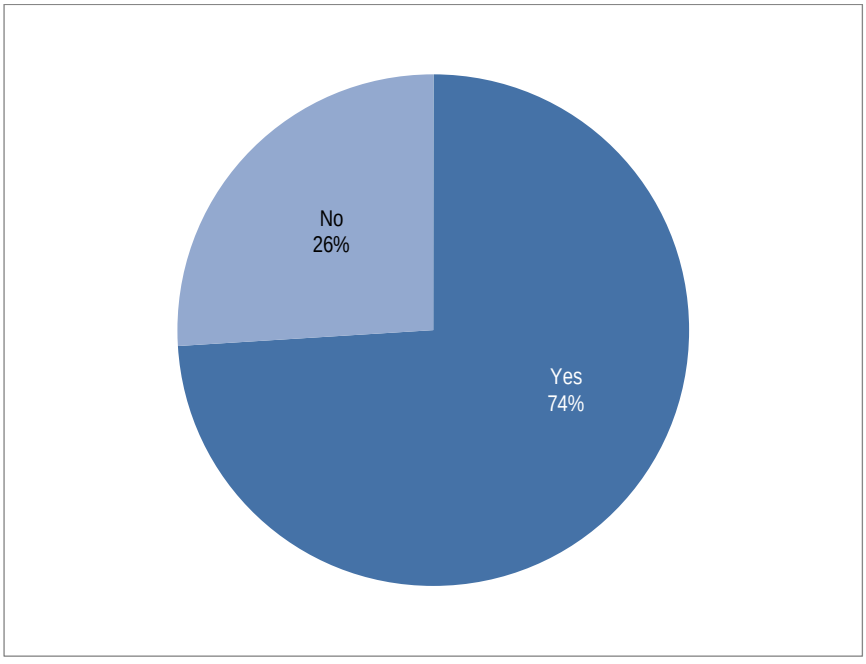
However, the presence of a specific open government data strategy/policy adopted by an individual public sector organisation, in addition to the central/federal open government data strategy/policy, is in some instances considered useful to adapt overarching national policies/strategies on open government data to particular institutional contexts. This can also in turn help ensure greater commitment to implementing the national open government data policy/strategy as the creation of institutional strategies implies assessing the feasibility of implementing specific requirements and objectives into actions at the institutional level. Additionally, it can also help lead to a deeper understanding regarding open government data – and its linkages with sector-specific policies and issues - at large.

In **Korea**, for example, all public sector organisations are required to establish an annual open data plan that includes the strategic steps to implement the national open data plan (defined as the master plan) and other matters to manage open data policies.[6] Similarly, in the **United Kingdom**, all government departments, such as the Department of Health, have established their own open data strategy.[7]

Sustainability and inclusiveness of results require that local levels of government be involved as well. Evidence shows that 74% of survey respondents indicated that their open government data policies/strategies include the development of open data initiatives at the regional and/or local level (Figure 1.2). This is extremely important, as the local authorities play a significant role in connecting and interacting with societies. They are

often the entities in charge, for instance, of the delivery of public services and are those that can better connect with the open data ecosystem. As a result, they can be important intermediaries between potential data re-users and those who would benefit from the final outcome of such reuse.

Figure 1.2. Percentage of OECD countries and partner economies that have open data initiatives at the regional/state or local level



Source: Based on information provided by 31 OECD countries and 3 OECD partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0, Section 2, Question 5b. Does the scope of the central OGD policy/strategy include the development of open data initiatives at the regional/state or local level?

The main objectives of open data policies

Increasing public sector transparency and accountability has been, and remains, a key driver for the early stages of open government data development in many countries, as also highlighted by the OECD Recommendation on Open Government (OECD, 2017a). As governments mature in their understanding of the potential value that can be created through the sharing and reuse of data available in machine-readable formats that can be searched, manipulated and linked, they also grow stronger in their grasp of data being a critical new resource for fuelling changes in value creation in more complex and broader terms, i.e. economic and social terms (Ubaldi, 2013), and for changing the relationship between governments and their citizens (OECD, 2017a).

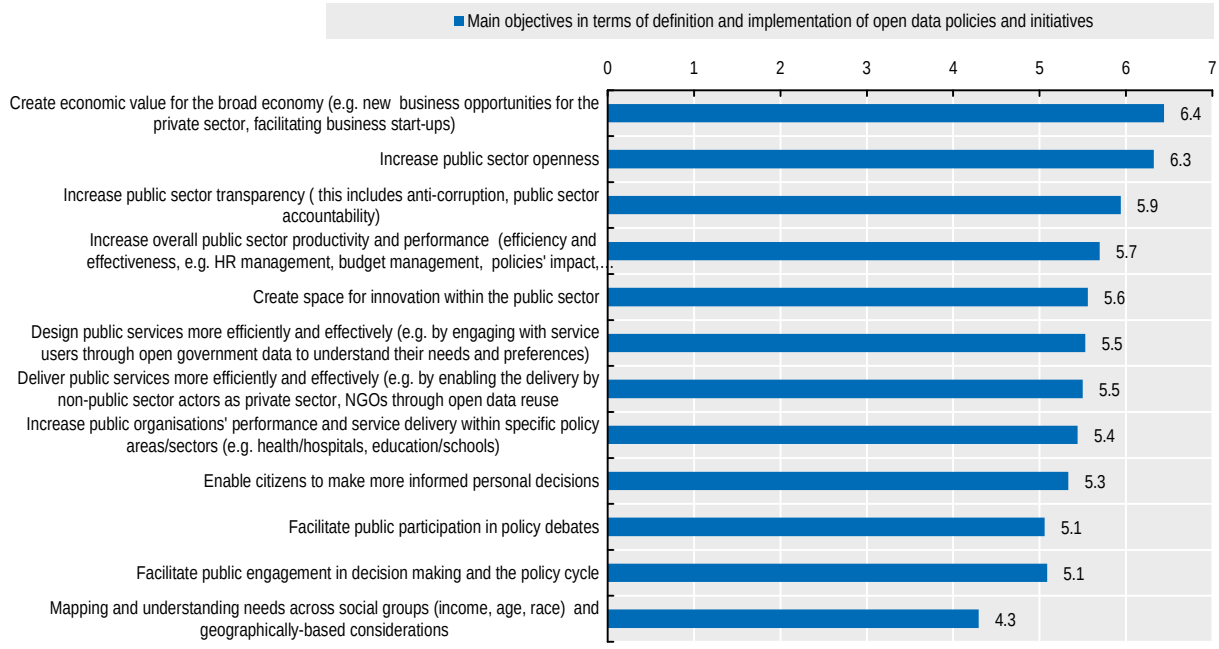
Results from the data collection conducted for the 2017 OURdata Index demonstrate that, on average, for most countries, the main objective in defining and implementing open data policies and initiatives is to create economic value for the broad economy. Thus, the potential value creation of open government data is indeed acknowledged by most OECD countries and partners.

However, despite the progress with regard to the general understanding of the value of open government data, countries still seem to primarily target efforts to link open government data to matters of public sector openness and transparency.

On average, for instance, in most countries, the value of open government data to improve public service design and delivery is considered secondary. Results demonstrate that, in fact, defining and implementing open data policies and initiatives to deliver public services more efficiently and effectively is not one of countries' main objectives (see Figure 1.3). Such a restricted approach may undermine efforts to encourage, for example, open government data reuse within the public sector.

Figure 1.3. Main objectives in terms of definition and implementation of open data policies and initiatives across OECD countries and partner economies

Average regarding the ranking countries provided to each objective, with 0 meaning the objective is not a high policy goal/not relevant, and 7 meaning the objective is a highly relevant/priority policy goal

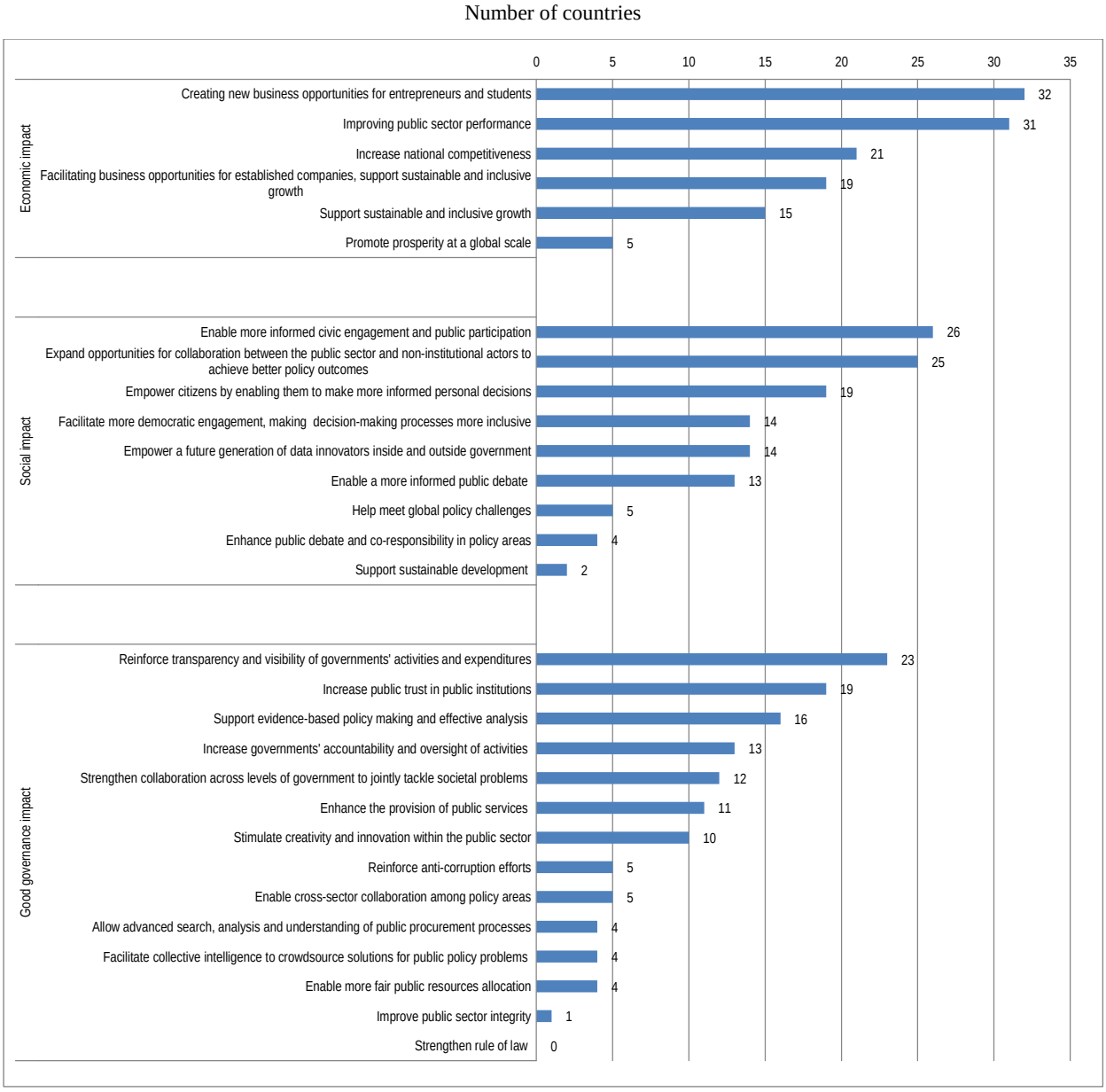


Source: Based on information provided by 31 OECD countries and 3 OECD partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 10. Countries providing a response to the question: Please rank from 0 to 7 the level of importance of the following objectives for your country regarding the definition and implementation of the central open data policy (if available) and/or initiatives (with 0: Not relevant/Not a policy goal – 7: Highly relevant/Priority policy goal).

In general terms, according to the 2017 OURdata Index data collection, the main drivers of open government data release still seem to refer mainly to the economic impact it can produce. In fact, 32 countries out of 34 included in the OURdata Index release government data in order to create new business opportunities for entrepreneurs and students. Furthermore, 31 countries out of the 34 intended to improve public sector performance through the release of open government data. Limiting the promotion of open government data reuse to the private and third sectors, with a prevailing focus on the potential economic value that can be created in the broad economy, means limiting potential value creation to the benefits for governments, too.

The role of open government data to enhance collaboration across the public sector and with actors from outside the public sector seems to be neglected. Few countries (Denmark, Norway, Spain, United States) report releasing data to either enhance public debate and co-responsibility in policy areas or to facilitate collective intelligence to crowdsource solutions for public policy problems (Chile, Colombia, Israel and France), despite the fact that most countries see OGD as part of their OG initiatives (see Figure 1.4). As such, the key role of open government data to support government as a platform and contribute to the digital transformation of the public sector is overall underexploited in most OECD and partner countries.

Figure 1.4. Drivers for data release across OECD countries and partner economies



Source: Based on information provided by 31 OECD countries and 3 OECD partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 57. Which are the main drivers for the central/federal government's decisions on data release and policy directions?

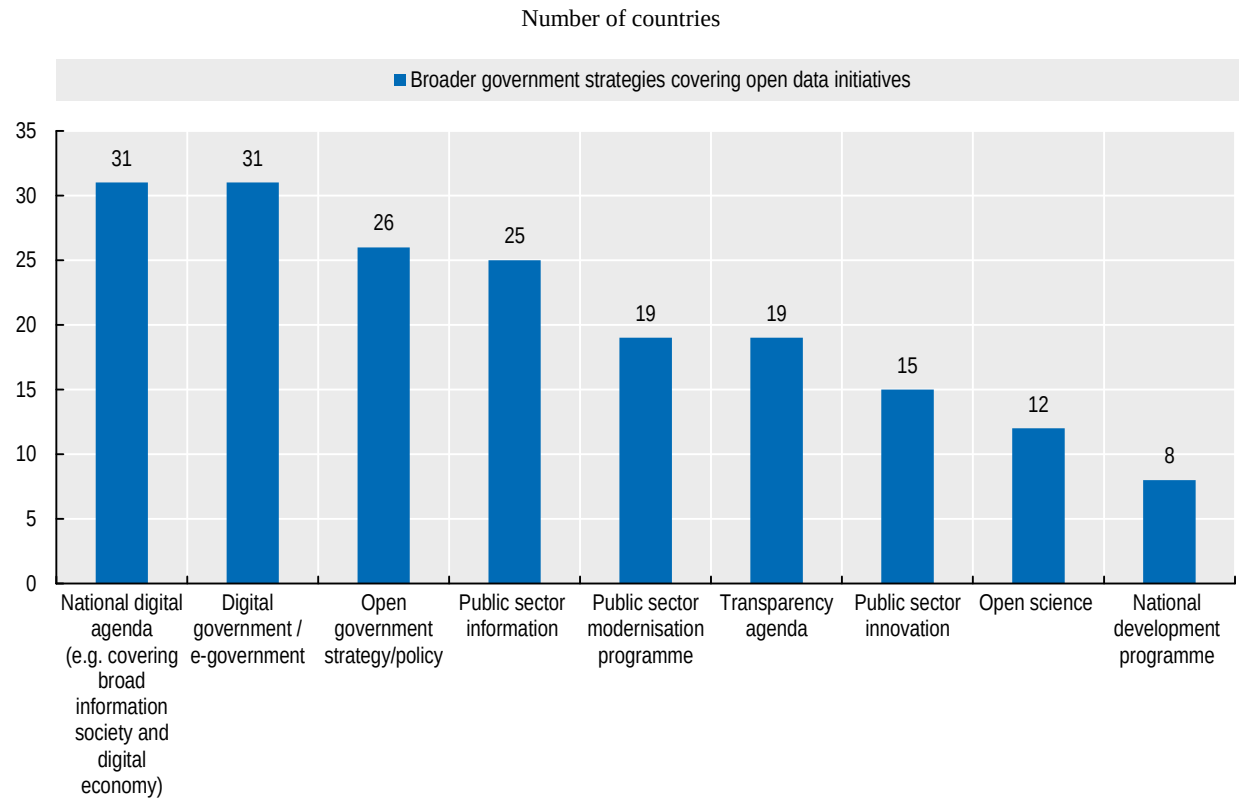
Leveraging the horizontal value of open data policies

The horizontal nature of OGD makes it potentially a key contributor to meet governments' broad key strategic and policy objectives. Therefore, securing its alignment with broad reforms and agendas, and linkages with sectoral policies is crucial to capture synergies and leverage its value to help address specific policy challenges (OECD, 2016a, 2015; Ubaldi, 2013) and broaden the scope of the OGD strategy as needed. For this to happen, however, recognised connections need to exist with other relevant policy fields and with actions and agendas set at the local as well as supra-national levels. To this end, it is possible to predict that governments with more mature digital government models would more likely lean towards the integration of OGD strategies into broader digital government business lines.

In **Mexico**, for example, the inclusion of open data as one of the key enablers of the 2013-18 National Digital Strategy stresses the connection and contribution of OGD to broader policies and sets the strategy to promote the use of open data for the achievement of key policy goals (e.g. the contribution of OGD to land management improvement, the digital economy and natural disasters' prevention and mitigation are clearly stated as part of the National Digital Strategy). Broader policy objectives are also included in the Open Data Executive Decree (e.g. promotion of economic development, competitiveness, accountability, citizen participation, government efficiency and better public services) and highlighted as action lines of the 2013-18 Programme for a Modern and Closer Government (e.g. in support of sectoral policies such as health) (OECD, 2016a). Embedding OGD in policies and agendas defining overarching strategic priorities has been essential to raising awareness of its cross-cutting relevance and securing high-level political commitment.

Data collected through the OECD Open Government Data Survey 3.0 show that open data policies appear to be mainly related to digital government strategies and open government strategies (Figure 1.5). In fact, the three main primary government strategies that include open data policies are the national digital agenda, the digital government or e-government strategy/policy and the open government strategy/policy. For example, 31 countries out of the 34 indicate that open data related issues are covered in the national digital agenda. This, therefore, shows that most countries are gradually evolving in their understanding of open data as an essential component towards digital government.

Figure 1.5. Broader government strategies covering open data initiatives across OECD countries and partner economies



Source: Based on information provided by 31 OECD countries and 3 OECD partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 2. Are open data related issues currently (also) covered in any of the following agenda/policies?

However, the absence of consideration of open data policies in other important overarching government strategies such as public sector innovation and the national development programme also shows that the full potential of open data to promote digital innovation and economic and social development (e.g. through more inclusive policy making) is still challenged in most countries. Evidence actually shows that only six OECD countries include open data policies in their national development programmes or similar.

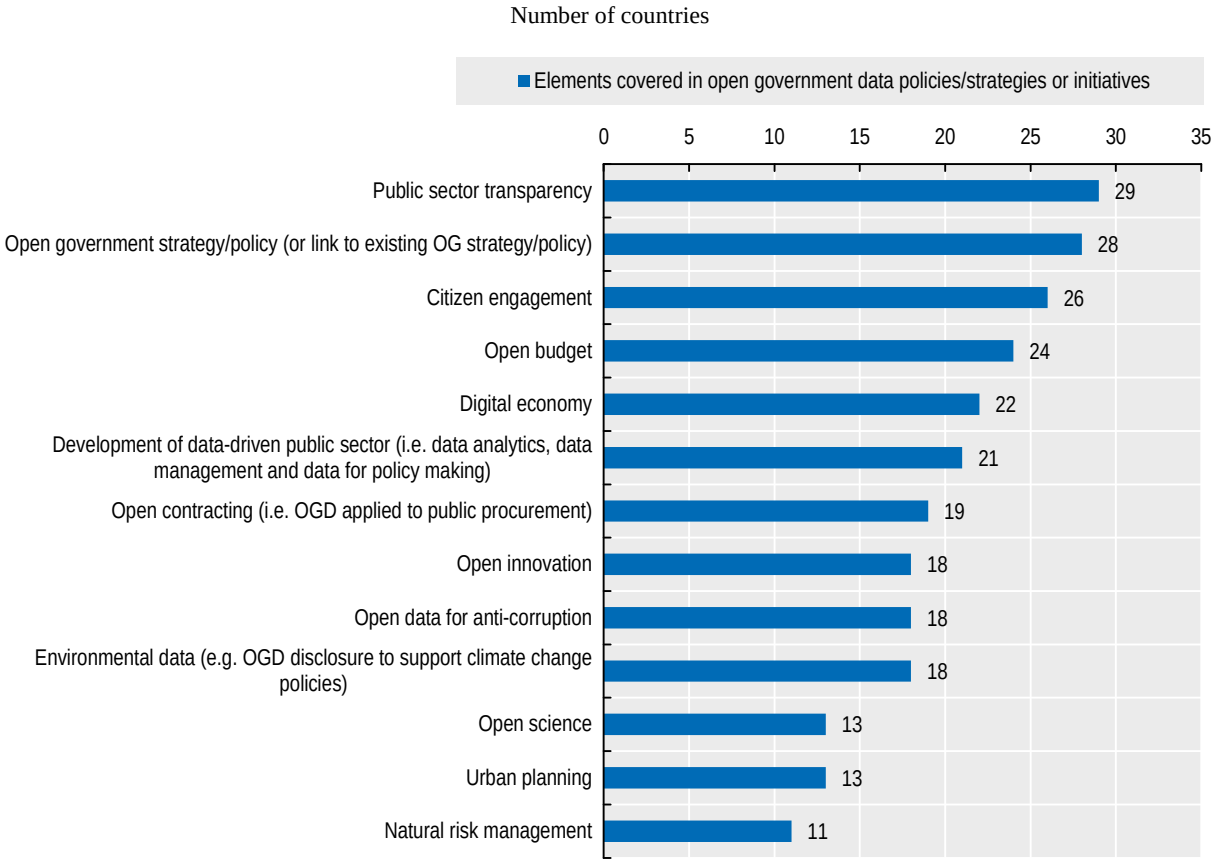
Generally speaking, countries still primarily relate open government data to matters of transparency and openness. Open government data is, therefore, more perceived as a key contributor to good governance as it enables government openness, transparency and accountability, and stakeholders' participation, rather than as a driver towards economic and social value creation. Thus, although economic value creation stands as one of the main objectives in the definition and implementation of open data policies and initiatives (see Figure 1.3), governments will need to learn to create broader linkages with other policies in order to generate benefits for the broader economy.

In fact, this current situation can be explained by the fact that traditionally there has been a strong tendency across OECD countries to draw upon transparency agendas as drivers for open government data (Ubaldi, 2013). However, as governments are becoming

increasingly aware that open data is not solely about transparency, they need to push their understanding of linkages of open data beyond digital government alone to capture its potential for growth and innovation, whether public or private. Even when the linkage of OGD to economic benefit is there and obvious (as illustrated in Figure 1.3), there is no means to achieve or measure it.

Coherent with this analysis, data show that 29 countries cover public sector transparency elements in their respective open government data policies and/or strategies whereas only 11 countries consider elements of natural risk management in their open government data policies/strategies (see Figure 1.6). That is, in most countries, open government data is considered an important tool that can contribute to public sector transparency and open government, but few relate its potential contribution to other important policy domains. However, governments need to understand the cross-cutting nature of open government data, as it stands as a useful policy tool to enhance, for example, urban planning, open innovation, and other types of policy areas. This will require that countries further consider these different policy fields in their open government data policies and/or strategies.

Figure 1.6. Elements covered in open government data policies/strategies or initiatives across OECD countries and partner economies

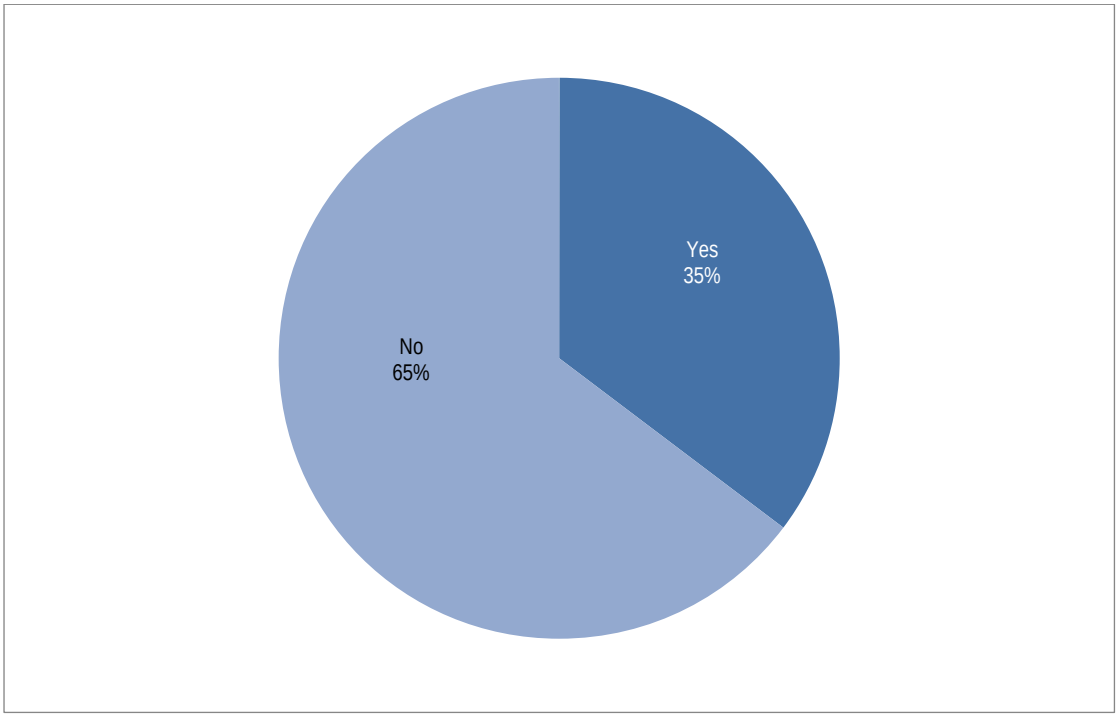


Source: Based on information provided by 31 OECD countries and 3 OECD partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 5. Does the single central/federal OGD policy/strategy or central OGD initiatives cover the following areas?

Evidence appears to attest that open government data policies still remain focused on the benefits of open government data publication for greater transparency, openness and accountability rather than on the wider benefits of open government data reuse (that would include elements relating to urban planning and open science for example), which should be acknowledged as a key requirement for value creation (OECD, 2017b).

Finally, connecting OGD policies with broad national objectives, when it comes to economic and social benefit, and human development, requires linkages with supra-national agendas and commitments such as the Sustainable Development Goals (SDGs). The SDGs provide an excellent opportunity to draw on broad linkages in order to strengthen the value of open data policies. A large majority of countries currently seem to undermine the potential value of open government data for the reporting or achievement of the SDGs. In fact, 65% of country respondents do not expect open government data to contribute to the achievement and/or the reporting of the SDGs (Figure 1.7). Yet, international multi-stakeholder efforts such as the Global Partnership for Sustainable Development Data aim to increase the links between and the benefits of digital technologies and open data for the development agenda worldwide.[8]

Figure 1.7. Percentage of OECD countries and partners economies that are expecting open government data to contribute to reporting on progress on the SDGs



Source: Based on information provided by 31 OECD countries and 3 OECD partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 6. Is OGD expected to contribute to reporting on the progress on and/or the achievement of the Sustainable Development Goals?

There are also a number of important examples proving the opposite across OECD countries. In **Canada** for example, the institution in charge of open government data (the Treasury Board of Canada) has engaged with officials from the institution responsible for the implementation of the Sustainable Development Goals to support the inclusion of

open government data to track and report on the achievement of the SDGs.[9] Similarly, in **Finland**, the Envibase project aims to promote the reuse of environmental data collected from different sources with the intent of contributing to the achievement of the SDGs relating to the environment.[10] As such, these countries illustrate the strategic reuse of open government data with respect to the SDGs.

Establishing adequate institutional governance as a critical success factor for sustainability and continuity

Institutional set-up

The institutional set-up established to support the design and implementation of the open data policy and/or strategy is an essential component of the governance framework and a key enabler for the support and commitment of political leadership. As such, it is critical to secure open data policy permanence and continuity, which can be highly conditioned by the existence of a sound institutional governance model - sustainable and resilient to political cycles (i.e. changing political agendas) - by the availability (or lack) of a constant flow of financial and human resources supporting policy co-ordination and government-wide implementation, and by the possibility to count on the necessary policy levers for sustained, and effective, implementation and co-ordination.

According to the results from the OECD Survey on Open Government Data 3.0, in most countries (24), the institution that is responsible for formulating the open government data strategy/policy at the central/federal level is equally responsible for its cross-government co-ordination and implementation (see Table 1.1).

Table 1.1. Presence of an institution/authority responsible for formulating the OGD strategy/policy at the central/federal level, its location and its responsibility to co-ordinate and implement the OGD strategy/policy across the government

	Availability of a main institution/authority responsible for formulating the OGD strategy/policy at the central/federal level	Location within the government of the institution/authority responsible for formulating the OGD strategy/policy			The institution / authority responsible for formulating the central/federal OGD policy or strategy is also in charge of its cross-government co-ordination and implementation
		Central/federal executive/cabinet office	Central/federal Ministry of Public Administration (or similar)	Central/federal Ministry of Communications and Technology (or similar)	
Australia	●	●	○	○	●
Austria	●	●	●	●	●
Belgium	●	●	●	●	●
Canada	●	○	●	○	●
Chile	●	○	●	○	●
Czech Republic	●	●	●	○	●
Denmark	●	○	●	○	●
Estonia	●	○	○	●	●
Finland	●	○	●	○	●
France	●	●	○	○	●
Germany	●	●	●	●	●

	Availability of a main institution/authority responsible for formulating the OGD strategy/policy at the central/federal level	Location within the government of the institution/authority responsible for formulating the OGD strategy/policy			The institution / authority responsible for formulating the central/federal OGD policy or strategy is also in charge of its cross-government co-ordination and implementation
		Central/federal executive/cabinet office	Central/federal Ministry of Public Administration (or similar)	Central/federal Ministry of Communications and Technology (or similar)	
Greece	●	○	●	○	●
Ireland	●	○	●	○	●
Israel	●	●	○	●	●
Italy	●	○	●	○	●
Japan	●	●	○	○	●
Korea	●	○	●	○	●
Latvia	●	○	○	●	●
Mexico	●	●	○	○	●
Netherlands	●	○	●	○	●
New Zealand	●	○	●	○	●
Norway	●	○	●	○	●
Poland	●	●	○	●	●
Portugal	●	○	●	○	
Slovak Republic	○	N/A	N/A	N/A	N/A
Slovenia	●	○	●	○	●
Spain	●	○	●	●	●
Sweden	●	○	●	○	N/A
Switzerland	●	○	○	●	
Turkey	●	●	○	○	●
United Kingdom	●	●	○	○	●
OECD total					
Yes ●	30	12	18	8	26
No ○	1	18	12	22	2
N/A	-	1	1	1	3
Colombia	●	○	○	●	●
Lithuania	●	○	○	●	●
Peru	●	●	○	○	●

Source: Based on information provided by 31 OECD countries and 3 OECD partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 12, Question 12a. and Question 12d. The questions were: Is there a main institution/authority responsible for formulating the OGD strategy/policy at the central/federal level? If no central OGD policy is available, please respond accordingly to indicate if there is a main institution(s) responsible for carrying out these activities de facto. *and* Where within the government is the institution/authority responsible for formulating the OGD strategy/policy located? *and* Is the institution/authority responsible for formulating the central/federal OGD policy or strategy also in charge of its cross-government co-ordination and implementation?

In **France** for example, the Etalab (the French Taskforce for Open Data) is both in charge of formulating the French open government data strategy and of its cross-government co-ordination and implementation. This is done through monthly meetings with open data correspondents established in all ministries.[11] Similarly, in **Ireland**, the Open Data Unit within the Department of Public Expenditure and Reform co-ordinates the cross-

government implementation of the open government data strategy through meetings with individual public bodies and through the Public Bodies Working Group (PBWG). The PBWG comprises public bodies and government departments working in the field of open data or with interest in open data.[12]

In the case of both France and Ireland, these departments are equally the ones responsible for OG, showing the close relationship between OG and OGD initiatives.

Evidence from the OECD Open Government Data Survey 3.0 indicates that in many instances the location of the authority responsible for formulating the OGD strategy/policy within the central executive office, or its clear linkage and connection with the same, contributes to effective policy co-ordination across the public administration, and secures high-level political leverage and broad recognition among public sector organisations.

The survey results show that in 11 countries the institution responsible for formulating the open government data strategy is located within the central/federal executive/cabinet office. If we look at countries ranking at the top of the OURData Index, with the exception of Korea, France, Japan, Mexico and the United Kingdom, all have their institution responsible for the open government data strategy/policy located within the central/federal executive/cabinet office. This tends to suggest that countries' performance regarding the three different components of the OURdata Index is strongly related to the level of authority of the institution in charge of open data policies.

For instance, in the **United Kingdom**, the responsibilities to lead the co-ordination of the open data policy were initially with the Government Digital Service (GDS), a body within the Cabinet Office and governed by the Ministerial Group on Government Digital Technology. This location enabled GDS to better steer and co-ordinate open data as part of the overall efforts aimed to spur the digital transformation of the public sector and ensure systemic change across public sector departments and agencies. As of April 2018, the UK Data Policy (including open government data) is under the responsibility of the Department for Digital, Culture, Media and Sport.

In **France**, Etalab is part of the Inter-ministerial Directorate of Digital and Information System and Communication of the State, which is part of the Prime Minister Services, hence giving this body strong leverage to enforce the government's decisions and horizontal agendas across institutions. The different executive decrees that have been issued in France, notably the recent decrees in November 2017,[13] clearly define the responsibilities of Etalab and its structure (OECD, 2018). In **Mexico**, the General Director of the Open Data Policy is within the President's Office (*Presidencia*).

Evidence also confirms the importance not only of the location but also of the permanent nature of the institutional set-up, for the long-term sustainability and resilience of the governance of open data. In this sense, requirements include a clear source and legal basis for the mandate of the responsible body and/or specific function in charge of the open data policy and agenda so as to assert their authority, sustainability and legitimacy with relation to other public sector institutions.

In **Korea**, the Open Data Law stands as the archetype to a clear and solid source of the mandate for the National Information Society Agency (NIA). Article 13 of the Korean Open Data Law specifically mandates the NIA the responsibility to "provide support for promoting the provision and use of public data" (Government of the Republic of Korea, 2016) (see Table 1.2) (OECD, 2018).

Table 1.2. Models of institutional governance across selected OECD countries

Body and country	Body location	Source of the body's mandate	Source of the body's funding	Body role
Etalab (France)	Prime Minister Services	Executive decrees	Central government	Co-ordinates open data policy and data reuse[1]
Government Digital Service (United Kingdom)	Cabinet Office of the United Kingdom	UK Government Transformation Strategy	Central government	Leads the digital transformation in the government[2]
National Information Society Agency (Korea)	Ministry of Interior and the Ministry of Science and ICT	Law	Central government	Leads the digital transformation in the government[3]

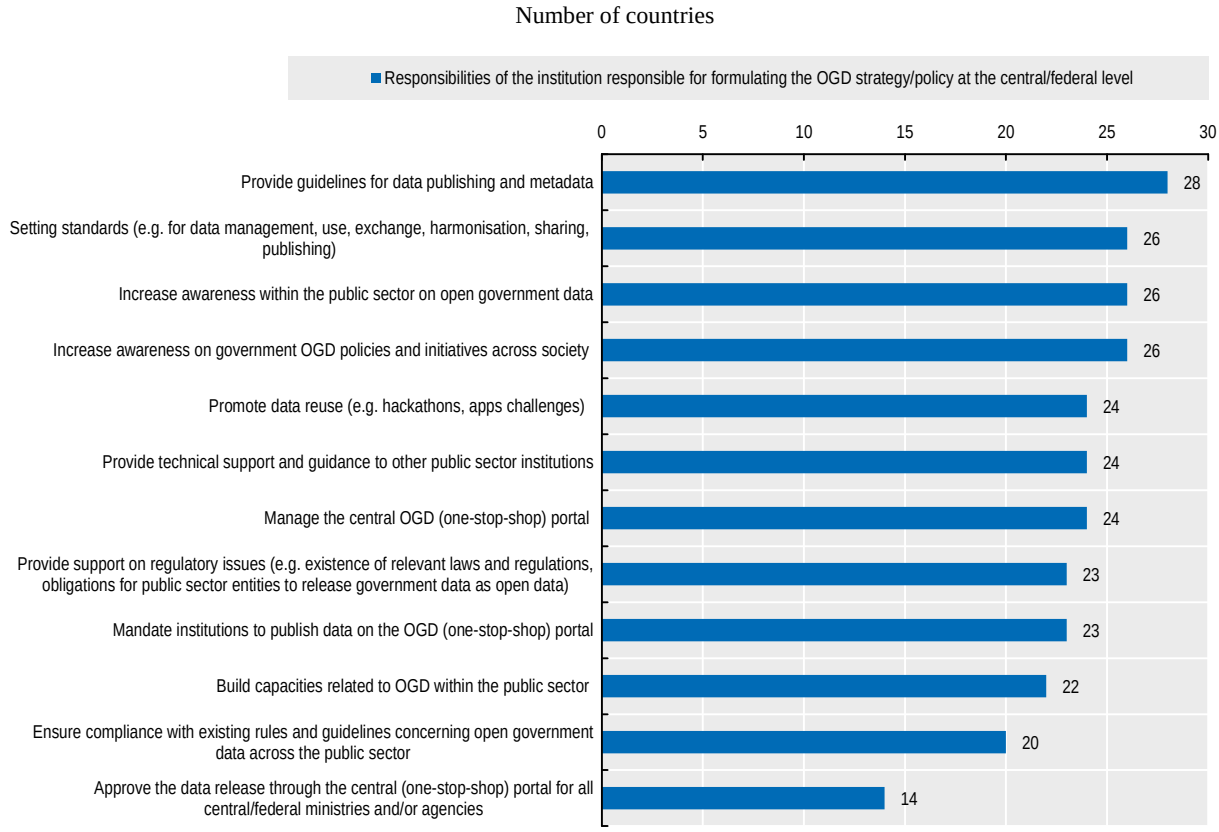
Notes:
1. For more information, see www.etalab.gouv.fr/qui-sommes-nous.
2. For more information, see: www.gov.uk/government/organisations/government-digital-service/about#responsibilities.
3. For more information, see http://eng.nia.or.kr/site/nia_eng/04/10402000000002016093002.jsp.
Source: Based on information provided by France, Korea and the United Kingdom in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 12a and Question 12b and Question 22. The questions were: Where within the government is the institution/authority responsible for formulating the OGD strategy/policy located? *and* What is the source of the mandate of the institution/authority responsible for formulating the OGD strategy/policy at the central/federal level? *and* Please indicate how OGD is funded in your country.

Institutions in charge of formulating the open government data strategy/policy at the central/federal level are generally responsible for providing guidelines and setting standards for open government data, as well as for increasing awareness regarding open government data, all required actions to support effective implementation.

For example, according to the results from the OECD Survey on Open Government Data, in 26 countries out of 34, institutions responsible for formulating the open government data strategy/policy at the central/federal level are in charge of increasing awareness on open government data within the public sector (see Figure 1.8).

However, results seem to suggest that many institutions in charge of formulating the open government strategy/policy at the central/federal level have advisory responsibilities, but lack enforcement powers. In only 20 countries of the 34 that replied to the survey, public sector institutions have the authority to ensure compliance with existing rules and guidelines concerning open government data across the public sector. Therefore, it is worth acknowledging the importance not only of the location of the officer in charge of co-ordinating open government data policies and efforts, but also the relevance to secure the fact this can rely on the necessary compliance tools and related authority.

Figure 1.8. Responsibilities of institutions in charge of formulating the OGD strategy/policy at the central/federal level across OECD countries and partner economies



Source: Based on information provided by 31 OECD countries and 3 OECD partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 12c. What are the responsibilities of the institution/authority responsible for formulating the OGD strategy/policy at the central/federal level?

Securing the necessary leadership: The role of the chief data officer

Clear and solid leadership is essential for open data policies to thrive. Within individual public institutions, leadership can indeed provide the political support and commitment required to prioritise the release of data and secure the availability of the needed financial and human resources for this to happen in a continuous and sustainable manner. More broadly, the support of the political leadership can favour horizontal collaboration and the development of strategic partnerships across the public sector, and facilitate alignment and co-ordination across and within policy areas, all key aspects for a horizontal policy area like open data to mature and deliver the expected benefits. Chief data officers co-ordinate the different administrative actions covering the entire government data value chain of the public sector (e.g. the creation of open data catalogues) and monitor the implementation of central policy and technical guidelines supporting data governance (e.g. technical norms for data interoperability or publication).

Table 1.3. Availability of a chief data officer (CDO) and/or a chief open government data officer in the central/federal government across OECD countries and partner economies

	Availability of a chief data officer	Availability of a chief data open government data officer
Australia	○	○
Austria	○	○
Belgium	○	○
Canada	○	○
Chile	○	○
Czech Republic	○	●
Denmark	○	○
Estonia	●	○
Finland	○	○
France	●	●
Germany	○	○
Greece	●	●
Ireland	●	●
Israel	○	●
Italy	○	●
Japan	●	●
Korea	●	●
Latvia	○	●
Mexico	●	●
Netherlands	○	○
New Zealand	●	○
Norway	○	○
Poland	●	●
Portugal	○	○
Slovak Republic	○	○
Slovenia	○	○
Spain	○	●
Sweden	○	○
Switzerland	○	○
Turkey	○	○
United Kingdom	●	○
OECD total		
Yes ●	10	11
No ○	21	20
Colombia	●	●
Lithuania	○	○
Peru	○	○

Source: Based on information provided by 31 OECD countries and 3 OECD partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 14 and Question 15. The questions were: Does the central/federal government have a chief data officer (CDO)? *and* Does your government have a chief open government data officer in charge of strategic co-ordination for open data? Information for Estonia and New Zealand were updated in September 2018.

Results demonstrate that there is a strong correlation between countries' ranking in the 2017 OURdata Index and the availability of a chief data officer at the central/federal level of government. In fact, the top five OECD countries in the 2017 OURdata Index (France, Japan, Korea, Mexico and the United Kingdom) have all officially established the position and function of a national chief data officer within their central/federal government. In **France**, for example, the Prime Minister's Official Decree No. 2014-1050 released on 16 September 2014 officially created the position of a national chief data officer at the central level of government (namely the *Administrateur Général des Données*) (OECD, 2017c) (OECD, 2018).

Evidence suggests that the location of the chief data officer (CDO) within the government is essential to secure adequate empowerment. With the exception of Korea and Colombia, all countries for which the CDO is within the central/federal executive/cabinet office tend to perform much better. Leadership, co-ordination and guidance through the availability of a CDO is a vehicle for the fulfilment of data governance and open data strategies, necessary for a data-driven public sector. CDOs that have a strategic vision of data governance that are adequately empowered to efficiently co-ordinate central bodies towards synchronised and well-structured policy goals (including open government data), and who can count on soft and/or hard policy levers (OECD, 2018), are better placed to lead open data policies to efficient results.

Cultivating maturity across the public sector: The role of data stewards in public sector organisations

The existence of data stewardship across public institutions is another key element of governance that supports the growing maturity of the open data policy. The establishment of the position of chief data officers (also called data stewards) recognised as a key function within public sector organisations with a recognised strategic responsibility can make the implementation of open data policy across public institutions more scalable, sustainable and impactful.

A network of institutional chief data officers/data stewards can play an important role in contributing to efficient public sector data governance models and facilitate synergies and horizontal collaboration. Rather than implementing open data as a separate policy, data stewards can, for instance, steer the process of using data and the insights it can generate to help find joint solutions to policy issues, thus favouring the crowdsourcing of public sector collective intelligence, thus stimulating a permanent cultural change within the organisation. Additionally, part of their tasks could be to support the application of the adopted open-by-default or publish-with-purpose guidelines/protocols.

The data stewards can help foster a strategic understanding and approach to OGD (and the data policy as a whole) across the entire public sector, and the understanding of data publication as an intermediate step, not an end, towards public value co-creation. As OGD is in the process of maturing as a key component of the public sector data value chain, data stewards can help nurture a culture of solving policy problems with data, which does not appear to be widespread across the public sector yet, beyond the efforts of the main co-ordination unit of OGD.

Results from the OECD Open Government Data Survey suggest that the impact of a chief data officer within the central/federal government is underpinned if such a strategic role is mirrored by the availability of institutional chief data officers in each ministry and/or agency. The availability of chief data officers in individual public sector organisations reflects data stewardship and improves overall policy performance. The mismatch

between a chief data officer within the central/federal government and the lack of data stewardship within public sector institutions undermines the possibility of further scaling up the understanding of open data from mere technical matters or beyond a data publication approach (OECD, 2018).

However, in many instances, it appears that the understanding and responsibilities of institutional chief data officers need to be redefined and formalised in order to maximise the public value of open government data and leverage data as a strategic asset for the public sector. Rather than being perceived as data administrators, institutional chief data officers should guide institutions in understanding the strong positive value associated with the publication, sharing, and reuse of their open data and steer their digital transformation efforts in this regard. In turn, they should link with their equivalents across the different groups of the ecosystem to increase awareness and interest to promote the strategic use and reuse of open government data in a co-ordinated manner, so as to foster synergies and linkages.

This can help overcome situations where the lack of value propositions and public interest are the main obstacles institutions face to open up their data, support stronger data governance models inside the public sector and move towards data-driven public sector organisations.

Building networks and connecting administrations: The role of collective bodies

Collective bodies – such as steering committees, governing boards – are an important success factor of the governance of an open data strategy. They can facilitate cross-cutting collaboration and co-operation among public sector institutions and the involvement of the different parts of the OGD ecosystem, from within and outside the public sector. As data reuse is to be progressively acknowledged as a key requirement for value creation and is important to prioritise efforts (e.g. datasets to be prioritised for release, targeted overarching goals of the strategy, provision of incentives for data reuse), doing so can help nurture permanent feedback loop mechanisms. The collective mechanisms/bodies provide a space and a platform for regular exchanges among actors and thus help meet data demand and supply by favouring collaboration between data producers and data users. This can help direct resources and efforts where most value can be produced based on demand.

Evidence demonstrates that 62% of countries (21 countries out of 34) that responded to the 3rd OECD Open Government Data Survey (administered across OECD and partner countries in 2016/17) have a steering committee or equivalent that is responsible for monitoring the implementation of the open government data strategy/policy at the central/federal level.[14]

Ireland provides a very interesting example with its Open Data Governance Board, which leads and drives the Open Data Initiative and is responsible for monitoring the implementation of the Open Data Strategy 2017-2022. The Board provides recommendations to the government regarding means to maximise the value of open government data for economic and social benefits (see Box 1.1).[15]

Box 1.1. The governance of open data as a critical success factor for effective implementation: The case of Ireland

The institutional governance of open data in Ireland includes a number of bodies that are expected to support inclusive approaches for an effective implementation by securing actors' engagement, strong leadership and alignment of the Open Data Strategy to broad government objectives such as the Public Service Reform Programme, the ICT/Digital Strategy and the National Data Infrastructure. The Irish governance institutional structure includes a number of bodies under the Ministry for Public Expenditure and Reform:

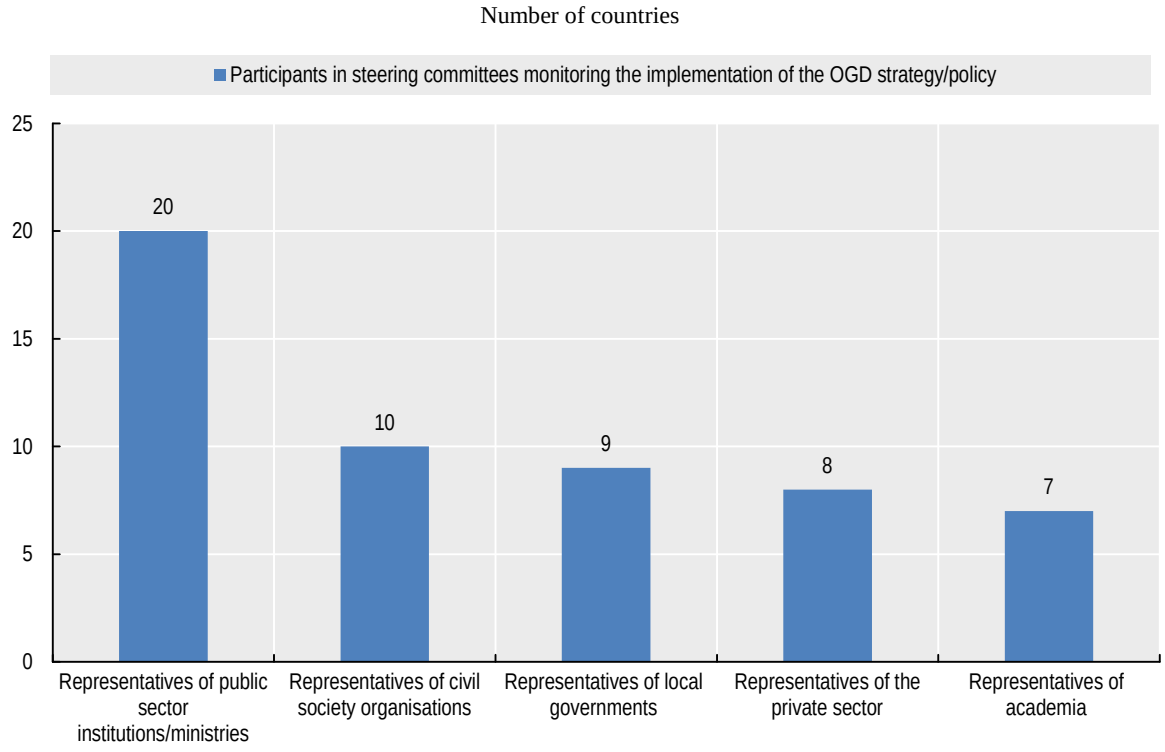
- The **Open Data Governance Board (ODGB)** leads and drives the open data initiatives and ensures implementation of the Open Data Strategy 2017-2022.
- The **Public Bodies Working Group (PBWG)** provides technical support to the ODGB and ensures a coherent and consistent approach to the publication of open data.
- The **Open Data Unit**, in the Department of Public Expenditure and Reform, supports the ODGB and the PBWG in implementing the Open Data Strategy and oversees the operation of the Open Data Portal.

Additionally, the designation of **open data liaison officers** in each public organisation ensures the necessary support at senior level; and the **Open Data Fora** provide a space where the public and the open data liaison officers from each public body are invited to provide advice and feedback on open data.

Source: Government of Ireland (2017), "Open Data Strategy", Government Reform Unit, Department of Public Expenditures and Reform.

A complete analysis of the effectiveness of the feedback loop stemming from the steering committee needs to underline the relevance of its composition. In fact, it is important to include representatives from a wide range of different communities of open data users in order for the feedback loop to lead to inclusive and comprehensive decisions on future open data policies/strategies and prioritisation of efforts. Almost all steering committees have representatives from public sector institutions/ministries (20 out of 21), but only 8 have representatives from the private sector and 7 representatives from academia (see Figure 1.9). Of the 12 OECD countries that have a horizontal co-ordination mechanism for open government, 58% include non-governmental organisations (NGOs); these include Canada, Estonia, Finland, Israel, Japan, Mexico and the United Kingdom (OECD, 2017c). Drawing upon the experience of OG co-ordination mechanisms, OGD steering committees could have more inclusive approaches involving civil society representatives more actively in the definition of OGD policies.

Figure 1.9. Participants in steering committees monitoring the implementation of the OGD strategy/policy across OECD countries and partner economies



Source: Based on information provided by 19 OECD countries and 2 OECD partner economies (Colombia and Lithuania) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 17a. Who participates in the steering committee monitoring the implementation of the OGD strategy/policy?

Establishing the necessary legal and regulatory environment

Traditionally, there is a strong tendency across OECD countries to draw upon transparency and freedom of information acts as the legal basis for open government data (Ubaldi, 2013). This rationale explains why open government data is often conceived as an evolution of access to public sector information and transparency policies. Even though they are strictly linked, this approach has in many circumstances led to strong transparency-driven approaches affecting the overall dynamics and understanding of open government data.

Furthermore, the experience of some OECD countries shows how changes in the central administration and political cycles could bring policy uncertainty, in particular when the OGD policy emanates from legal instruments issued by the Executive (which can be abolished by the subsequent administration). The OECD analysis of different legal instruments specific to both public sector digitisation or open government data demonstrates the importance of how sound legal and regulatory frameworks can promote data-driven and digital public sectors.

The work of the OECD in specific regions (OECD, 2018, 2016a, 2016b, 2015) has for example found evidence on how the aforementioned context and approach have led to governments' passive/reactive approaches to open government data driven by public

sector transparency arguments rather than building on the understanding that proactive release of data is an essential precondition for public value creation, beyond transparency. As also mentioned earlier in this chapter, a strong focus on transparency, though essential to sustain efforts meant to strengthen overall public sector integrity and accountability, can limit the proactive release of open government data and the necessary engagement of the relevant actors in the ecosystem in data reuse for value creation.

Evidence supports the above analysis as it seems that across OECD countries and its partners, open government data is still strongly related to openness and transparency (see Table 1.4). Evidence from the OECD Open Government Data Survey 3.0 indicates that most countries (21 out of 34)[16] draw upon freedom of information and/or access to information laws as the most relevant legal basis supporting open government data.

Table 1.4. Legal frameworks to open government data across OECD countries and partner economies

	Availability of a law which sets requirements and responsibilities promoting open data	Type of law setting legal mandates to open data requirements and/or responsibilities			Level of applicability of the law			
		Freedom of information / access to information law	Transparency law	Other laws (Stand-alone open data laws, digital) government)	To all levels of government	Only to the central / federal administration / government	Only to the central / federal level and to the regional / state level	Only to the central / federal level and to the local level
Australia	○	-	-	-	-	-	-	-
Austria	○	N/A	N/A	N/A	●	○	○	○
Belgium	●	●	○	○	●	○	○	○
Canada	●	●	○	○	●	○	○	○
Chile	○	-	-	-	-	-	-	-
Czech Republic	●	●	○	○	●	○	○	○
Denmark	○	-	-	-	-	-	-	-
Estonia	●	●	○	○	●	○	○	○
Finland	●	●	○	○	●	○	○	○
France	●	●	○	●	○	○	○	●
Germany	●	●	○	●	○	●	○	○
Greece	●	●	●	○	●	○	○	○
Ireland	○	-	-	-	-	-	-	-
Israel	○	-	-	-	-	-	-	-
Italy	●	●	●	○	●	○	○	○
Japan	●	●	○	●	●	○	○	○
Korea	●	●	●	●	●	○	○	○
Latvia	●	●	○	○	●	○	○	○
Mexico	●	●	●	○	●	○	○	○
Netherlands	●	●	○	○	●	○	○	○
New Zealand	○	-	-	-	-	-	-	-
Norway	●	●	○	○	●	○	○	○
Poland	●	●	○	○	●	○	○	○
Portugal	○	-	-	-	-	-	-	-
Slovak Republic	○	-	-	-	-	-	-	-

	Availability of a law which sets requirements and responsibilities promoting open data	Type of law setting legal mandates to open data requirements and/or responsibilities			Level of applicability of the law			
		Freedom of information / access to information law	Transparency law	Other laws (Stand-alone open data laws, digital) government)	To all levels of government	Only to the central / federal administration / government	Only to the central / federal level and to the regional / state level	Only to the central / federal level and to the local level
Slovenia	●	●	○	○	○	○	○	●
Spain	○	○	●	○	●	○	○	○
Sweden	○	-	-	-	-	-	-	-
Switzerland	○	-	-	-	-	-	-	-
Turkey	○	-	-	-	-	-	-	-
United Kingdom	●	●	○	○	●	○	○	○
OECD total								
Yes ●	21	19	5	4	18	1	0	2
No ○	10	1	15	16	3	20	21	19
N/A (Not applicable)								
Colombia	●	●	●	○	●	○	○	○
Lithuania	●	●			●	○	○	○
Peru	○	-	-	-	-	-	-	-

Source: Based on information provided by 31 OECD countries and 3 OECD partner and other economies (Colombia, Lithuania and Peru) OECD Survey on Open in response to the OECD Survey on Open Government Data 3.0. (2017),: Section 2, Question 9, Question 9a. and Question 9b. Countries providing a response to the following questionsThe questions were: Is there a law on access to information and/or on transparency and/or on open data which sets requirements and responsibilities promoting open data in your country? *& and* If yes, specify.: *& and* If yes, please specify the level/s of government to which it applies: (Based on information provided by 31 OECD countries and 3 country partners: Colombia, Lithuania and Peru).

At the European level, for instance, the EU PSI Directive on the reuse of public sector information has led to the adoption of its regulations in national legislation.

In **Greece**, in 2014, amendments were provided to the law on the reuse of public sector information to include the principle of "open by default", which requires all public sector organisations to release government data as open data.[17] In **Italy,** amendments were also provided to the legislative decree of 2006 on the reuse of public sector information, and therefore included requirements for public sector organisations to release government data as open data.[18] In a similar way, in 2015, **Slovenia** made amendments to its law on access to public sector information in order to include open data by default requirements.[19]

Some OECD countries have taken action in this respect by developing specific legal instruments devoted to public sector digitalisation or, in more specific cases, open government data to secure the establishment of solid legal basis for open data policy, as a key requirement for its long-term sustainability and continuity, beyond executive decrees or freedom of information acts.

In **Japan,** the Basic Act on the Advancement of Public and Private Sector Data Utilization, enacted in 2016, sets requirements for all central and local public sector organisations to release government data as open data. It also establishes other requirements such as for the government to implement necessary measures to encourage the reuse of OGD by a wide range of actors or to develop and retain in the public sector civil servants who have data skills.[20]

Other relevant examples include the 2013 Act on the Promotion, Provision and Use of Public Data in **Korea**, the 2016 Digital Republic Law (Loi pour une République Numerique) in **France**, and the 2017 Law for the Promotion of Electronic Government (E-Government Law) in **Germany**. In the **United States**, the Open, Public, Electronic and Necessary (OPEN) Government Data Act bill was (re)introduced to the US Congress in October 2017 as part of the Foundations for Evidence-Based Policymaking Act (OECD, 2018) (see Table 1.5).

Table 1.5. Key legal instruments on OGD across selected OECD countries and other economies

	Argentina[1]	Brazil[2]	France[3]	Germany[4]	Korea[5]	Mexico[6]	Peru[7]	United States (bill)[8]
Requires explicitly the publication of open data in a machine-readable format and in open format with their associated metadata	■	■	●	●	●	■	■	●
Demands the publication and update of an open data catalogue for all institutions	■	■	●	○	●	■	▲	●
Provides a taxonomy of datasets to be published in priority	■	■	●	○	●	○	○	○
Mandates a national chief data officer	○	■	■	○	●	○	■	○
Mandates institutional chief data officers within all public sector institutions	○	○	○	○	●	○	○	●
Mandates the appointment of public officials in charge of data publication	○	■	▲	○	●	▲	■	●
Requires the publication of open data plans by public sector institutions	○	■	●	○	●	▲	○	●

	Argentina[1]	Brazil[2]	France[3]	Germany[4]	Korea[5]	Mexico[6]	Peru[7]	United States (bill)[8]
Includes requirements on funding of the open data strategy and/or open data initiatives	○	○	○	○	●	■	■	○
Includes requirements to monitor the implementation of open data plans/ strategy and/or open data initiatives	■	■	■	●	●	■	■	●
Requires stakeholder engagement to promote the reuse of open government data and/or the creation of an ecosystem of open data users	○	■	○	○	●	▲	■	●
Yes, available in law ●								
Yes, available in a decree ■								
Yes, available in other instruments (implementation guidelines, recommendations, etc.) ▲								
No ○								

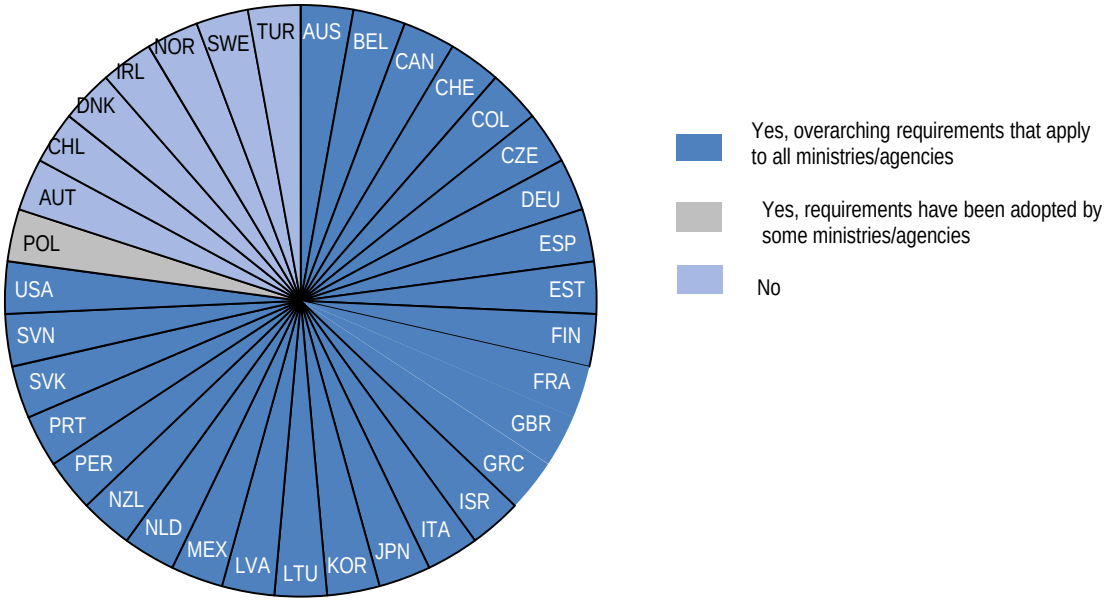
Notes:
1. For Argentina, see more information at http://servicios.infoleg.gob.ar/infolegInternet/anexos/215000-219999/218131/norma.htm and http://servicios.infoleg.gob.ar/infolegInternet/anexos/255000-259999/257755/norma.htm.
2. For Brazil, see more information at http://planalto.gov.br/ccivil_03/_Ato2015-2018/2016/Decreto/D8777.htm.
3. For France, see more information at www.legifrance.gouv.fr/affichTexte.do;jsessionid=AE6CD34C644E37D99FD9D1C23BC3F98E.tplgfr38s_2?cidTexte=JORFTEXT000033202746&categorieLien=id and www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000029463482&categorieLien=id and www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000024072788.
4. For Germany, see more information at www.gesetze-im-internet.de/egovg/__12a.html.
5. For Korea, see more information at http://law.go.kr/engLsSc.do?menuId=0&subMenu=5&query=%EA%B3%B5%EA%B3%B5%EB%8D%B0%EC%9D%B4%ED%84%B0%EC%9D%98%20%EC%A0%9C%EA%B3%B5%20%EB%B0%8F%20%EC%9D%B4%EC%9A%A9%20%ED%99%9C%EC%84%B1%ED%99%94%EC%97%90%20%EA%B4%80%ED%95%9C%20%EB%B2%95%EB%A5%A0#liBgcolor0.
6. For Mexico, see more information at www.dof.gob.mx/nota_detalle.php?codigo=5382838&fecha=20/02/2015 and www.dof.gob.mx/nota_detalle.php?codigo=5397117&fecha=18/06/2015.
7. For Peru, see more information at https://busquedas.elperuano.pe/normaslegales/decreto-supremo-que-aprueba-la-estrategia-nacional-de-datos-decreto-supremo-n-016-2017-pcm-1484961-4/ and http://sgp.pcm.gob.pe/wp-content/uploads/2016/10/Guia-Rapida-ADG.pdf.
8. For the United States, see more information at www.congress.gov/bill/115th-congress/house-bill/1770/text.
Source: Author, based on the above links.

As such, this tends to suggest that open government data is still considered in many cases as a continuation of transparency and access to public sector information policies (OECD, 2018). As a result, the legal basis could be further leveraged in order to spur open government data reuse, support economic, good governance and social value creation, and support a more proactive problem-solving approach towards the release of open data.

Spurring change in the organisational culture

The first essential step towards promoting a public sector culture prone to government data openness is to establish requirements at the central/federal level whereby government data should be "open by default" (see Figure 1.10). In fact, central/federal ministries and agencies need to come to the understanding that openness by default should be the norm rather than the exception, always within the limits of personal privacy, data protection regulations and other class and harm tests (e.g. national security, business confidentiality). In terms of open government policies, while the principle of maximum information disclosure should prevail, openness by default should be balanced with data protection regulations.

Figure 1.10. Adherents with "open by default" requirements for government data across OECD countries and partner economies



Source: Based on information provided by 32 OECD countries and 3 OECD partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 2. At the central/federal level, are there formal requirements whereby government data should be "open by default" (unless a legitimate justification is provided)?

Governments should, therefore, establish a list of legitimate justifications in order to inform ministries and agencies of the few exceptions restricting requirements to government data openness. The establishment of such a list is important so that government data openness can become the standard since as the legitimate exceptions to public data release become well defined it informs all public sector institutions of the few possible exceptions.

The legal and regulatory framework serves as an instrument to, on the one hand, promote a culture as well as a context prone to government data openness within the public sector, and, on the other hand, to make explicit and regulate the restrictions and limitations to government openness. Ideally, this list of legitimate justifications to restrict the release of government data should be available in one single official document, available on and off line for public access (digital by design) and clear and understandable for all actors.

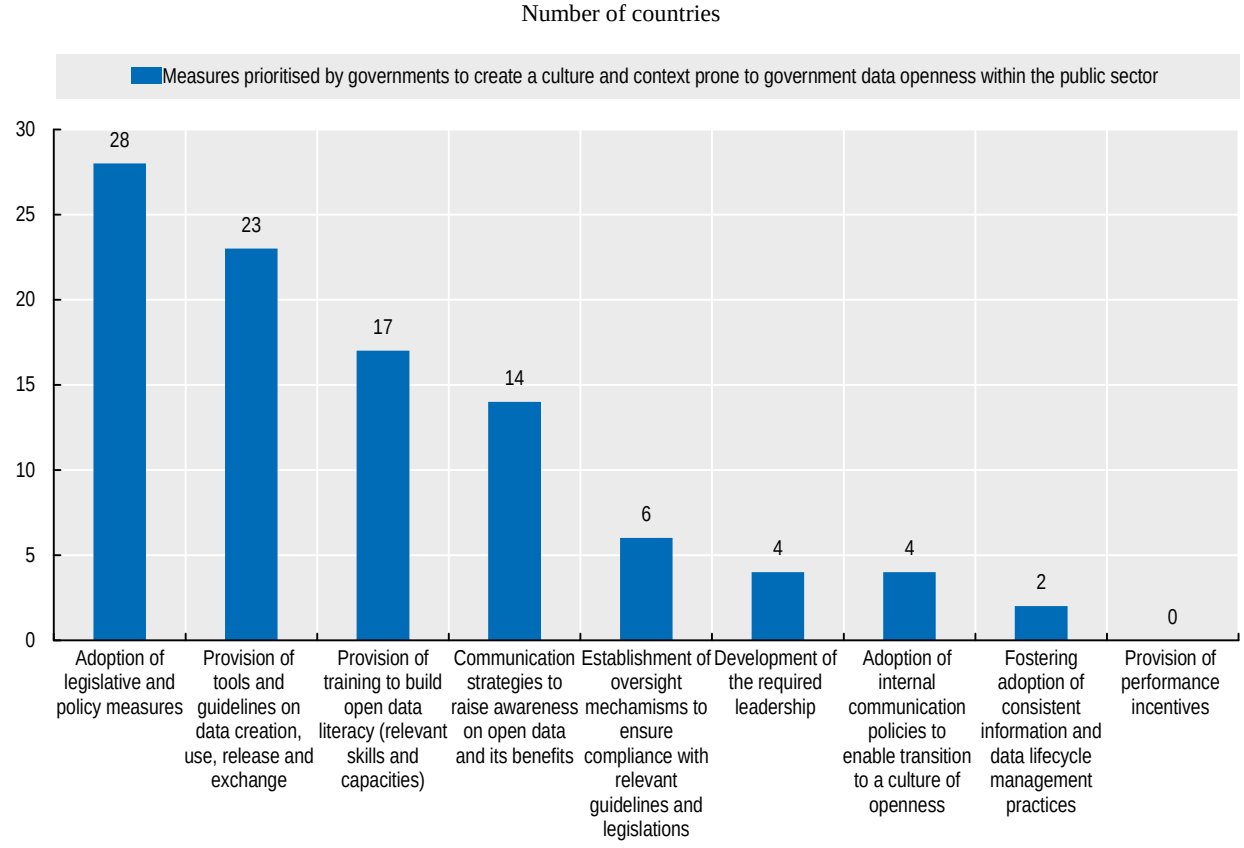
In **Korea**, for example, the Open Data Law, in Article 17, clearly specifies the list of legitimate justifications that restrict requirements to publicly release government data by default. In fact, countries should ensure that this list of legitimate justification is as clear as possible and available for all public sector institutions.[21] In most countries, these limitations are in line with public sector transparency and government openness regulations such as freedom of information acts.

Adoption of international instruments, such as the International Open Data Charter, can also be seen as a proxy for institutionalising open data requirements for public sector organisations, thus helping to further the required cultural change.

Yet, the development of the aforementioned instruments is to be accompanied by hands-on practice and capacity building (see Chapter 2). For instance, while 28 countries have taken action to adopt legal and policy measures and 23 have provided guidelines to support open government data (see

Figure 1.11) only 17 countries have taken action to develop the capacities and skills. This evidence indicates that whereas it is essential to support and promote the availability of sound legal and regulatory pillars for open government data, it is also important to build competencies to put that legal basis into action so that impactful open data initiatives exist in reality (see Figure 1.11). Public sector institutions to adopt a culture of government data openness need to understand clearly what open data is and acquire the specific skills to process, share, open up and reuse data, including government data.

Figure 1.11. The measures governments prioritise to create a culture and context prone to government data openness within the public sector in OECD countries and partner economies



Source: Based on information provided by 31 OECD countries and 3 OECD partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 20. What measures do the central/federal government prioritise to create a culture and context prone to government data "openness" within the public sector?

Securing policy funding for sustainable and long-term value creation

The sustainability of open government data policies and strategies in the long term depends largely on the funding models countries adopt. Governments need a strong and well-defined funding model to design, implement and sustain different open data initiatives in the long run (OECD, 2018).

A solid and well-defined funding model facilitates designing, implementing and sustaining different open data initiatives in the long term. Sustainable and secure funding is critical for policy continuity and maturity, as a firm financial basis provides an institution with incentives as well as room for manoeuvre and flexibility to implement its open data strategy and plan efficiently and effectively – coupled with the existence of appropriate accountability, monitoring and evaluation mechanisms. Additionally, clear and sustainable funding, or approaches to recover lost revenues from making data open rather than selling it, make open data initiatives less vulnerable and more protected from the influences of political cycles, thereby becoming a lever to promote open data policies' sustainability and continuity. Thus, the funding model must be designed with the intent to

eliminate all possible constraints to policy implementation and sustainability in the long run and to produce incentives to secure continuity.

For example, governments can decide to adopt a funding model where the central/federal government assigns its own line of financing to their open government data policies and/or strategies upon which each public sector organisation can then finance their own specific open government data initiatives (see Box 1.2). In some cases, funding can be used as a strong policy lever in the sense that project funding can be conditioned to the observance of specific standards and guidelines determined by the central policy co-ordinating body.

Box 1.2. Policy funding models across selected OECD countries

Across OECD countries, the type of financing provided to the authority co-ordinating the OGD policy also plays an important role:

- In the case of **Portugal**, for example, the financial autonomy of the Agency for Administrative Modernisation (AMA) (a body within the Presidency of the Council of Ministers) constitutes an interesting approach to protect decisions and investments on OGD from influences from the political cycle, and secure funding to carry out its responsibilities and secure continuity of initiatives. AMA also uses EU Structural Funds as levers to ensure the inclusion of open data as part of public sector institutions' application for funding.
- In the **United Kingdom**, the funds allocated to the GDS, with the provision of GBP 450 million over 2015 to 2019, constitute a solid financial basis to enable GDS to implement its different programmes for digital transformation (HM Treasury, 2015: 70).
- In **France**, the Secretariat-General for Government Modernisation's (SGMAP) received in 2016 funds of about EUR 41 million, of which EUR 2.5 million was allocated to the publication and use of open government data. Etalab uses this budget to develop different open data initiatives, including the development and management of the central open government data portal, and to exploit the potential value of OGD through data science in order to promote a data-driven public sector (Office of the Prime Minister, 2015: 67-68).

Source: Author, with information from country responses to the OECD Open Government Data Survey 3.0.

Evidence shows that 14 OECD countries out of 31 actually follow a dual funding process (see Table 1.6). That is, in these countries, governments allocate funding for public sector organisations to implement the central/federal open government data strategy/policy, which often entails financial resources to collect, process and publish government data. These public sector organisations, in turn, use their own resources to finance initiatives that build on the policy/strategy, such as events to reach out to the ecosystem.

In fact, establishing a funding model that eliminates all possible constraints to the continuity and sustainability of open data policy implementation, in the long run, will be paramount for governments. Thus, the financial model for open government data needs to be able to provide an adequate financial basis allowing for flexibility in implementation and protection from potential influences of political cycles (OECD, 2018).

Table 1.6. OGD policy funding models across OECD countries and partner economies

	Government assigns its own line of financing to the OGD strategy/policy	Funding from other public sector institutions to fund the OGD policy/strategy but funding is not regular	Government provides funding to other public sector institutions to implement their OGD initiatives	Each public sector institutions finances its specific OGD initiatives	Funding from the private sector	Funding from the civil society	Grants from international organisation	Royalties for some data	Advertisement	EU structural funds
Australia	●	○	○	●	○	○	○	○	○	○
Austria	○	○	○	●	○	○	○	○	○	○
Belgium	○	○	○	●	○	○	○	○	○	○
Canada	●	○	○	●	○	○	○	○	○	○
Chile	●	○	○	●	○	○	○	○	○	○
Czech Republic	○	○	○	○	●	●	○	○	○	●
Denmark	○	○	○	○	○	○	○	○	○	○
Estonia	●	○	●	●	○	○	○	○	○	●
Finland	○	○	●	●	○	○	○	○	○	●
France	●	○	○	○	○	○	○	○	○	○
Germany	●	○	○	●	○	○	○	○	○	○
Greece	○	○	○	○	○	○	○	○	○	○
Ireland	●	○	○	●	○	○	○	○	○	○
Israel	●	○	●	●	○	○	○	○	○	○
Italy	●	○	○	●	○	○	○	○	○	●
Japan	●	○	●	●	○	○	○	○	○	○
Korea	●	○	●	●	○	○	○	○	○	
Latvia	●	○	○	●	○	○	○	○	○	●
Mexico	○	●	○	○	○	○	○	○	○	○
Netherlands	○	○	○	●	○	○	○	○	○	○
New Zealand	●	○	○	○	○	○	○	○	○	○
Norway	●	○	○	●	○	○	○	●	○	○
Poland	○	○	○	●	○	○	○	○	○	●
Portugal	○	○	○	●	○	○	○	○	○	●
Slovak Republic	○	○	●	○	○	○	○	○	○	●
Slovenia	●	○	○	●	○	○	○	○	○	●
Spain	●	○	○	●	○	○	○	○	○	○
Sweden	○	○	○	●	○	○	○	○	○	○
Switzerland	●	○	○	●	○	○	○	○	○	○
Turkey	●	○	○	○	○	○	○	○	○	○
United Kingdom	○	○	○	●	○	○	○	○	○	○
OECD total										
Yes ●	18	1	6	23	1	1	0	1	0	9
No ○	13	30	25	8	30	30	31	30	31	22
Colombia	●									
Lithuania	●			●						●
Peru	●			●						

Source: Based on information provided by 31 OECD countries and 3 OECD partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 22. Please indicate how OGD is funded in your country.

Government-led seed funding models can indeed also help to invigorate the demand and link data-reuse initiatives to governments' overarching priorities. Existing funding models of many civic start-ups for example too often rely on ad hoc funding provided by international donors; this may put at risk the continuity of their work and of the value they create (OECD, 2018). There is a need to invest and develop business models that require seed funding in the short term but can self-capitalise in the mid and long terms. Coupled with stronger capacities across the open data ecosystem and within the different communities to formulate the value proposition of open data initiatives, such funding can contribute to a sustainable and irreversible cultural change.

Notes

1. For more information, see www.per.gov.ie/wp-content/uploads/Draft-Open-Data-Strategy-2017-2022.pdf.
2. Based on additional information provided by Slovenia to Question 1a, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at www.mju.gov.si/nc/en/media_room/news/6505/.
3. Based on additional information provided by Poland to Question 1a, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at https://mc.bip.gov.pl/programy-realizowane-w-mc/programu-otwierania-danych-publicznych.html.
4. Based on additional information provided by Estonia to Question 1a, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).
5. Based on additional information provided by Italy to Question 1a, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at http://open.gov.it/wp-content/uploads/2016/10/2016-10-07-3rd-NAP-Italy-English-version.pdf.
6. Based on additional information provided by Korea to Question 4a, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at http://law.go.kr/engLsSc.do?menuId=0&subMenu=5&query=%EA%B3%B5%EA%B3%B5%EB%8D%B0%EC%9D%B4%ED%84%B0%EC%9D%98%20%EC%A0%9C%EA%B3%B5%20%EB%B0%8F%20%EC%9D%B4%EC%9A%A9%20%ED%99%9C%EC%84%B1%ED%99%94%EC%97%90%20%EA%B4%80%ED%95%9C%20%EB%B2%95%EB%A5%A0#.
7. Based on additional information provided by the United Kingdom to Question 4a, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).
8. For more information, see: www.data4sdgs.org.
9. Based on additional information provided by Canada to Question 6, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).
10. Based on additional information provided by Finland to Question 6, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).
11. Based on additional information provided by France to Question 12f, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).
12. Based on additional information provided by Ireland to Question 12f, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

13. For more information, see www.modernisation.gouv.fr/documentation/decrets/une-nouvelle-organisation-pour-la-transformation-publique-et-numerique-de-letat-decrets-du-20-novembre-2017.

14. Based on data from Question 17, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

15. Based on information found at https://data.gov.ie/pages/opendatagovernanceboard.

16. Based on information provided by 31 OECD countries and 3 OECD partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 9, Question 9a and Question 9b. The questions were: Is there a law on access to information and/or on transparency and/or on open data which sets requirements and responsibilities promoting open data in your country? *and* If yes, specify. and If yes, please specify the level/s of government to which it applies.

17. Based on additional information provided by Greece to Question 9, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

18. Based on additional information provided by Italy to Question 9, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at www.gazzettaufficiale.it/eli/id/2015/07/10/15G00116/sg.

19. Based on additional information provided by Slovenia to Question 9, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO3336.

20. Based on additional information provided by Japan to Question 9, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at www.japaneselawtranslation.go.jp/law/detail/?ky=ask&re=02&page=19&la=01.

21. Based on information provided by Korea to Question 3, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

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Government of the Republic of Korea (2016), "Act on the Promotion of the Provision and Use of Public Data", English version provided to the OECD by the Korean Government.

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OECD (2017b), *Government at a Glance 2017*, OECD Publishing, Paris, http://dx.doi.org/10.1787/gov_glance-2017-en.

OECD (2017c), "OECD Open Government Data Survey 3.0", unpublished.

OECD (2016a), *Open Government Data Review of Mexico: Data Reuse for Public Sector Impact and Innovation*, OECD Digital Government Studies, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264259270-en.

OECD (2016b), *Open Government: The Global Context and the Way Forward*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264268104-en.

OECD (2015), *Open Government Data Review of Poland: Unlocking the Value of Government Data*, OECD Digital Government Studies, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264241787-en.

OECD (2014), "Recommendation of the Council on Digital Government Strategies", OECD, Paris, www.oecd.org/gov/digital-government/Recommendation-digital-government-strategies.pdf.

Ubaldi, B. (2013), "Open government data: Towards empirical analysis of open government data initiatives", *OECD Working Papers on Public Governance*, No. 22, OECD Publishing, Paris, http://dx.doi.org/10.1787/5k46bj4f03s7-en.

Chapter 2. Innovating public service delivery through open data

This chapter highlights the opportunities for using open government data to innovate public service delivery while raising awareness on some of the main implications that need to be tackled to successfully grasp potential benefits. It also discusses the relevance and challenges related to building and promoting an "open by default" culture and organisational capacities in the public sector.

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Lithuania was not an OECD Member at the time of preparation of this publication. Accordingly, Lithuania does not appear in the list of OECD Members and is not included in the zone aggregates.

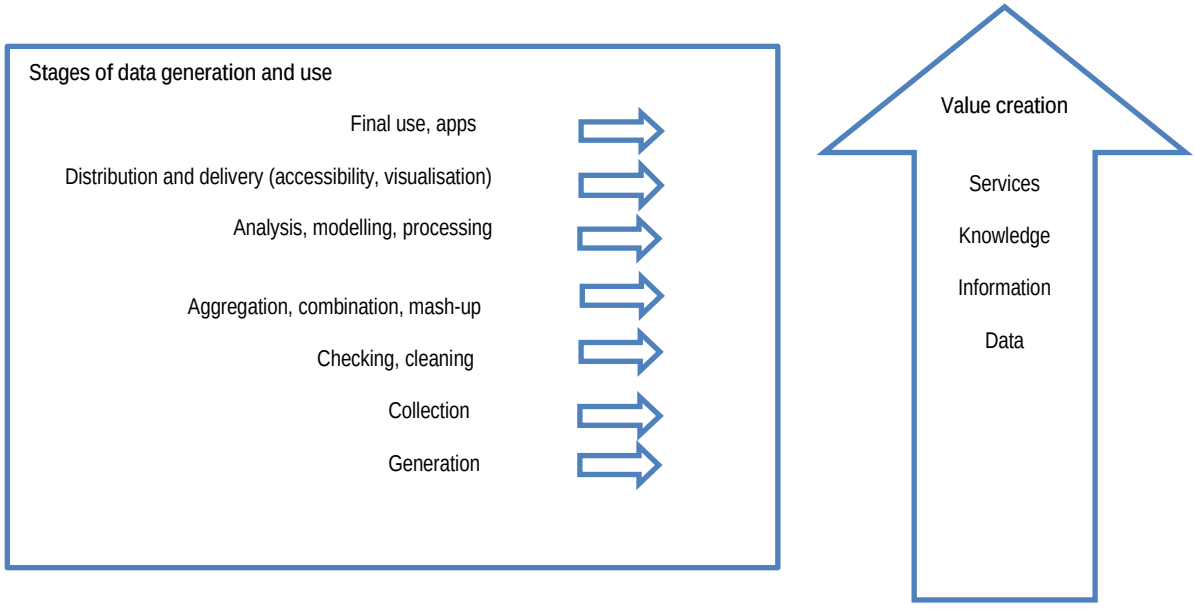
The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Open data and the new frontier of innovative public service delivery

Open government data (OGD) policies, programmes and initiatives have the potential to provide a number of economic, social and political benefits for governments (Ubaldi, 2013), as will be further discussed in Chapters 6 and 7 of this report. Largely praised and supported by advocates of government transparency, open data also offers means for developing new solutions – built on top of government data released in machine-readable formats that can be leveraged to innovate public sector processes and public service delivery. These data are normally referred to as "liquid data", which means open, widely available, and in shareable formats. Open data has the potential to trigger a revolutionary approach to how governments think about providing services to citizens and how they measure efficiency in service delivery as well as user satisfaction.

Nevertheless, creating value from OGD not only means addressing the issue of escalating data quantity, quality and improving the capacity to identify high-value, high-impact data for the whole ecosystem to promote reuse (as highlighted in several chapters of this report), but it also requires exploring and understanding the process barriers to effective data management for government data to contribute to the public service value chain (Figure 2.1).

Figure 2.1. The contribution of government data to the public service value chain



Source: Ubaldi, B. (2013), "Open government data: Towards empirical analysis of open government data initiatives", *OECD Working Papers on Public Governance*, No. 22, OECD Publishing, Paris, http://dx.doi.org/10.1787/5k46bj4f03s7-en.

A great amount of innovation is happening across OECD countries and other economies as a result of the higher quality, accessibility (see Chapter 3), availability (see Chapter 5), and reuse (see Chapter 7) of open government data. A primary driver of this trend appears to be the fact that governments increasingly take up the idea of open innovation. This implies engaging and unleashing the power of non-institutional stakeholders such as the private sector, the academic sector, the non-profit sector, as well as the public in general,

throughout the whole open data policy process in order to accomplish more than what the government could do alone.

Opening up government data provides the opportunity to involve innovators from inside and outside governments to co-create ways to tackle old and new challenges. This has the potential to increase government efficiency and effectiveness, as well as to innovate the delivery of services and internal public sector operations. Additionally, the increasing uptake of emerging technologies and data analytics within the public sector, and the integration of analysis in policy making and in the design of public services can boost more integrated and innovative service delivery.

This potential bodes well with a general trend happening across OECD countries and other economies, as articulated by Tim O'Reilly's concept of "government as a platform" (O'Reilly, 2010). This concept refers to the fact that governments' role is changing; as governments are no longer expected to be the sole provider of responses and solutions to "wicked problems" that increasingly require joined-up answers. This implies the government's capacity to act as a facilitator, providing the platform for institutional and non-institutional actors to collaborate to jointly produce common solutions (see Chapter 5).

Since the inception of the Internet, and its increasingly central role in how governments have transformed how they deliver services and information to citizens and businesses, governments have used data as an input into a finished "product", i.e. a service delivered to users (O'Reilly, 2013). As government data made available as open/liquid data are being provided to the broad ecosystem of actors, which is enabled to develop new innovative solutions and to directly contribute to public sector innovation. Hence, the data becomes the "platform" that fuels the development of new useful applications and solutions, which can lead to new forms of open and collective public sector innovation (see Chapter 5).

Nevertheless, data should not be misunderstood as equating the concept of "government as a platform". A similar understanding has proved to be unsuccessful, as a platform-based organisational model, and or public sector business model is required to enable users to locate and use data, as much as it is for the government to identify potential users. As the chapters of this report highlight, it is about data stewardship (see Chapter 3), as it is about establishing the institutional and governance frameworks (see Chapter 1) that enable the government to act as "sponsor", "mobiliser" and "facilitator" within the new business model. A reorganisation off line (i.e. in the analogue world) is critical to breaking down the silos that obstruct collaboration in the digital world.

Therefore, to leverage the opportunity of using data as a fuel for new collaboration and ways of working has several implications. It entails first and foremost a significant change in the way governments operate and conceive their role as service providers (i.e. rethinking their role), which might be a long and complex process, fraught with risks: instead of being the provider of the final solution, or the owner of the data, the government becomes the data stewards (Helbig et al., 2012). Moreover, governments need to address key policy challenges (see Chapter 4) to refine their capacity to understand citizens' specific needs, behaviours and mental models, and to use the data to respond to these needs (i.e. becoming more user-driven). All this entails a significant cultural change within the public sector.

What kinds of innovation can open data bring?

Improving ordinary citizens' experiences

Open government data programmes, and the tools they help generate, provide helpful ways to find new approaches to old problems and to sustain the application of emerging technologies for innovative service delivery. Innovative governments have begun to change the way in which they do business by providing more holistic solutions that optimise services, according to the needs of citizens, and continuously improve services in response to users' feedback (MBRCGI and OECD, 2017).

As artificial intelligence is increasingly used to improve service delivery and users' experience, open data provides evidence on user behaviour and preferences in order to fuel citizen-driven design. Hence, an increasingly available amount of data, which could be accessed and reused as provided in open formats, has enabled the design of innovative citizen experience driven by their needs. Data contains relevant information about people's lives and preferences which need to be available and accessible to all, within the limits set by safeguards to privacy and security (see Chapter 3).

However, open government data is rarely usable by ordinary citizens in the form in which they are first released. The past decade has brought significant and growing benefits to ordinary citizens through apps and services built on open data reuse, which have been crucial in optimising the usefulness and impact of OGD for ordinary people. These services and apps have become the interface bringing to light the information it contains, and allowing individuals to incorporate it into their daily habits and life. For example, in **Slovenia**, the eVineyard is a start-up project using OGD to provide software to help wine producers produce better grapes with less use of pesticides. In fact, OGD is used to provide information as a service and enable wine producers to then make better decisions for their vineyards.[1]

Some of the biggest open data success stories that have brought value to citizens come from the world of public transport, where many useful mobile apps have been developed using transit data released by governments in open formats. These applications have fundamentally changed riders' habits in consuming data on public transit. However, useful real-time transit apps built on government open data do more than offer a raw feed of public transport positions (i.e. GPS co-ordinates for buses). For example, many allow riders to search arrivals on multiple lines and to adjust their commute plans accordingly.

Improved service delivery in the transport field can also emerge as a result of initiatives originally driven by a government's push for greater transparency around data. In the **United Kingdom**, for instance, discussions between the Department of Transport and Trade Association for Train Operating Companies (ATOC) led to free access to the fares databases in early 2013. Since then this has enabled the development of price comparison websites and mobile phone apps for the benefit of passengers who can access accurate information and find the tickets they need at the best price.

Weather data is another area where interesting developments have happened in terms of improved design of mobile apps built on open data. Government weather data have been considered a public good since the moment governments gained the capability to collect relevant data on weather. However, the first weather-related apps used a single information model to release data to the public. This model was mainly regional, focused on large events and on weather patterns mainly because the authorities with the main pressing needs for weather data were agricultural and industrial actors. The world of

weather apps has greatly evolved in past years and apps such as Dark Sky,[2] Swackett,[3] Yahoo!Weather,[4] etc. all use the same public data, but each offers a different experience that responds to specific needs and questions of ordinary citizens, e.g. what jacket should I wear today? Do I need to bring my umbrella with me? These apps employ design in combination with open data to deliver an experience that far exceeds anything that existed prior to the 2010s (Harrel, 2013).

This requires not only smart technology but, even more relevant, a new and thoughtful re-thinking of the needs of public services' users: what information (right and accurate data) needs to be provided, when (timeliness) and how (design) it needs to be provided. The task of making data meaningful and useful to ordinary citizens who can benefit from it is not easy, and public sectors cannot always count on the availability of the skills required (see Chapter 4). There is more to designing open data than just making it searchable, discoverable, available, and presenting it attractively. Integrating data from various departments, using plain language, simple and familiar web interfaces and clear information hierarchies are just some examples. All this requires a working environment where cross-disciplinary teams work together with an open and transparent approach to the management of processes. Coders, data scientists, lawyers, designers and service delivery experts in various policy areas need to collaborate to deliver single solutions to users (see Chapter 4). Designing thinking approaches, for example, seek to bring together different disciplines to focus solutions around demand rather than around supply.

Understanding how to choose, aggregate, present and enable public interaction with data are all key steps. Skipping any of these steps, or doing one poorly, can lead to confusion or underutilisation of the released data. An interesting example is one of US census data. Early versions of American FactFinder provided links to available datasets. This represented a valuable service and an important improvement on what was earlier available via the Internet. Still, it was very challenging for untrained people to use it. The latest version has evolved to allow returning the data to the people in a form in which they can use it.

Another interesting example is in the schools and education area. Rather than listing data on schools, most apps – such as the DiscoverBPS, the Boston Public Schools search app – allow comparison across factors that are likely to be important for the family's choice of school. The innovative approach comes from using parents' perspectives to decide what, when and how to deliver school-related data. These apps reduce the burden on public services' users to extract the specific information they care about from public data. Design is used to make the relevant information more accessible to all ordinary citizens.

Hence, open government data has increasingly modified the role of the public authorities in relation to how services are being delivered, e.g. through apps. Authorities are letting the market develop most of these apps to meet users' needs, while in the past they would have been the primary developers. Interestingly enough, the "market" is no longer made up of only large private sector representatives such as established companies as larger numbers of social entrepreneurs, developers and individuals participate in hackathon movements and events to exchange knowledge and experience in order to enable ordinary citizens to benefit from the value produced through government data. These non-institutional actors thus contribute to changing the way services are delivered and play a key role in capturing open data's full transformative potential and delivering its value to ordinary citizens (see Chapter 7).

In **Germany**, the Federal Ministry of Transport and Digital Infrastructure have implemented a research initiative to support the development of data-based businesses in

the transport sector. In fact, the initiative, titled "mFund", provides financial support in particular to start-ups and smaller companies to enable them to develop innovative business ideas reusing OGD related to different fields of mobility. Other bodies such as universities and research institutions also researching and developing applications for digital innovations in the transport sector are eligible for funding. Currently, 100 projects have been funded by the Ministry of Transport and Digital Infrastructure with more than 300 individual project partners. Furthermore, a specific open data portal for mobility-related data has been created to facilitate OGD access and reuse.[5] Box 2.1 provides another example from the United States.

Box 2.1. Health Datapalooza: Innovating health services in the United States

The Health Datapalooza is a platform for public sector organisations, businesses, citizens and other stakeholders to collaborate, create knowledge from health data and promote its reuse so as to enhance public policies and practices in health. It also operates as a platform to facilitate government collaboration with open data users through the reuse of open government data on health.

Created in 2010, it gathers, each year, different governmental and non-governmental stakeholders to share ideas on the use of health data to address health and healthcare issues. Conferences thus take place and offer opportunities for networking and collaboration to solve public policy challenges in health, with the use of data at the centre.

In 2018, a new concept was introduced, called "Health Datapalooza Unconference", to further promote the reuse of open government data on health. The Health Datapalooza Unconference is a space to promote unplanned and active interaction regarding experiences in the use of healthcare open data.

Furthermore, in the conference of 2018, some of the themes discussed were the use of smart data to support clinical decision making, or again the use of big data to combat antibiotic resistance.

Similarly, in 2017, themes addressed during the conference focused on the use of data to improve hospital performance, through the use of digital tools to benefit underserved communities, to innovations in data sharing.

Note: For more information, see www.academyhealth.org/events/archive.
Source: AcademyHealth (2018), "Health Datapalooza Agenda", www.academyhealth.org/sites/default/files/hdp_agenda_2018.pdf (accessed 13 July 2018); AcademyHealth (2017), "Health Datapalooza Agenda", www.academyhealth.org/sites/default/files/hdpagnedabook.pdf (accessed 13 July 2018).

For this reason, open data programmes and policies should not only focus on building public sector capacities to sustain related initiatives but should also aim to increase the number of intermediaries that are key partners in using open data to respond to the needs of real users. Intermediaries include for example infomediaries, which have grown significantly in number in **Spain**, for instance, after the launching of the national open data initiative, Aporta - or the "civic technology industry". This is a sort of new subset of the software industry, a collection of start-ups that challenge existing heavyweights in government technology, or creates completely different tools. In Spain, a study on the public infomediary sector indicates that in 2015, the overall financial turnover of this

sector stood from EUR 1.55 million to EUR 1.75 million (Spanish Ministry of Energy, Tourism and the Digital Agenda, ONTSI and Public Corporate Entity Red.es, 2016)[6] (see also Chapter 8). In the **United States**, the non-profit *Code for America* also launched an accelerator programme investing seed money and time into a few new companies.[7]

Some countries implemented such initiatives in the early stages of open government data development. In **Korea** for example, in 2012 an initiative was held to include further intermediaries in the use of open data. The initiative "Let's shake! Open Government Data Camp" was a hackathon organised by Codenamu, an open community interested in maximising the impact of Gov 2.0 to the benefit of the broad ecosystem.[8] These types of efforts are among the most diffused co-creation practices among OECD countries and partner economies (see Chapter 7).

Building the next generation of empowered civil servants

Innovation in service delivery achieved through open data can not only result from the reuse of data by private sector actors or by civil society organisations. It can also be produced thanks to the reuse of government data by civil servants, who have in several instances taken the initiative to develop new services and/or new mobile applications. The use of technology and data analytics within the public sector and the integration of analysis in policy making and the design of public services can boost more integrated and innovative service delivery. This requires, however, availability of specific capacities among civil servants, at all levels, as well as incentives for them to be enticed into experimenting (see Chapter 4).

Equally important to empowering citizens is, in fact, empowering the public sector workforce. Opening up government data can enable civil servants, many of whom are front-line professionals, to participate directly in ensuring that government supports open innovation, and develop services – or forms of access - that better respond to users' needs. Many civil servants see the real-time performance and impact of public services and public policies on citizens, and would be able to generate appropriate data and other inputs, or use available ones, to improve service experience if they were given the tools and incentives to do so, e.g. by being enabled to participate in a professional capacity in online social networks to offer advice and knowledge to the public (Ubaldi, 2013).

Moreover, many civil servants also see a blurring of their personal and professional lives in terms of the tools they use, such as smartphones. This fact could improve their performance through the two-way exchange of experience and skills. Sensible structures are needed to ensure that civil servants are empowered in this way while they are also able to retain impartiality and a position of trust both from the government itself as well as from citizens. This also requires that civil servants be equipped with the necessary skills, tools, mechanisms and guidelines (Tambouris et al., 2012).

Empowering civil servants with OGD requires strategies and programmes to build the next generation of civil servants. New skills are needed (see Chapter 4), which are not only strictly information technology (IT)-related. They should include: data science; predictive analytics to identify patterns and create models; a better knowledge of how to use web 2.0 technologies for social engagement and to negotiate and connect to people; and a finer understanding of emerging problems and of the use of IT to solve them (e.g. cybercrime investigations). As an example, the Dutch police force, in collaboration with Deloitte and a forensic consultant (ForensicPlaza), co-produced a programme known as "Awareness and Digitalization". This programme is intended to provide a flexible and innovative way to raise the police force's awareness of risks and opportunities in the

cyber environment and to develop their skills in dealing with the emerging challenges of an increasingly digitalised society (OECD, 2016).

Innovating public procurement

Open government data has not only paved the way for new forms of service delivery. OGD has also helped highlight some of the deficiencies in existing procurement processes of digital solutions needed by governments to deliver services and information.

OGD and the changes it is provoking in terms of service delivery have also a considerably relevant potential impact on how software and technological solutions are procured by the public sector. Instead of purchasing software, governments and public sector organisations are moving from traditional procurement process (e.g. siloed procurement practices, contracting and managing of suppliers) to an approach where governments act as one client, simplifying ICT procurement by establishing shared capabilities using a single procurement process, and providing data (e.g. open contracting data, see Chapter 6) to engage outside developers to develop apps, for instance through hackathons or apps contests. Therefore, innovating how digital services are commissioned.

This is extremely useful not only to capture optimal technology solutions but also to nurture innovative procurement practices, for instance by cultivating a more open culture towards new ways of working (OECD, 2017a) and establishing optimal collaboration with non-institutional actors engaged for the delivery of public service, therefore making the most of the latest thinking on how software and services are developed and deployed to best respond to users' needs. As a result, services can be more responsive to users' needs and can be delivered more efficiently and effectively, thus producing gains for both the public sector and end users.

In a number of countries, efforts have therefore been made to ease user experience in the analysis and potential reuse of procurement data.

In **Slovenia**, the Ministry of Public Administration created a web-based application, Statist,[9] which provides direct, comprehensive and updated information (e.g. ten largest contracting entities and ten largest tenderers by timeframe and contract value) (MJU, 2018) on awarded public procurements in the country since 1 January 2013. Users can examine the information using different parameters and consequently access all key information on the use of public funds for all contracting authorities within a certain period. Additionally, users can easily download, store, extract and adjust data according to their own needs.[10]

At the multinational level, efforts such as the Open Contracting Data Standard (see Chapter 6) aim to standardise how public procurement data is published in order to ease its comparability and reuse and support more efficient and accountable public procurement processes. At the European level, the 2014 EU Directive on Public Procurement also seeks to standardise and shed further light on procurement practices, for instance by highlighting the relevance of publishing contracting authority's purchasing intentions (prior information notices), notify suppliers on contract opportunities (contract notices), and contract award notices (European Parliament, 2014).

The traditional public procurement process is indeed often regarded as cumbersome and complex therefore opening up a window of opportunity to take further advantage of digital technologies – and new technologically driven solutions – to innovate government operations (see Chapter 6). Some governments have been making efforts to simply their

procurement processes so as to capitalise on the use of digital services and technologies. For example, efforts to improve and streamline procurement processes can offer benefits for open government efforts by supporting an environment that is conducive to open innovation.

In **Canada**, the government aimed to use simplified procurement processes to award contracts to companies for the development of specific digital services as part of an agile procurement pilot, and in support of the Canadian open government portal.[11] This included the implementation of an open, innovative, and challenge-based procurement process, co-ordinated by Public Services and Procurement Canada (PSPC), where businesses were able to pitch their proposal to a panel of five evaluators. This agile model helped accelerate the procurement process (the contract award took place within two months of the launch date) and decreased the burden that cumbersome procurement processes can represent to small companies (Treasury Board of Canada Secretariat, 2017).

Additionally, open data can also support new IT service delivery arrangements, e.g. cloud-based, that are not only entirely dependent on public sector systems or that can replace them entirely. Nevertheless, a note of caution is needed. Releasing open data and involving outside developers to gradually develop solutions may not be the right approach for the development of all government IT systems. It may efficiently support the generation of emergent customer-facing applications, but it may not substitute standard procurement when governments have specific needs or detailed requirements on how a solution or app should be built and operated. Other issues relate for instance to the need to balance government openness with the protection of personal privacy, sensitive data, and business confidentiality (see Chapter 3). Yet developing the right capabilities to choose the most adequate modality of commissioning given specific needs remains a priority – and a challenge – for most governments.

Evolving public sector internal dynamics

The OECD Working Paper, "Open Government Data: Towards Empirical Analysis of Open Government Data Initiatives", as well as numerous OECD country reviews (see, for instance OECD, 2017b, 2016, 2015a) highlight OGD's potential to increase government efficiency, effectiveness and innovation in service delivery and internal public sector operations. Even though the release of government data on line can raise a number of substantive enquiries in terms of government activities that require time to be addressed, from a service delivery perspective data reuse can also lead to a significant decrease of the questions routinely received by public authorities, or enable questions to be answered more quickly. Additionally, the remaining questions concerning service delivery per se would be easier for civil servants to answer as the relevant information would be easier to find. Subsequent benefits include reduced workload, a reduction in paperwork and lower transactional costs. Services are also improved as people more easily find and claim the benefits they are entitled to, and public sectors can tune frontline services more closely to individual needs and behaviours.

In the **Netherlands**, the Dutch Department for Cultural Heritage is, for instance, actively releasing their data and collaborating with amateur historical societies and groups such as the Wikimedia Foundation in order to execute their own tasks more effectively. This can result in improvements in the quality of data, while encouraging external inputs and new sources of knowledge, possibly making them more innovative and comprehensive. In addition, one could argue that the co-development of knowledge, in this case, increases

not just the quality, but also the awareness of the Dutch public authority's work, thereby further increasing its value and relevance.

Similarly, in Bristol (**United Kingdom**), the project "Bristol Is Open"[12] is a collaboration between the local government, universities, local tech communities and the technology, media and telecommunications industry aimed at promoting user-driven services and policies in the city (Capgemini Consulting, 2013). In fact, the project is indeed based on a joint venture between the Bristol City Council and the University of Bristol, and draws upon the value of using digital technologies to facilitate multi-stakeholder collaboration and jointly address policy challenges. An initiative called the "Bristol Approach" was launched in that line, which supports citizens working together to pinpoint the needed knowledge, technology and resources to address problems in the city of Bristol.[13]

OGD can also help encourage collaboration across and within public agencies and departments. As shared datasets and/or registers are being created, collaboration and exchange on who "owns" or holds what data and for what purpose it is needed, which provides an opportunity to also develop sound data governance models, re-engineer and simplify internal procedures, spot and correct duplications in data production and/or collection, and/or automate processes and as a result eliminate redundant expenditures or reduce internal transactional costs. Furthermore, as public resources are freed from having to maintain unnecessary registers and datasets, they can be reallocated to more productive tasks.

Using predictive data analytics to spot emerging governmental and societal needs

The enhanced ability to combine different datasets can help develop additional, more innovative and better products and services. Mixing public data with commercial, civil society and citizen input data, and pooling and sharing with those produced by other public agencies and/or levels of government – i.e. data sharing for developing shared content, services and policies between cities or countries – holds considerable potential for public value creation. Authorities point to the need in the future, not just for "big data", drawing on citizen inputs and facilitating data analytics, for example, to develop and simulate public policies and better target services, but also for a more qualitative approach including ethnographic surveys. A need is thus foreseen for both big quantitative data crunching to provide explicit codified evidence for public sector activities, on the one hand, as well as more qualitative survey data to contextualise "big data" to provide the necessary implicit and un-codified evidence. Public sectors are still struggling with the development of the skills the public sector needs to conduct data analytics and make the best use of data analysis, as well as to cross-link data and sources. This is essential to spur open data use by the public sector that drives better decisions, informs policies, supports the development of data-driven processes and services, and delivers more innovative services (Ubaldi, 2013).

Over the last decade, the private sector has increasingly used data analytics to target the delivery of goods and services and, when compared with the public sector, it has been more able, flexible and agile to adapt to the digital revolution. For such a reason, as technology evolves, and data availability explodes, governments could learn from the private sector on how to better adapt to digital change in order to exploit new digital technologies, combining the use of data and the latest technology to achieve the delivery of modern, timely and personalised services targeted to the needs of users. The lesson for the non-commercial world could be, for instance, that it is important to establish channels

that are push mechanisms for information – thus helping move towards a more proactive approach towards data and information release to meet the demand or retrieval mechanisms for complaints and comments. This can help to improve government performance.

What's missing, however, would be the dialogue, not so much between people themselves, which often happens anyway, but between individual citizens and governments (see Chapter 4). This requires structuring, tracking, tracing and personalising answers to the input received by the appropriate level of responsibility (either at the central or local level of government) driven by who has direct contact with citizens, therefore providing insights into user needs. This requires time and effort but provides potential wins for citizens, as well as for the government. It can move governments from one-size-fits-all to segmentation and finally to personalisation, bearing in mind, nevertheless, that data can often produce results counter to citizens' stated preferences.

In **France**, Pôle Emploi (a French public sector organisation that assists jobless people in the search for new employment registers unemployed citizens and helps them find jobs) has been using data analytics to detect fraud into financial assistance provided by the organisation, provides data on unemployed individuals and employers that is analysed through data visualisations tools, and linkages between individuals and employers are identified. In fact, based on data analytics, the data visualisation, following the data analytics, assign coloured scores according to the level of incoherence between the information provided by individual job seekers and employers. This, in turn, allows for the identification of potential fraud from either individuals or employers (Tauzin, 2016).

Earlier examples of the use of data analytics within the government have been implemented in New York City (NYC) (**United States**) for example. In fact, in 2012 already, advanced data analytics were used in NYC to better target fire, safety and health inspections ("saving taxpayer money and saving lives"). Since then, NYC receives over 20 000 complaints per year for "illegal conversion", i.e. properties that house more people than is considered safe. Historically, the around 200 inspectors at the Department of Buildings would find serious high-risk conditions at 13% of inspections. Recently, in 2012, the Department started co-operating with about 19 other NYC agencies. They cross-tabulated enormous amounts of additional data on the individual properties and used the results to guide inspections. The result is that now between 70% to 80% of inspections discover high-risk properties, upon which actions can be taken.

Moreover, the NYC mayor office used advanced data analytics and combined data from several of the city's departments to boost predictive data analytics. This is helping to save lives and taxpayer dollars in New York City, thus ameliorating deplorable housing conditions that are hazards to individual and public health. [14]

Results include:

- a five-fold return on the time of building inspectors looking for illegal apartments
- an increase in the rate of detection for dangerous buildings that are highly likely to result in firefighter injury or death
- more than doubling the hit rate for discovering stores selling bootlegged cigarettes
- a five-fold increase in the detection of business licenses being flipped
- fighting the prescription drug epidemic through detection of the 21 pharmacies (out of an estimated total of 2 150 in NYC) that accounted for more than 60% of total Medicaid reimbursements for Oxycodone in the city.

Promoting collective learning, collective intelligence and social participation in service delivery and policy making

Encouraging the emergence of more advanced features, beyond simple delivery of data, can support a collective learning process. For those desiring to build interactive sites, the barriers to entry are much lower once government data is conveniently available. Web hosting is inexpensive, software building blocks are often free and open source, and new sites can iterate their designs rapidly. Successes thus far (e.g. the Govtrack.us site built by Joshua Tauberer;[15] see Box 2.2), show that significant resources are not required to enter this space. See Box 2.3 for another example from the United States.

Box 2.2. GovTrack.us

GovTrack.us is a project that enables American citizens to track the actions of the US Congress and participate in their national legislature. The tool offers alerts to its users on updates to different government bills and provides a deeper understanding of the context of legislation through statistical analyses. The statistical analyses provide insight into the factors that can promote or undermine the bill's success of being enacted, on the sponsorship and co-sponsorship patterns of members of Congress or on text from other bills included in the current one analysed.

The purpose of GovTrack.us is to release government data on Congress as open data to promote full transparency and encourage informed participation from citizens in the political life of the United States. Information about the US Congress is therefore made discoverable, accessible, understand and reusable for public use. This is encouraged by ensuring that information is set in context and monitoring new developments regarding issues affecting citizens and providing the right tools for users to act accordingly.

GovTrack.us is a good example of efforts to use OGD to empower citizens to make informed decisions and participate in the political life of their government, all in a cheap and effective way.

Source: Civic Impulse, LLC (n.d.) "GovTrack.us", website, www.govtrack.us (accessed 14 August 2018).

Box 2.3. San Francisco improves service delivery to disadvantaged youth

In the city of San Francisco, the heads of the foster care, juvenile probation and mental health departments, crafted an agreement with the city's attorney to permit the limited exchange of case information among agencies. The sharing enabled a new level of care for children interacting with any of these agencies. Case co-ordination improved, invisible populations emerged (overlapping clientele). This was made possible by the fact that the new integrated data system recognises and focuses on the families that are most vulnerable, most troubled and most in need. Prior to data integration and data analysis, the agencies had not realised that only 2 000 users of services were using half of the resources of the department, and most of these families lived within walking distance. As a follow-up, the Human Service Agency concentrated delivery of services in specific neighbourhoods and co-located services at community centres, and this improved efficiency.

Results included savings and better service delivery. Analysis of linked data enabled a better assessment of needs of high-risk youth, diverting them from negative future events, the understanding of where youth were falling through, identification of what services were needed to intervene earlier and prevent negative outcomes. Initially supported by a low-tech system, the system was transferred to a more sophisticated platform to enable the three agencies to better understand the overlaps among their users. The crossover users of multiple systems were at higher risk of committing a crime (51% of San Franciscans involved in multiple systems were convicted of a serious crime, 33% had been served by the three agencies, and 88% of these youth committed a crime 90 days after having become a crossover user - a critical window of opportunity for the caseworker to intervene). A report identified a specific need: the need for a web-based integrated case management system to make this connection in real time.

As services started being delivered by non-institutional care providers, awareness grew of the need to balance the right of excellent care with the right to privacy protection. Hence, the need to carefully avoid sharing un-needed information. What made it so difficult were legally related matters. Good results convinced the district attorney's office that the integrated database could support better prevention services and gave the authorisation through a new statute that justifies the sharing of records on youth at particularly elevated risk levels. The school district decided to join to target students with a high probability of dropping out, so as to structure early intervention. Having multiple perspectives on client risk and identifying protective factors can help agencies determine which programmes are more effective, who needs to be targeted (most vulnerable, in trouble and in need) and how to co-ordinate responsibilities.

Source: OECD (2015b) "Rebooting Public Service Delivery: How Can Open Government Data Help to Drive Innovation?", OECD, Paris, www.oecd.org/gov/Rebooting-Public-Service-Delivery-How-can-Open-Government-Data-help-to-drive-Innovation.pdf.

But, furthermore, the expanding use of new technologies, combined with the emergence of the OGD movement, are becoming key enablers of higher public engagement in service delivery. OGD initiatives, particularly as they are supported by social media applications, are creating an architecture for participation that allows users to not only be active contributors in the development of innovative content and apps but also to

collaborate with public entities in delivering services with innovative arrangements and crowdsource collective knowledge (see Chapter 4).

Encouraging change in the organisational culture

Following initial concerns with regard to the importance of increasing data availability, through the development of, for instance, single repositories (e.g. open data portals), governments have increased their awareness of the need to address challenges related to governance, policy frameworks and institutional matters, so as to be able to capture and monitor the benefits of OGD - as highlighted throughout this report.

Yet, as OGD maturity is increasing across the globe, so is governments' understanding that securing long-term sustainability requires changing the organisational culture to further the leadership's understanding and build the necessary skills and open-by-default mindset among civil servants and across the broad public sector. This can indeed facilitate the scaling up of successful initiatives, the sharing of knowledge on what works and what doesn't and the promotion of OGD reuse by civil servants, who can become active agents in benefits realisation.

In the **United States**, the health data initiative (see Box 2.1) was "cloned" in other sectors, such as energy, education, and public safety. For example, Safety.Data.Gov was launched with 700 datasets that relate to all aspects of safety: transportation safety, product safety, community safety, consumer safety, industrial safety. The first Safety Data Jam hosted 40 innovators. As mentioned previously in this chapter, software development contests, information sessions for businesses and citizens, training events for users, organisation of co-creation types of events, and data promotion to journalists are all activities that have been used by OECD countries to foster reuse of data in society (see Chapters 4 and 7).

The recognition of civil servants as a key group of potential data re-users highlights the relevance of the point made earlier in this chapter on the potential impact of OGD to empower public sector officials. Fostering a culture that sustains the use of data to innovate "business processes" and create collaboration within the public sector becomes essential for long-term sustainable results. This implies building the capacities to reuse data for strategic foresight, to innovate (e.g. build data analytics capacities) and to improve performance (e.g. releasing data and implementing OGD policies considered essential as part of the performance indicators framework or policy).

For instance, the **United Kingdom**, between 2012 and 2015, created the Open Data User Group, in collaboration with the Cabinet Office, which offers advice to inform government datasets that should be prioritised for release as open data[16] by a group of "advisors" (the Open Data User Group) collaborating on a permanent basis with the Cabinet Office on open-data-related matters. The **United States** has tried to foster entrepreneurship in government, using a philosophy called "lean start-up". A small interdisciplinary team was established in the United States with the idea to develop and market the simplest possible apps that consumers would actually use. The idea of starting small was to provide incentives for the officials to start learning from actual experience and then iterate rapidly. Cycle times of updating product are days or weeks - not months - long.

Clearly, this approach is in contrast with the traditional model of project management in large public sector organisations - according to the commonly called "waterfall" approach: spending a good number of months coming up with some strategy, another

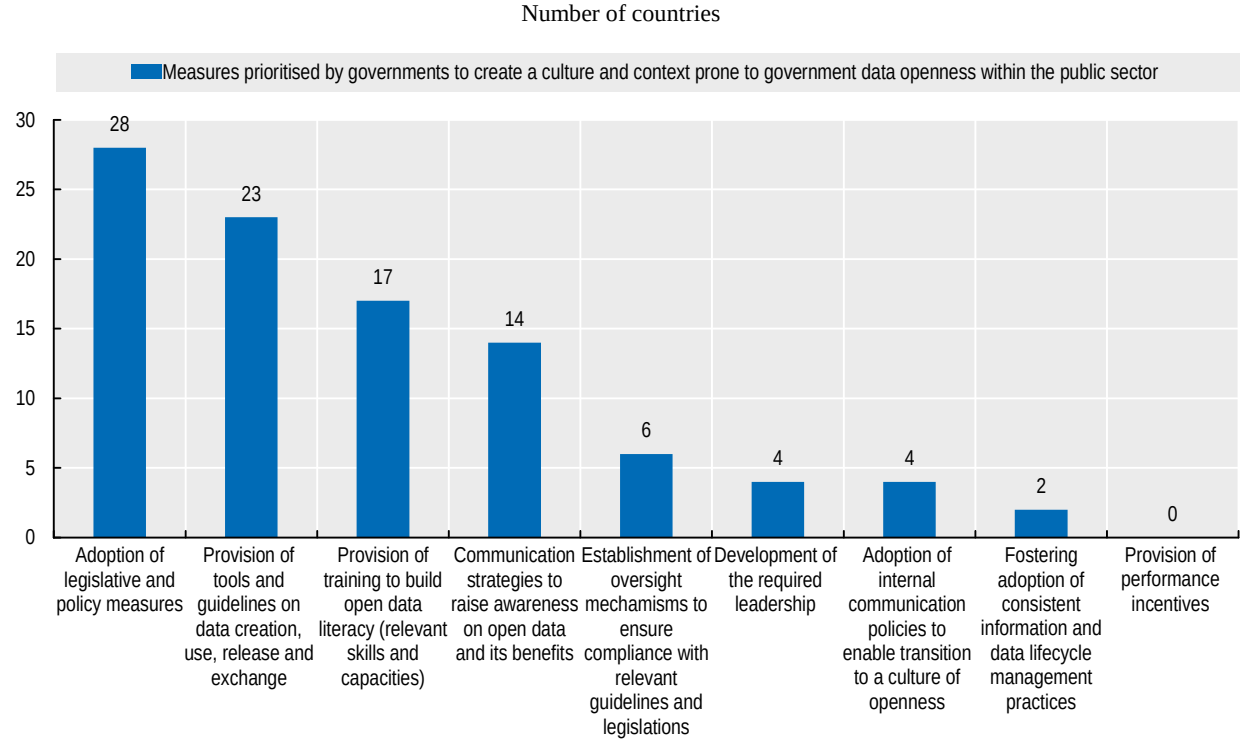
good number of months doing an operational plan, then six more months to build a systems plan, before launching something that might as well not be successful. The mode of operation, in this case, would be much more disruptive as more iterative, rapid and allow for prototyping. Requiring small investments in terms of time and resources, the lean "start-up model" enables the public sector to accept failure. It is as a matter of fact considered as the best risk-management methodology one could adopt; as it minimises the cost of failure and allows the real-time course of adjustment to take evaluation results and changing parameters into account.

Building data literacy capacity

Building up open data literacy constitutes an essential measure to create a culture prone to government data openness. In fact, for a culture of government data openness to grow across public sector organisations, these need to acquire a good understanding of what open data is and develop specific skills to open up government data and promote its reuse. This is part of a broader understanding of data literacy that is not unanimously defined or understood across countries, but that goes beyond the capability to open data better. Data literacy commonly includes identifying the needs of new open data and/or building open datasets, as complementary to the skills needed to better understand and use data and link it to the achievement of strategic policy goals (OECD, forthcoming, 2017c)]. Enhancing data literacy also requires identifying which skills and competencies need to be developed across the different groups of civil servants (including managers and policy makers). This can also help encourage public sector innovation as teams capable of experimenting and innovating across the public sector draw considerably on data, and the stories that data analysis can tell (OECD, 2017d).

However, data collected through the OECD Open Government Data Survey 3.0 show that only 17 countries out of 34 prioritise measures providing training to build open data literacy. Only four countries have prioritised measures to develop the required leadership for open government data, which stresses the need of building capacities, awareness and understanding at all levels within the public sector in order to move away from an approach that confines open data to mere technical and not strategic policy issues (Figure 2.2). As pressure to deliver benefits and policy impact increases, practical focus on implementation is required; skills and competencies are required for this purpose.

Figure 2.2. The measures governments prioritise to create a culture and context prone to government data openness within the public sector in OECD countries and partner economies



Source: Based on information provided by 31 OECD countries and 3 OECD partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 20. What measures does the central/federal government prioritise to create a culture and context prone to government data "openness"□ within the public sector?

In terms of the approach taken by most OECD countries and partner economies regarding capacity-building exercises for data literacy and encouraging an open data culture in the public sector, evidence collected through the OECD Open Government Data Survey 3.0 provides some relevant examples. In some cases, these examples highlight the evangelist role that the central government has taken, especially in earlier policy development stages.: .Regarding understanding the concept of open data:

- In the **United States**, bi-weekly implementation support meetings are held to present to civil servants the benefits and opportunities of open government datasets. Furthermore, to highlight the benefits and opportunities of open data to non-governmental actors, these biweekly meetings are also open to the public on a quarterly basis.[17]
- In **Belgium**, the federal government has held several face-to-face meetings with public servants across the public sector to present the potential value of open government datasets. In addition, a series of awareness sessions have been organised with public servants to increase their knowledge on open government data and its benefits.[18]
- In **Spain**, through the Aporta initiative, a public servant mailing list has been established, and detailed emails providing updates to the members are sent upon changes regarding open government data policies.[19]

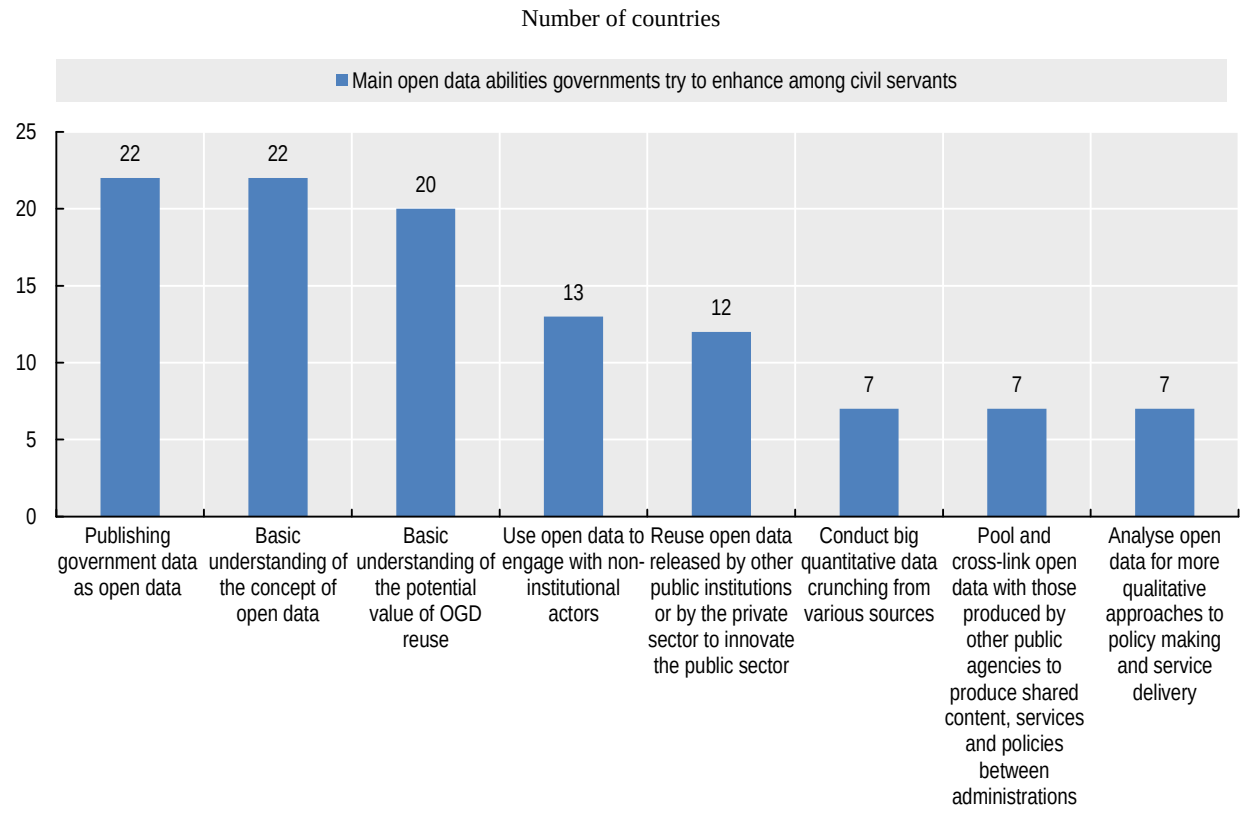
- In **Canada**, the Canadian Open Data Summit is an annual conference calling on different potential open data users to foster a deeper awareness of OGD and its numerous benefits. The summit provides a forum bringing together all orders of government for peer learning on the benefits of OGD and to set a national agenda for aligning and improving the delivery of open data in Canada.[20]
- In **Slovenia**, the Administrative Academy of the Ministry of Public Administration has organised a number of seminars on the topics of public sector data management, open government data, and on the central OGD portal.[21]

Additionally, efforts to increase the abilities of civil servants to publish government data as open data, including open data literacy training courses, include:

- In **Colombia,** the Programme for Excellence in Government offers specific training to public officials to strengthen their digital skills; this also includes open data literacy skills.[22]
- In **Finland**, the Ministry of Education and the Ministry of Finance have organised and supported training sessions for public servants opening up their data, which included training on open data literacy.[23]
- In the **Czech Republic**, the Ministry of Interior and the Department of Chief Architect of the E-Government regularly organise open data training courses and workshops for public servants. These training courses aim to equip public servants with the adequate knowledge and skills for the publication of government data as open data. Thus, these training courses also include open data literacy skills development.[24]
- In **France**, training on open data is available within the National School of Administration (ENA). Other training courses are also provided within the Direction of Administrative and Financial Services of the Prime Minister Office.[25]
- In **Israel**, through the Digital Leaders Program, different types of training courses relating to digital government are offered, of which one relates to open data literacy. In 2017, a forum was held on open data literacy.[26]

However, in general terms, most countries have not prioritised the enhancement of advanced data competencies to promote the reuse of open data within the public sector (see Figure 2.3). Evidence confirms most OECD countries do not stand out in understanding the importance of increasing open data abilities that can lead to data reuse within the public sector, to improve either policy making or service delivery. Seven countries out of the 34 that responded to the OECD Survey on Open Government Data 3.0 (2017) aim to enhance the abilities of civil servants to analyse open data for more qualitative approaches to policy making and service delivery (see Figure 2.3).

Figure 2.3. Main open data abilities that governments are trying to enhance among civil servants



Note: For countries that responded No in Question 18 - Does your central/federal government focus on increasing open data literacy either inside the government and/or among the community of data re-users (e.g. app producers, developers) in society?- the response option No was selected by default for all categories available in Question 18d. Additionally, for countries that responded No to the response option "Civil servants (e.g. data managers, technicians, institutional chief data officers, data analysts/scientists)" in Question 18a - If yes, who is the main target group?- the response option No was also selected by default for all categories available in Question 18d.)
Source: Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 18d. Please specify which ability/ies it tries to enhance among civil servants.

Initiatives have been implemented in some countries, but they remain exceptions rather than the norm:

- In **Mexico** for example, the Data Squads are a group of open data experts responsible for building open government data capacities within the government, which also includes the reuse of open government data, although in its initial stages the focus has been on capacities for open data release.[27]
- In **Korea**, a number of different types of training sessions relating to open data have been organised by the government, and some of these training sessions concern the reuse of open government data.[28]
- The Data Science Campus Project, led by the **United Kingdom** Official of National Statistics, is part of the overall efforts aimed to foster the required cultural development within public sector organisations in the United Kingdom and to foster data reuse (see Box 2.4).

Box 2.4. The UK Government Transformation Strategy: People, skills and culture

In the United Kingdom, the Government Transformation Strategy focuses on promoting the establishment of the adequate skills and public sector culture in line with a data-driven public sector. The strategy stresses the importance of creating digitally skilled public servants by establishing digital professions and increasing the number of digital public servants.

In line with the strategy, the UK Government Digital Service (GDS) focuses on the development of a group of public servants with deep expertise in digital, data and technology, i.e. digital, data and technology (DDaT) professions. This is done through the definition of consistent career paths and reward structures for such professions. Furthermore, a specific framework (the Digital, Data and Technology Profession Capability Framework) helps public sector organisations better understand and recruit DDaT professionals.

GDS also aims to increase the digital skills within the British public sector, through the Data Science Campus and Data Science Accelerator training programme, which both aim to increase government's data science capabilities, as well as the application of digital tools and techniques internally within public sector organisations. The project aims to explore how new data sources (including open data and big data) and data science techniques can improve the collective understanding of the United Kingdom's economy, communities and society, and build world-leading expertise across the whole ecosystem. Created to respond to this challenge, the Office for National Statistics (ONS) Data Science Campus acts as a hub for the whole of the UK public and private sectors to build a new generation of capabilities, tools and technologies to exploit the growth and availability of innovative data sources and to provide rich informed measurement and analyses on the economy, the global environment and wider society. To reach this aim, the Data Science Campus actively promotes collaboration among academia, government and industry partners to meet the demands and challenges posed by the evolving economy and push the boundaries of data science research within ONS and beyond.[1]

Finally, the GDS works towards promoting a culture in line with the data-driven transformation of the public sector. This is done through awareness initiatives on the value of data as an asset within the public sector. Training sessions are offered to allow public sector leaders to manage digital projects and "digital-age organisations" (Cabinet Office and the Rt Hon Ben Gummer, 2017). The GDS also helps create an environment allowing for the training and experimentation on different digital tools and techniques of non-digital public servants.

1. More information is available at www.ons.gov.uk/aboutus/whatwedo/datasciencecampus and https://datasciencecampus.ons.gov.uk/.

Source: Cabinet Office and the Rt Hon Ben Gummer (2017), "Government Transformation Strategy", London, http://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/590199/Government_Transformation_Strategy.pdf.

- In **Italy**, a recent initiative has been established to foster data interoperability, data sharing and promote the management and use of OGD throughout public sector organisations. The Data and Analytics Framework (DAF), a project introduced in the Three-Year Plan for Information and Communications Technology (ICT) in

> the Public Administration in 2017, aims to offer a big data platform (including also OGD), which centralises, stores, standardises and redistributes data and insights. The DAF also has a specific data team that focuses on using the platform to analyse data, build applications and visualisation tools. In fact, the framework and the team can, in particular, assist public sector organisations that do not have the skills and resources to invest in the design and management of their own data infrastructure. This initiative, therefore, creates a platform that facilitates the search, interlinkages, analyses and reuse of data, with the assistance of the team within the DAF if necessary.[29]

The aforementioned scenario stresses the need for increasing capacity-building exercises to strengthen the skill base for the construction of a data-driven public sector. In addition, this requires clarity in terms of defining *what* data and digital skills are needed inside the public sector, beyond the skills related to the preparation process prior to government data publication. It is also a priority to understand the need of data skills in a broader sense to connect the development of these capacities to specific efforts to modernise and transform public sector digital capabilities (e.g. in line with broader public sector employment policies).

Legislative and policy measures that can help create a culture and context prone to government data openness within the public sector need to be complemented by other actions aimed at promoting a working culture that would support advancements in OGD. Many practitioners believe that it is less about training and more about giving officials permission to experiment, as improving a culture of experimentation would help drive the further value of OGD. There are many potentially talented innovators and entrepreneurs across public sector organisations who are, or might be willing, to experiment through the use of OGD, but it is essential to ensure that these people do not remain isolated examples and practices, but are made part of a whole community of data-driven innovators. For this to happen, they need to be given the signal that they can work and operate in different ways, and be provided with the incentives to do so. Encouraging an innovative workforce across public sectors requires tackling issues related to employees' ability and motivation to innovate while giving them the opportunity to act on them in practice (OECD, 2017d).

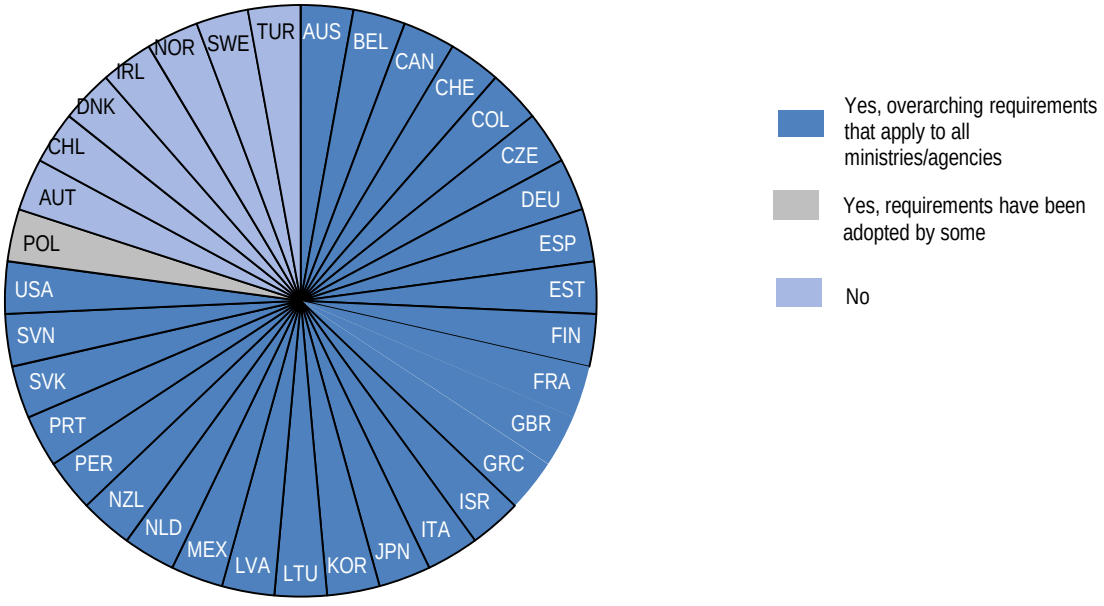
The key message should be more about using OGD to reboot the processes and ways of functioning than to transform what already exists. More than technical training courses, this attitude can be incentivised by providing civil servants with the guidance, principles, tools and space in an environment that authorises innovative behaviour. Open data can be mobilised to support public sector innovation provided that a culture of experimentation across the public sector is incentivised. Cross-fertilisation in this regard can be achieved, with efforts targeting the establishment of innovation units and teams, seen as a structural response for cross-cutting and interdisciplinary initiatives breaking down business-as-usual work while experimenting and introducing new approaches that bring together different tools, methods and skills (OECD, 2017d).

Countries need to establish measures that will stimulate, incentivise and lead to the practical implementation of open government data initiatives (see Chapter 4). In fact, to create a culture and context prone to government data openness, governments need to prioritise measures that will promote and drive the practical implementation of open government data initiatives. As such, governments cannot focus only on establishing a legal basis to open government data in order to promote a culture and context prone to government data openness.

Can "open by default" help promote the desired cultural change?

Many governments still consider the establishment of requirements at the central/federal level whereby government data should be "open by default" as the first essential step towards promoting a public sector culture prone to government data openness (see Chapter 4). This is certainly an essential step to help central/federal ministries and agencies understand that openness by default should be the norm rather than the exception. In line with this final objective, governments have focused on establishing legal frameworks that support the cultural shift towards "openness by default" (while ensuring that they inform ministries and agencies of the few exceptions restricting requirements to government data openness) (see Figure 2.4).

Figure 2.4. Adherents with "open by default" requirements for government data across OECD countries and partner economies



Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 2. At the central/federal level, are there formal requirements whereby government data should be "open by default" (unless a legitimate justification is provided)?

As highlighted in Chapter 1, many governments use the legal framework as complementary measures to promote a culture as well as a context prone to government data openness within the public sector. In **Korea**, for example, the Open Data Law, in Article 17, clearly specifies the list of legitimate justifications that restrict requirements to publicly release government data by default. In fact, countries should ensure that this list of legitimate justification is as clear as possible and available for all public sector institutions. Thus, ideally, this list of legitimate justifications to public release should be available in one single official document and available on line, as it is in Korea.[30]

However, even though the establishment of a legal framework supporting "digital by default" has been pivotal to encouraging a cultural change and making sure that government data openness becomes the standard, with the due respect to the legitimate exceptions to public data, it remains essential to secure that "open by default" is seen as a means to an end and not an end in itself. This is why many governments are increasingly

complementing the "open by default" approach with "publish with purpose" as a way to ensure that data release is responding to the demand.

Open by default vs. publish with purpose?

For many years open data enthusiasts have been advocating the incorporation of the principle of open by default in national frameworks for open data. New national legislation has been adopted and/or existing access to information, or freedom of information acts and laws have been amended to sustain a release of government data as open data, with the exception of data subject to valid privacy, security or privilege limitations (Ubaldi, 2013). Many legislative measures clarify also that the release should be subject only to - at the most - the requirement that users attribute the data and that they make their work available to be shared, that data that can be freely used, reused and distributed by anyone, and/or that no fee should be charged for download and reuse.

When regulatory measures were not taken to push for an open-by-default approach, steps to promote a culture supportive of open by default were undertaken, often encouraged by communities of data re-users. These actions have certainly raised awareness across public sector organisations on the meaning and the potential value of open data, and have incentivised, motivated and helped increase data availability. Yet, key actors of the open data ecosystem have been observing that in many instances the implementation of this principle has led to a supply-driven release of data. In fact, in order to comply with its requirements and respond to the related expectations of the communities of data re-users, or to react to peer pressure, public sector organisations have focused on "low hanging fruit" and released data with a top-down approach and not based on demand. This situation has resulted at times in sharp criticism concerning the fact that open data was seen more as a goal than as a means to enable value creation. Little efforts to get to better know and engage with the ecosystem, to understand the real data needs and let the demand drive the release, were considered the main shortcomings of the criticised public administrations.

Concurrently, as the maturity of open data across countries worldwide has grown, so has an awareness of the need to foster a culture around value creation and problem-solving approaches to be able to efficiently target efforts, and the use of the limited resources, to release data that are highly valuable for re-users. The concept of "publish with purpose" is what best represents this new emerging discussion (see Box 2.5).

In order to encourage a culture of proactive data openness across the whole public sector, there need to be overarching requirements for all ministries and agencies whereby government data should be open by default. However, these requirements should be associated with a clear and available description of the list of exceptions (see Chapter 3) to the requirements for openness by default, and the release of the data should be seen as a means to an end, therefore linked to a purpose (e.g. driven by data demand, problem solving approach) (see Chapter 4).

Box 2.5. International Open Data Charter: Strengthening the framework for sustained publication with purpose

As the International Open Data Secretariat is undergoing an exercise meant to appraise the need to review the International Open Data Charter's six principles, the outcome of public consultations seems to reflect a general agreement with the need to shift towards a strategic approach focusing on "publication with purpose", though overall consensus is still lacking on how to achieve it. Even if the main driver of this shift appears to be the recognition that opening up data disconnected from the purpose of its reuse is less effective than release can be if targeted at solving specific problems, many open data activists consider the whole debate risky as they fear it may end up endangering "open by default" as the principle that underpins the entire open data movement.

Overall, some believe that Open by Default, i.e. Principle 1 of the Charter, remains too ambitious to be achieved by many countries around the world, and ends up putting too much pressure on governments to publish everything they have without regard for quality, security or privacy concerns. Others believe that the notion of "publication with purpose" clashes with the Open by Default Principle – seen as the cornerstone of the whole open data movement. Few argue that "open by default" is a principle while "publication with purpose" is a strategy to achieve that principle (Carfi, 2018).

At the heart of the problem probably lies the fact that the debate is still too insufficiently focused on data demand. For a meaningful open data release to happen, value creation should be the main driver for governments to act upon.

Source: Author, based on research from different sources, including Ubaldi, B. (2013), "Open government data: Towards empirical analysis of open government data initiatives", *OECD Working Papers on Public Governance*, No. 22, OECD Publishing, Paris, http://dx.doi.org/10.1787/5k46bj4f03s7-en and Carfi, N. (4 July 2018), "Is 'Open by Default' too high a bar?", Medium, https://medium.com/@opendatacharter/is-open-by-default-too-high-a-bar-1bc8c0578480.

Improving capabilities to deliver and measure impact

This chapter has discussed how open data can be leveraged across the administration and levels of government to provide context and insights that can inform the performance improvement agenda (see Chapter 8). A key first step to efficiently use open data to solve problems and improve performance is, however, to make sure we know the question we are trying to answer, the problem we would like to solve and/or the improvements or impact we are targeting and therefore wish to measure. This can indeed support the prioritisation of datasets to be released in open formats and the subsequent assignment of resources to such end.

Clarifying the key question, or problem, that data users are trying to solve and/or answer can help governments understand which data need to be captured, reviewed and analysed, so as to better grasp the problem and identify relevant data to measure the performance in delivering the service. We have discussed how technology combined with the increasingly available open datasets can help identify patterns and relationships, correlate data across departments and agencies, and present the most relevant information. This can greatly help monitor when performance is declining or vice versa, to be able to take quick action. Partnering with non-governmental organisations to present data may also help

increase public understanding and appreciation of data and improve impact and performance.

In the changing open data context, however, new datasets (alternative source of data) become relevant to assess and measure performance in service areas. These data are often input directly by service users, often through mobile devices or social media platforms. This input and feedback are often provided in real time, and the impact of improved service delivery is expected on a timely basis. For this to be done, however, governments should have the right capacities in terms of human resources - numerous enough and adequately trained - to skim through feedback, select the relevant ones and turn them in a timely fashion into real input for service delivery improvement.

Last but not least, results achievement requires the capacity of public sector organisations to assess progress in the implementation and results of the OGD policies; Chapter 8 of this report will elaborate more on existing capacities and methodologies across governments to measure impact. Certainly, in addition to strengthening focus and capacities to measure, adopting a problem-solving approach can help governments build the capabilities required to deliver and measure impact, thus overcoming the risk that OGD release is seen as an end result rather than a means to deliver public value.

Notes

1. Based on information Slovenia provided to the OECD on 12 August 2018.
2. See https://darksky.net/app.
3. See https://itunes.apple.com/us/app/swackett/id412558550?mt=12.
4. See www.yahoo.com/news/weather.
5. Based on information the German Delegation provided to the OECD on 9 August 2018 and on information found at www.bmvi.de/DE/Themen/Digitales/mFund/Ueberblick/ueberblick.html.
6. For more information, see www.ontsi.red.es/ontsi/es/content/estudio-de-caracterizaci%C3%B3n-del-sector-infomediario-2016.
7. For more information, see www.codeforamerica.org/about/.
8. For more information, see http://cckorea.org/xe/english/307119.
9. For more information, see https://ejn.gov.si/statist#.
10. Based on information Slovenia provided to the OECD on 12 August 2018.
11. Based on information Canada provided to the OECD on 10 August 2018.
12. For more information, see www.bristolisopen.com/.
13. For more information, see www.bristolisopen.com/about/ and www.bristolisopen.com/.
14. For more information, see https://www1.nyc.gov/site/analytics/index.page.
15. See www.govtrack.us/about.
16. For more information, see www.gov.uk/government/groups/open-data-user-group.
17. Based on additional information the United States provided to Question 57, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

18. Based on additional information Belgium provided to Question 57, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

19. Based on additional information Spain provided to Question 57, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

20. Based on information the Canadian Delegation provided to the OECD on 10 August 2018.

21. Based on information Slovenia provided to the OECD on 12 August 2018.

22. Based on additional information Colombia provided to Question 58, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

23. Based on additional information Finland provided to Question 58, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

24. Based on additional information the Czech Republic provided to Question 58, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at https://opendata.gov.cz/edu:%C5%A1kolen%C3%AD:archiv.

25. Based on additional information France provided to Question 58, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

26. Based on additional information Israel provided to Question 58, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://digileaders.com/region/il/.

27. Based on additional information Mexico provided to Question 59, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

28. Based on additional information Korea provided to Question 59, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

29. For more information, see https://pianotriennale-ict.italia.it/en/daf/.

30. Based on information Korea provided in response to Question 3, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

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Chapter 3. Leveraging accessibility through high-quality open data

This chapter presents an overview of the actions taken by OECD countries, partner and other economies to support the publication of high-quality open data. It focuses on presenting the relevance of defining policy instruments such as guidelines and standards as tools that can help public sector organisations to prepare government data prior to its publication while also contributing to greater data interoperability and sharing inside the public sector.

Lithuania was not an OECD Member at the time of preparation of this publication. Accordingly, Lithuania does not appear in the list of OECD Members and is not included in the zone aggregates.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Introduction

The expansion of open government data (OGD) efforts across the world has run in parallel to the digitalisation of business activities and the increasing number of 24/7 connected and inter-connected citizens. In the context of the fourth Industrial Revolution (characterised by the fusion of the physical, digital and biological worlds;[1] Schwab, 2015), data is placed at the core of business intelligence and increasingly seen as pivotal to enhancing public sector intelligence. In light of these trends, enhanced access to high-quality data stands as a competitive advantage.

A set of characteristics determine the quality of data, including of open data (see Box 3.1), and therefore affect its overall potential as an asset for data re-users. Earlier efforts to bring clarity to the concept of data quality and its implications are exemplified for instance by the "8 Open Government Data Principles" which were defined and put forward for governments' consideration in December 2007, during an Open Government Working Group Meeting held in Sebastopol (California, United States). The meeting gathered 30 open government advocates and was organised by Public.Resource.Org, with sponsorship from the Sunlight Foundation, Google and Yahoo and led to the definition of specific principles that government data should comply with in order to be considered as open data (e.g. timeliness, machine-readability) (Ubaldi, 2013).

As governments around the world increasingly recognise data reuse as a key requirement for value creation, there is growing attention on the understanding that good quality of government data draws upon broader efforts to improve data governance and management of the data value chain. As a result, the availability of, and access to, good quality data should be accompanied by integrated data and information technology (IT) infrastructure models that can support digital and data-driven transformation and reforms of the public sector (e.g. by enhancing automated data sharing, data integration). The availability of a data infrastructure is essential to prepare the ground for the successful adoption of emerging technologies, which depends highly on the availability of quality data.

Building up public sector intelligence and the capacities of public sector organisations to govern the overall data value chain requires putting in place a set of enablers supporting effective public sector data governance models. These enablers include the development of policy instruments such as guidelines and standards that can support efficient and effective policy implementation, as they contribute to building up the quality of OGD prior to the publication stage.

This chapter discusses the efforts countries have made to establish efficient data governance tools guiding and supporting the accessibility, quality, and usefulness of open government data towards greater data reuse. The chapter presents, among others, the policy instruments and requirements that countries have developed to ensure privacy protection, spur the availability of data catalogues, and support metadata publication, data interoperability, and open by default pricing and licensing models.

The practice and implementation of some of these policy instruments are explored in Chapter 5.

Box 3.1. From data quality to data qualities

Data users are often clear on the significance of having access to high-quality data, but often fail to agree on what high-quality data means in practice.

The concept of data quality can be understood as the aggregate of different aspects - core data *qualities* - that as a whole can contribute to the overall value and usefulness of the data for the final user. While the degree of the relevance of the different core quality aspects may differ for different communities of users, when present, these core qualities transform data into a raw asset that can be effectively internalised as part of data-driven business models in order to extract its value and contribute to the achievement of specific objectives.

Good quality data levels can be determined by the sum of the following core qualities:

- **Complete**: All data items or data points are available. There is no missing data preventing the analysis or use of the data.
- **Comprehensive**: All data items or data points corresponding to the real-world object, event or situation are included in the dataset, allowing for the intended use of the data to be fulfilled.
- **Timely** (including frequency of updates): The most up-to-date version of the dataset is made available without undue delays. The data therefore accurately represents the current state of the real-world object, situation or event.
- **Understandable** (including metadata): All relevant information about the data is provided to ensure the users easily understand it. This includes all the relevant metadata that will guarantee users understand the data.
- **Accurate**: Data values are correct and represent in a clear form the characteristics of the real-world object, situation or event.
- **Consistent**: Data does not hold contradictions that would undermine the precision of its analysis and so impede its use.
- **Valid**: Data is updated to ensure the most-up-to-date data is presented.
- **Unique**: Data items or data points are not repeated within the same dataset.

It is not nonetheless possible to have good quality data in a siloed fashion: the data is not shared, and it is mainly accessible for a single or small group of users. Therefore, in the context of the digital transformation of business models, good quality data should also comply with the following characteristics in order to facilitate more advanced data governance and management models framing data sharing, integration and consolidation:

- **Discoverable** (master data, data catalogues): Extent to which data or other types of information can easily be found either on the open government data portal or within the government. Data catalogues are used within government as well to increase data discoverability across ministries and agencies.
- **Machine-readable**: Information or data that is in a structured format that can be processed by a computer without (or with minimal) human intervention and without loss of semantic meaning. Digital formats are not automatically machine-readable (e.g. text documents in PDF or Word formats are not machine-readable).
- **Inter-operable** (standards, semantics, common identifiers): A characteristic of a product or system, whose interfaces are designed to work with other products or systems. System interoperability corresponds to the use of common formats and

software standards across government ministries/agencies. Semantic interoperability corresponds to gathering different information under the same heading.

- **Protected** (e.g. privacy and data registries): Measures implemented to ensure data privacy and security norms/standards are guaranteed.

When non-public data is released as open data, new data qualities are added to the concept of good quality open data. In fact, these qualities determine open data's unrestricted access and reuse:

- **Licensing**: Official governmental document that sets the permission regarding the access, download, copy, distribution and use of government data.
- **Free**: No fees charged for access, copy, download, distribution and use of government data.
- **Non-proprietary**: Formats that are supported by more than one developer and can be accessed with different software systems. The eXtensible Markup Language (XML) is a popular non-proprietary format for government records. By contrast, proprietary file formats are controlled and supported by just one software developer (Microsoft Word [.doc] format is one example).
- **Raw**: Data that has not been processed, curated, cleaned, analysed or prepared. Raw data usually refers to chunks of data that are unstructured, uncategorised or unformatted.
- **Granular**: Level of detail provided by the data. The granularity of data refers to the level of deconstruction of the data, which provides further levels of detail (e.g. an hour to a minute to a second, etc.). The maximum level of granularity implies the maximum level of deconstruction a dataset can reach.
- **Disaggregated**: Data that can be separated into its component parts. Data can be for instance disaggregated by gender, age, socio-economic group, ethnic group, geographic location and other socio-economic characteristics.
- **Inclusive** (data visualisations): The extent to which data is made available in a way that all users (technical and non-technical) can understand, analyse and reuse the data. Data visualisations tools allow for data democratisation: data is presented in such a way that the average user (with no skills as such) can also understand it.

Source: Author's own creation with research from different sources including European Commission (2014), "Open Data and Metadata Quality", Training Module 2.2,Open Data Support, www.europeandataportal.eu/sites/default/files/d2.1.2_training_module_2.2_open_data_quality_en_edp.pdf (accessed 2 July 2018) and Melissa (n.d.), "6 Key Data Quality Dimensions", webpage, www.melissadata.com/enews/articles/1007/2.htm (accessed 2 July 2018).

Country efforts are measured in Pillar 2 of the Open Useful and Reusable data (OURdata) Index (see Background: The OECD Open Useful and Reusable data [OURdata] Index), with the exception of privacy and data protection, which are covered in Pillar 1. Pillar 2 of the OURdata Index benchmarks how OECD countries and partners have taken strategic actions to ensure the accessibility and usefulness of open government data prior to its publication. This includes, for instance, the development of formal requirements to ensure that OGD is published with an open license, with the relevant accompanying metadata, in appropriate, open and non-proprietary formats. It also covers, for example, requirements to provide data free of charge and in a timely and disaggregated fashion (see Box 3.2).

Box 3.2. How the 2017 OURdata Index measures the availability of formal requirements for data quality

Privacy and data protection are measured as part of Pillar 1 of the 2017 OURdata Index, Data availability.

- Sub-pillar 1.1 *Content of the open by default policy* assesses the availability of formal requirements to anonymise data before any public release.

Metadata is measured as part of Pillar 2 of the 2017 OURdata Index, Data accessibility.

- Sub-pillar 2.1 *Content of the unrestricted access to data policy* assesses the availability of formal requirements and guidance on metadata.
- Sub-pillar 2.3 *Implementation* assesses the provision of metadata in practice and its content.

Timeliness is measured as part of Pillar 2 of the 2017 OURdata Index, Data accessibility.

- Sub-pillar 2.1 *Content of the unrestricted access to data policy* assesses the availability of formal requirements to provide data in a timely manner, without undue delay.

Licensing is measured as part of Pillar 2 of the 2017 OURdata Index, Data accessibility.

- Sub-pillar 2.1 *Content of the unrestricted access to data policy* assesses the availability of formal requirements for line ministries and agencies to provide government data with an open license and the possible actions offered to users for government data with an open license.

Pricing models are measured as part of Pillar 2 of the 2017 OURdata Index, Data accessibility.

- Sub-pillar 2.1 *Content of the unrestricted access to data policy* assesses the availability of formal requirements for line ministries and agencies to provide government data free of charge and the possible actions offered to users for government data free of charge.

Disaggregated data is measured as part of Pillar 2 of the 2017 OURdata Index, Data accessibility.

- Sub-pillar 2.1 *Content of the unrestricted access to data policy* assesses the availability of formal requirements to publish data in a disaggregated way when applicable.

Overarching guidelines and standards to support data publication

The capacity of public sector organisations to internalise and embed open data by default as an ingrained component of sectoral and institutional strategies is a measure of the maturity of open government data policies. Yet, such level of sophistication is often jeopardised by the lack of adequate capacities, understanding and awareness of the value of open data across the broad public sector (see Chapters 1 and 2).

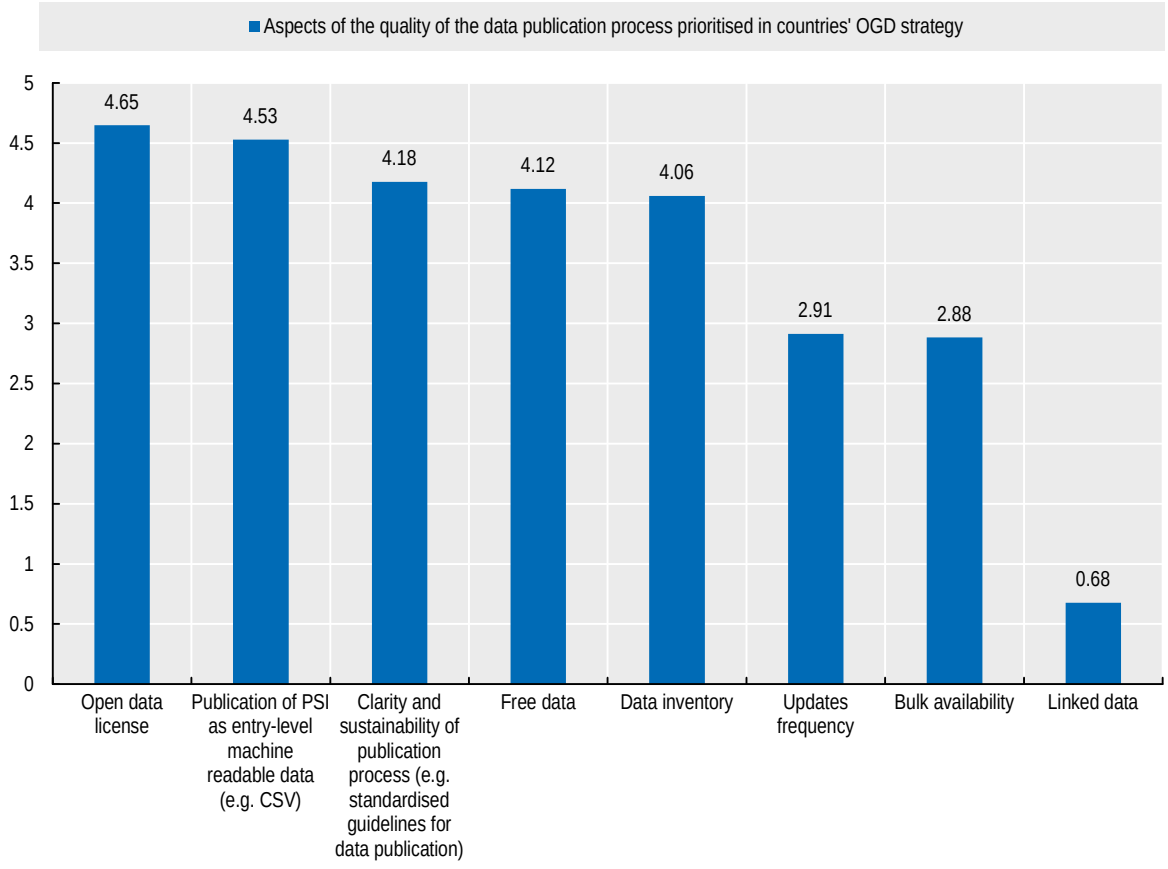
Recent OECD work on digital government and open data has shown that despite countries' level of public sector digitalisation (see, for instance, OECD, 2017a and 2016a), sometimes the vision for open government data of the policy co-ordinating institution (e.g. the office of the chief data officer) is disconnected from the one of public sector organisations. Therefore, the support and guidance provided by the central policy co-ordination institution, in particular in early policy maturity stages, plays a key role to increase awareness of the relevance of open government data across the broad public sector and to develop institutional capacities for the implementation of OGD initiatives.

OECD countries and partner economies agree on the need to develop guidance and support policy instruments as part of their strategy for open government data in an effort to better guide the instrumentation of their open data policies. Providing strategic support and guidance is critical in countries where experimentation and innovation with digital technologies take place in an isolated fashion and on the edge of the broad public sector. Thereby, the core objective of policy guidance instruments is not only to create capacities but also to build system knowledge on technological trends and on their instrumental value to achieve policy goals and support the overall digitalisation of the public sector. The adoption of the International Open Data Charter is also seen as a way to commit to data, completeness release and interoperability.

Efforts aimed to increase the quality of the data publication process need to complement actions adopted to strengthen the understanding of data *as* infrastructure (see Chapter 4). Countries need to ensure that government data published as open data fulfil some key requirements if the data is to operate effectively as an infrastructure and platform for the creation of public value.

Elements such as timeliness and frequency of updates, automated data linkages, clarity and sustainability of the publication are all elements that contribute to data quality. According to the results of the OECD Open Government Data Survey 3.0 (administered across OECD countries and partner and other economies in 2016/17), on average the main aspects of data quality prioritised by most countries are the provision of appropriate licenses for reuse, the publication of government data in machine-readable formats and for free, and the development of guidelines for data publication (see Figure 3.1).

Figure 3.1. Aspects of the quality of the data publication process prioritised in governments' OGD strategies



Note: Results stand as an average following the ranking countries provided to each aspect of the quality of the data publication process prioritised in their respective central/federal government strategies, according to the categories indicated in the question (on a scale of 1 [high priority] to 8 [low priority]). Reversed values are shown for visualisation purposes 8 (high priority) to 1 (low priority).
Source: Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 41. Please specify which aspects of the quality of the data publication process are priorities for your central/federal government strategy: - Clarity and sustainability of publication process (e.g. standardised guidelines for data publication) - Data inventory - Updates frequency - Bulk availability - Open data license - Publication of PSI as entry-level, machine-readable data (e.g. CSV) - Free data - Linked data.

From privacy protection of personal data to data anonymisation

In a context of rapid digitalisation of societies, economies and public sectors, it is essential to find the right balance between openness by default and the protection of sensitive data (including, for instance, personal data or data related to commercial confidentiality). Therefore, the relevance of ensuring individuals' consent and awareness in regard to how their data is being shared and who has access to them, and taking action to protect access to sensitive data either within the public sector or prior to data publication (e.g. through data anonymisation). This is true not only in the context of open government data policies but also within a framework of increased data access more broadly (e.g. access to private sector data).

The collection, sharing and use of personal data by governments often raise concerns in terms of public trust. Therefore, placing emphasis on governments' role as custodians – not owners - of personal data is an advisable approach to address public trust issues, and make explicit the responsibilities of governments in terms of privacy protection (see Box 3.3). For this reason, governments are obliged to take action and develop data-processing practices conceived within the framework of risk-based data management models, ruled by data governance and privacy protection instruments and supported by sound institutional governance frameworks.

Box 3.3. Governments as data owners vs. governments as custodians of citizens' data

The distinction regarding data ownership and governments as custodians of citizens' data is essential to safeguard public trust in the government's capacity to properly manage and use personal and sensitive data and build citizens' empowerment and government accountability.

As data custodians, governments are granted the right to collect, store, manage, share and use citizens' data, but the ownership of that data remains in the hands of citizens, thus allowing them to pose restrictions or consent in how governments use their data.

The EU Global Data Protection Regulation (GDPR) follows this line of governments as custodians of citizens' data. Article 18 to Article 22 of the GDPR offer a series of right-to-data subjects (i.e. citizens), which assert their ownership and control over the data governments possess concerning them.

Article 18 specifies that, under specific circumstances, data subjects have the right to restrict the processing of their data. If, for example, data subjects contest the accuracy of their personal data, its processing has to be restricted until its accuracy is verified.

In the same manner, Article 17 indicates that, under specific conditions, data subjects have the right to request the erasure of their personal data as soon as possible. The controller is then required to do so without undue delay.

The distinction between data custodians and data owners is therefore paramount to sustain data reuse while maintaining and even increasing public trust in governments.

Governments should at large establish an environment allowing them to manage and use citizen data without jeopardising the safety, privacy and security of citizens' data. This means setting a framework allowing governments to maximise public value from the use of citizen data while enabling citizens to set restrictions to the use of their own personal data, as the rightful owners of that data.

Source: Author, with information from European Parliament and Council of the European Union (2016), "General Data Protection Regulation", Regulation (EU) 2016/679, https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32016R0679.

In light of the recent international scandals related to the mismanagement of personal data by the private sector, and following the enforcement date of the EU Global Data Protection Regulation (GDPR) (25 May 2018), governments are increasingly developing

specific policy instruments to guide and ensure the ethical management of data by public and private entities.

Together, all these instruments contribute to the establishment of a solid governance framework (see more on this in Chapter 1) and help build an institutional, policy, legal and regulatory basis to sustained citizen trust. They can reassure citizens, for example, on how personal data is properly managed and shared internally within the public sector – e.g. through appropriate anonymisation (e.g. as part of data processing processes) prior to data publication and stress the role of governments as custodians of citizens' data.

In the context of open data policies, central governments have developed vast arrays of formal instruments supporting and contributing to data privacy protection. This has been done to govern, and/or guide, public sector organisations in the process of anonymising data prior to their publication or in the process of restricting public access to data based on selective data access controls.

According to the results of the OECD Open Government Data Survey 3.0, only two countries (Peru and Turkey) report the absence of formal requirements stating the obligation of public sector organisations to anonymise data before publication. In most countries, freedom of information, data privacy protection and/or transparency acts to regulate, control and/or restrict access to personal data. This is the result of the evolution of open government data from movements aimed to increase access to public sector information (Ubaldi, 2013) or from the fact that in many countries OGD policies remain a subset of public sector transparency policies. However, as the maturity of government openness increases (including opening up government data) there is an increased sense of governments' responsibility to publish data, balanced with the effective development and implementation of personal data protection models.

The protection of personal, private and sensitive data requires developing policy instruments (e.g. guidelines, technical norms) to ensure that in practice only anonymised data will be shared for public access, therefore moving from policy guidelines (e.g. data and privacy protection laws) to action (the anonymisation of data in practice).

For instance, in **France** and **Norway**, the French and Norwegian data protection authorities developed guidelines for the anonymisation of government data by public sector institutions prior to its publication. In the **United Kingdom**, the Anonymisation Code of Practice and of the Information Commissioners Office (ICO) provides advice on data anonymisation framed within the regulations of the UK Data Protection Act. The United Kingdom also developed the Data Ethics Framework as an effort to guide public officials on the ethical, open, and accountable management of the processing of data (see Box 3.4). The UK ICO has also developed a Data Protection Impact Assessment to help organisations comply with the GDPR regulations.

In **Mexico**, the Open Data Policy Implementation Guide provides the basic requirements and methods to anonymise data before their publication as open data. In **Colombia**, the National Department of Statistics developed guidelines for data anonymisation including protocols for microdata anonymisation and covering the implementation of data collection and publication exercises within the framework of the National System of Education and Health.

Box 3.4. The United Kingdom's Data Ethics Framework

The United Kingdom established the Data Ethics Framework to guide and equip public servants in their use of data. It offers a series of principles regarding the management and use of data within the public sector. The aim of the framework is to ensure that value creation from the use of data goes hand in hand with the highest standards of transparency and accountability.

The framework considers the following seven principles:

1. **Start with a clear user need and public benefit**: This principle stresses the importance of clearly defining the needs of users and expected public benefit in providing a solution to that specific, identified need.
2. **Be aware of relevant legislation and codes of practice**: This principle highlights the importance of public servants' awareness in regard to the different available legislation and codes of practices touching on the data use and sharing (e.g. the Code of Practice for Statistics or the EU General Data Protection Regulation).
3. **Use data that is proportionate to the user need**: This principle indicates that the use of data should remain proportionate and thus the minimum amount of data (personal or non-personal) should be used to achieve the desired objective.
4. **Understand the limitations of the data**: This principle points out that other possible limitations to the use of data (other than legal barriers) need to be considered by public servants. Possible limitations include but are not restricted to errors in the data, biases, incomplete metadata and the source of the data.
5. **Ensure robust practices and work within your skillset**: This principle insists on the importance of setting the appropriate practices to work with data and on working with data that are within one's skillset, not outside of it. Practices that should be adopted include multidisciplinary teamwork, ensuring the accountability of algorithms, defining acceptable model performance or again testing the model under a range of conditions.
6. **Make your work transparent and be accountable**: This principle emphasises the need for public servants to be transparent and clear (e.g. plain language) about the tools, data, and algorithms used (including the process to develop them) within the framework of their activities. The purpose of this principle is to keep public servants accountable when using data.
7. **Embed data use responsibly**: This principle refers to the responsible use of information or results stemming from the analysis of data. This requires the establishment of both an implementation plan and sound evaluation methods to monitor policies using data analysis.

In addition to these principles, the framework offers additional guidance on every single principle considered and a workbook to assist public sector organisations regarding the practical implementation of the Data Ethics Framework within their specific government projects.

Source: UK Department for Digital, Culture, Media and Sport (2018), "Data Ethics Framework", London, www.gov.uk/government/publications/data-ethics-framework.

While most countries have taken action to ensure the protection of personal data, cross-border flows of data and the digitalisation of the economy increases the need to take concerted action at the regional and global level (see Box 3.5). At the European level, EU directives and instruments such as the General Data Protection Regulation (GDPR) (EU 2016/679) show how the globalisation of data-sharing networks led to the need to give control back to EU citizens.

Box 3.5. Cross-border data sharing in the Nordic-Baltic region

OECD work on digital government has found evidence of the need to take concerted multi-national action about cross-border data sharing. A key aspect concerns incongruent policies and goals across nations concerning digital government which, despite political willingness, undermines the possibility of moving faster in terms of cross-border collaboration.

The 2015 *OECD Public Governance Review of Estonia and Finland* addresses the need for cross-border data sharing in view of the digital transformation of societies and economies. The review provided a series of recommendations regarding elements that need to be considered to encourage cross-border data sharing and service delivery:

- Identify priority areas that could require cross-border co-operation.
- Involve users and relevant stakeholders in the selection of priorities for cross-border services.
- Build early cross-border service prototypes and test them with expected users.
- Link cross-border service delivery and data exchange to local, national and supra-national priorities.
- Adapt national regulation to ensure the free flow of data across borders.
- Develop appropriate governance mechanisms to support cross-border data sharing and services (e.g. common project templates for monitoring, reporting and implementing cross-border services; service owners liaising with service managers in partnering countries; joint infrastructure management and development of governance mechanisms; joint development and management of infrastructures such as interoperability layers).
- Explore and exploit synergies between local, national and bilateral interests across different policy areas.

The fact that the Estonian X-road is now expanding to Finland is increasing the Estonian and Finnish systems' compatibility, therefore improving data interoperability and sharing between the two countries, supported by the uptake of the European Commission's once-only principle as a vehicle for convergence.

Cross-border data sharing can be also hindered indeed by regulatory adaptability issues. The 2017 *Digital Government Review of Norway* found evidence that the Norwegian national legislation - such as the Archives Act and the Accounting Act - limited cross-border data management and sharing, thus restricting cross-border data storage and obstructing the possibility to further develop cloud-based services that may require storing data in servers outside Norwegian borders. At the supra-national level, this context limited Nordic co-operation on this subject.

Source: OECD (2017a), *Digital Government Review of Norway: Boosting the Digital Transformation of the Public Sector*, OECD Digital Government Studies, OECD Publishing, Paris, https://doi.org/10.1787/9789264279742-en; OECD (2015), *OECD Public Governance Reviews: Estonia and Finland: Fostering Strategic Capacity across Governments and Digital Services across Borders*, OECD Public Governance Reviews, OECD Publishing, Paris, https://doi.org/10.1787/9789264229334-en.

Data catalogues

The concept of "data catalogues" is one of the lesser understood concepts across OECD countries and partner economies. In general terms, evidence from the OECD Open Government Data Survey 3.0 shows that data catalogues are understood as equal to the central open data portal as the main data catalogue for the public sector. Not in vain CKAN stands as one of the most widely used open source data management tools in the context of open government data. However, governments rarely understand data catalogues as data governance and data management instruments which, while connected to the publication of open government data, can work as a valuable tool towards the construction of data-driven public sector (see Box 3.6).

Box 3.6. What is a data catalogue?

A data catalogue refers to a central location where data resources (i.e. data and metadata) are recorded in order to facilitate its discoverability and sharing while also making these data understandable. Data catalogues place data at the core of digital transformation and stress their relevance as assets for the organisation.

For example, a central/federal government data catalogue if complete provides information on all government data available within the central/federal government or policy sector. Though these data can remain in their respective locations, catalogues can help map who holds the data and create an access path to them.

Data catalogues enable users to easily discover, understand and use data available across public sector organisations, as they offer a platform that makes data within an organisation more discoverable and understandable by providing relevant information regarding the data.

Comprehensive data catalogues help also to increase the knowledge base on data available across the public sector. This can increase public officials' awareness of available data within their own organisation and more broadly across the public sector. The increased visibility on data can encourage both the release of government data as open data - as requested by more informed re-users – while also promoting the reuse of government data within governments.

Data catalogues can then become essential to spur data-driven reforms and innovation within the public sector. They can reduce potential siloes within the public sector, accelerate the process of reuse as they enable organisations to discover and spot the data that suits their needs, and work as platforms towards the publication of government data.

Efficient data catalogues require public sector organisations' agreement on the metadata elements. In fact, the interoperability of both data and their accompanying metadata is quintessential if a central/federal comprehensive data catalogue is to enable efficient data management process within and between public sector organisations.

Ideally, efficient data catalogues should also enable public sector organisations to review the metadata and enrich it if necessary. As such, data catalogues become a platform for collaboration among public sector organisations to improve the

general understanding of the data. For governments to encourage data-driven approaches, they need to create the appropriate infrastructures, and the availability of a comprehensive central/federal data catalogue stands as a paramount element of such infrastructures.

Source: Author, based on research from different sources including Underwood, J. (2017), "Why you need a data catalog and how to select one", www.jenunderwood.com/2017/08/30/need-data-catalog-select-one/ (accessed 10 July 2018); Le Big Data (2018), "Data Catalog définition : tout savoir sur les catalogues de données", www.lebigdata.fr/data-catalog (accessed 10 July 2018); Microsoft Azure (2018), "Data Catalog Documentation", https://docs.microsoft.com/en-us/azure/data-catalog/ (accessed 10 July 2018).

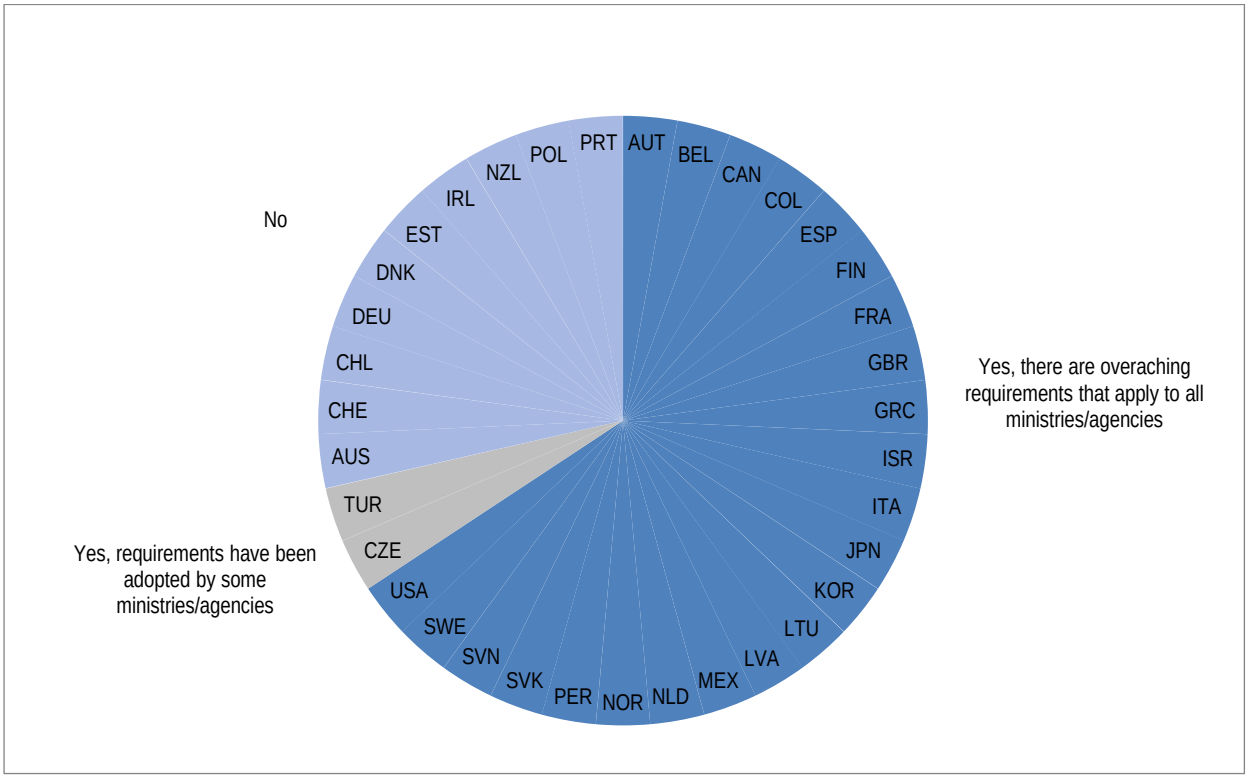
Results from the 2016/17 OECD Open Government Data Survey 3.0 demonstrate an important variation across OECD countries regarding the availability of a data catalogue for the central/federal government. According to the data, only 7 countries out of 34 report the availability of a single exhaustive data catalogue at the central/federal government. Most countries (18 out of 34) do not have a data catalogue for the central/federal government.

Thus, despite countries' clear push towards government data publication, it seems that the existence of a data catalogue - as an essential element of the management and governance of the data value chain - is still missing in most countries. This can have significant implications for the effective management of the data value chain in the public sector, which goes beyond open data.

Countries should implement further efforts to understand the different elements of the governance of the data value chain and establish key components in order to promote effective data management, can significantly impact availability, accessibility and reuse of government data, within and outside the public sector.

At the institutional level, 23 out of 32 OECD countries and 3 partner and other economies report the availability of formal requirements for the development of data catalogues by public sector organisations, as a precondition to providing coherence and guidance prior to the publication of government data sets (see Figure 3.2). However, governments should conceive and present these efforts as key strategic steps towards the construction of a data-driven public sector. As such, ensuring the interoperability of institutional data catalogues (e.g. through the use of common semantics and metadata standards) would also contribute to better data sharing across the public sector.

Figure 3.2. Availability of formal requirements for institutional data catalogues across OECD countries and partner economies



Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 12. At the central/federal level, are there formal requirements for ministries/agencies to maintain a list of data holdings (e.g. data catalogue)?

Metadata and interoperability

Metadata provide information on existing data collections and their harmonisation facilitates common access to, and search for, data. Metadata helps to standardise data definitions and improve comparability and interoperability, and help make data assets understandable (Ubaldi, 2013).

Metadata frames other data and provides further contextual details on the content and nature of a dataset. It aims to provide information for instance on who is publishing the data, how the data was collected or additional documentation that can be useful to find and understand the data itself. Metadata contributes to data clarity and accessibility, making it useful and clear for users, and facilitating data interoperability and sharing.

Ensuring that open datasets include consistent, core metadata and are made available in human- and machine-readable formats remain a top priority for OECD countries and partner economies in terms of data sharing and interoperability. In practice, interoperability efforts also mean implementing consistent and open standards related to data formats and structure and supporting the use, for instance, of common identifiers and semantics when collecting, sharing and publishing data.

Evidence from the OECD Open Government Data Survey 3.0 demonstrates that the general understanding regarding the importance of metadata and data interoperability is spreading across OECD countries and partner economies. Most countries have developed data standards and guidelines for data publication and reuse, including for instance metadata standards to support data interoperability and accessibility. In total, 30 OECD countries and partner and other economies (Colombia, Lithuania and Peru) report the availability of overarching formal requirements to publish open data with the associated metadata. Two OECD countries, Belgium and France, report that only some ministries have adopted these requirements. Denmark, Sweden and Turkey are the only OECD countries where these requirements are not available. Among the 30 countries reporting the availability of overarching formal requirements in most cases (only with the exception of Lithuania, Norway and Portugal) further guidance is provided on the fields metadata should actually include.[2]

For instance, in 2013 the White House Office of Management and Budget (OMB) in the **United States** developed and published an Implementation Guide, including a Metadata Schema, to support data publication by public agencies. The **United Kingdom** has also developed a series of guidelines and standards for open data, which are publicly available on the central OGD portal.[3] Other examples include:

- In **Mexico,** the Coordination of the National Digital Strategy, a body within the Office of the President, developed the Implementation Guide of the Open Data Policy[4] (Guía de Implementación de la Política de Datos Abiertos) in 2015 (updated in 2017) to help public institutions develop their institutional open data plans and open up government data. The guide promotes data interoperability by requiring the use of the ASCII 6 range for characters in file names and URLs as well as the use of DCAT for metadata.[5] The Mexican National Statistical Office (INEGI) played a key role in this respect as it developed the Open Data Technical Norm for National Interest Information and its accompanying implementation guide, which covered the development of metadata standards and open data formats (OECD, 2016a).
- In **Canada**, the Treasury Board Secretariat developed guidance for federal government departments and agencies on metadata implementation including standardised federal government metadata schema and common vocabulary support interoperability. The Open Government Metadata Application Profile is also available to implementing departments and sets out requirements and best practices with regard to metadata.
- In **Italy,** the National Guidelines for the Enhancement of Public Sector Information[6] developed by the Italian Digital Agency provide also guidelines to public sector institutions on how to work towards data and metadata interoperability and standardisation. Other guidelines developed by the Italian Digital Agency also provide guidance on semantic interoperability and linked open data.[7]
- **Norway**'s Agency for Public Management and eGovernment (Difi) developed metadata standards and guidelines for the publication of OGD as part of the Norwegian Information Governance model for the public sector, developed by Difi (OECD, 2017a).
- In **Spain,** a technical standard of interoperability for the reuse of information resources was established. The purpose of this technical standard is to define the guidelines for the reuse of government documents and information. It notably

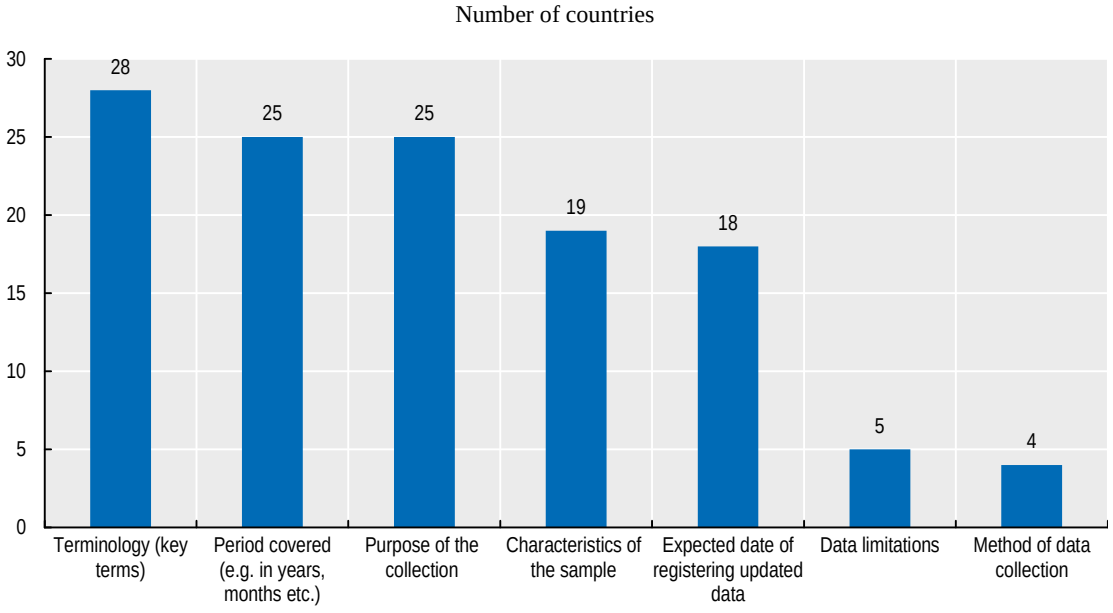
offers a set of common conditions for the selection, identification and description of reusable information.[8]

- In **Slovenia**, the National Interoperability Framework Portal enables different stakeholders across public sector organisations to publish online standards and guidelines on interoperability at all levels (whether it be legal, organisational, semantic, technical), so as to stimulate together the common use of policies and semantic methodologies. A network of interoperability editors formed of different public sector organisations also exists and gathers on a regular basis to address the interoperability of data across the public administration.[9]

The approach followed by each country depends, however, on different organisational factors that have an impact on the public sector's culture. For instance, in **Estonia,** there are no strict formal requirements, but recommendations for data interoperability and metadata's plain language. Other OECD countries like Finland, France, Korea, Poland and Portugal and Lithuania, have taken stricter approaches to enforcing data and metadata interoperability across the broad public sector through legal and/or regulatory mandates.

Results from the OECD Open Government Data Survey 3.0 show that in practice countries have prioritised the publication of metadata on terminology (key terms), period covered and the purpose of data collection (see Figure 3.3). The use of standards for machine-readable metadata publication (e.g. DCAT and JSON) have been widely adopted by countries in order to contribute to OGD quality, accessibility and interoperability, and the usefulness of central open data portals (see Chapter 5). The provision of additional contextual documentation and metadata covering the limitations of datasets and the methods of the data collection are not yet widely adopted.

Figure 3.3. Coverage of metadata on the central open data portal across OECD countries and partner economies



Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 75b. On the central/federal "one-stop-shop" portal, what do the metadata usually cover?

Timely data publication

The key characteristics influencing data quality include the timely publication of open data. However, this aspect is commonly addressed through a regulatory approach (e.g. through the development of formal requirements), which can become challenging to monitor and enforce in practice.

Out of 34 OECD countries and partner economies, 19 report the availability of specific requirements on the timely publication of open data, and 13 out of 34 report the availability of formal requirements requiring public sector organisations to systematically provide precise dates for updating datasets as part of the accompanying metadata.

In **Korea**, the Open Data Law Enforcement Decree states that public agencies must maintain data timeliness for data under their jurisdiction, and the Open Data Management Guidelines sets a one-year limit for updating any dataset available through the central open data portal. In **Norway** and **New Zealand**, OGD timeliness and update are considered as part of the core principles of data management and publication. In other countries such as **Germany**, the **Slovak Republic** and the **United States**, data timely publication is regulated by freedom of information acts.

Securing the timely publication of open data is particularly relevant in light of automated real-time data publication and sharing (e.g. through the provision of APIs [application programming interfaces]) and the need to ensure constant data flows once these data are internalised and reused as part of the business models of actors from the public, private and third sectors.

For instance, in **Australia**, the Australian Government Public Data Policy Statement requires public agencies to follow an automated approach for the publication and update of open government data. In **France**, the Digital Republic Bill (Loi pour une République Numerique) requires public sector organisations to release government data that can have an economic, social, sanitary or environmental interest. While the bill does not provide further details on the data taxonomies to be published as part of the previous categories, these datasets are expected to be automatically updated in view of their relative importance. Moreover, in France too, the National Institute of Statistics and Economic Studies (INSEE) publishes as open data the SIRENE datasets, which refers to the register of companies operating in France. These datasets are also to be updated daily and without undue delay.

Licensing

The access, reuse and openness by default of government data requires setting licencing models that support the unrestricted access, share and reuse of government data. By setting and observing these minimum licensing requirements, public sector institutions and users support the traceability of the data to the origin (by acknowledging the source of the data) and contribute to advancing the development of the (open) knowledge-based society.

Among OECD countries, the licensing conditions are advanced. With the exceptions of Poland, Portugal, Sweden and Turkey, 31 out of 35 OECD countries and partner economies report the availability of specific requirements to publish open government data under licensing models that support accessibility and reuse (see Annex 3.A) – e.g. through the development of a national open license such the Open Government Data license in **Canada**,[10] the Open License of Etalab (the French Taskforce for Open Data)

in **France**,[11] the Standardised Terms of Use in **Japan**, the Terms of Free Reuse in **Mexico**,[12] and the Open Government License in the **United Kingdom**.[13] In other cases, countries (e.g. Australia, Finland, Ireland, New Zealand, Norway, Portugal, Slovenia and the United States) have opted for promoting the use of widely known and broadly used licencing models such as Creative and Open Commons licenses and public domain dedications (e.g. CC0, CC BY, PDDL, ODbL).

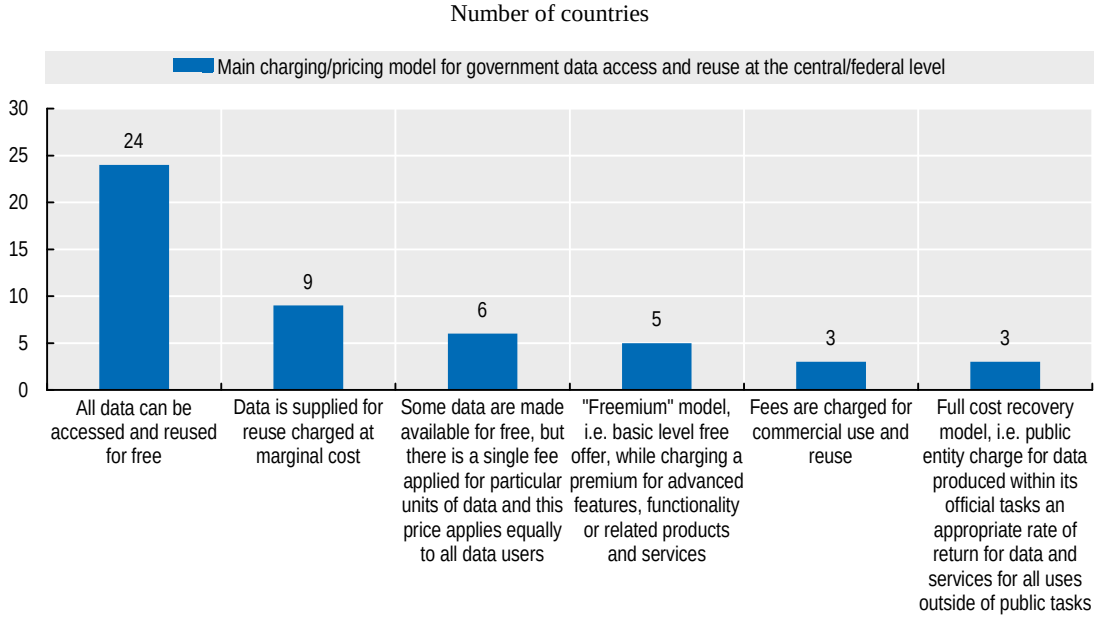
Pricing models

The formal requirements to provide government data free of charge enable users to request, access and use government data with no financial obligations. The provision of open government data free of charge is in line with the definition of openness at its very core, and thus free data reduces access barriers by design and increase the inclusiveness of the open data policy as a whole.

The pricing model selected for government data should also favour data sharing and reuse across the public sector as a contribution to encouraging data-driven public sectors. Internal pricing models can indeed be conducive to government data reuse, but also provide incentives to increase it. In this light, free access and free reuse of government data constitute the ideal pricing model towards more data-driven public sectors.

Most OECD countries and partner economies have followed an open-by-default approach covering the financial aspects of this concept and their relation with the free provision of open government data (Figure 3.4) (see Chapter 4).

Figure 3.4. Pricing models for government data access and reuse across OECD countries and partner economies



Source: Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 59. What is the main charging/pricing model for government data access and reuse at the central/federal level?

For instance, in **France**, open government data is free by default, but the Digital Republic Law (Loi pour une République Numerique) extended the concept of free data also to data sharing within the public sector. In countries like Chile, Japan, Mexico, Norway and Switzerland, the "free of charge" principle is covered as part of the technical norms and/or guidelines and handbooks for the publication of open data. In the Norwegian case, while exceptions exist to free-of-charge rule, public sector institutions are responsible for publishing the costs for data sharing in advance. In fact, the evidence demonstrates that countries have generally adopted this pricing model. Indeed, 24 countries out of 34 have adopted a pricing model that allows all open government data to be accessed and reused for free.

Some exceptions are still present. In some countries, public sector organisations hold a business model based largely on a fees model applicable also to the internal reuse of data they share with other public sector organisations and the public. In these instances, requirements to provide all data free of charge pose a threat to the financing models of these organisations and have met for these reasons strong resistance.

In particular, in a large majority of countries, cadastral and geodata are still subject to charging fees, as the public sector organisations providing these data have resisted its provision free of charge. This is the case in **Austria** and **Sweden** for example, where relevant organisations provide geodata data are still subject to fees.[14] In Sweden, public information, including government data, is by default free and publicly available. Yet, for those datasets that are released under a fee, the conditions for fees are regulated by ordinance. For instance, the selling of data still forms a substantial part of the budget of the Swedish Mapping, Cadastral and Land Registration Authorities, which in addition to other factors, has caused resistance to the release of these data as open data.[15]

Thus, although governments can establish formal requirements to provide government data free of charge, providing public sector organisations with alternative business models that compensate for the free provision of data will be paramount (see Box 3.7).

In fact, in order to encourage a pricing model conducive to open government data release, governments will need to offer public sector organisations with the adequate incentives to do so (see Chapter 4). This will be all the more important in the geo-sector, where incentives to provide government data free of charge are small. In fact, the EU INSPIRE Directive does aim to address this issue of government data sharing of geospatial data, though the free sharing of geospatial data remains unaddressed (see Chapter 4).

In addition to the barriers public sector organisations' business models can pose, in some countries remain legal barriers to the free provision of government data. For instance, in some European countries, according to the EU PSI Directive, organisations can charge fees corresponding to the marginal cost incurred in the reproduction, availability and diffusion of some government data.

This is the case in **Spain** where, in line with the EU PSI Directive, the law on the reuse of public sector information, in Article 7, does set some conditions upon which government data can be provided with a fee.[16] In **Austria** too, government data that is released according to open government data principles are free of charge, but those released according to the EU PSI Directive can be charged at the marginal cost of extraction of the data.[17]

In addition to the establishment of an environment providing financial incentives for public sector organisations to make government data available free of charge, it would be

advisable for governments to set a legal and policy framework conducive to the release, access and reuse of government data free of charge.

Box 3.7. Developing a business case for the free opening up government data in Denmark

In Denmark, in order to foster government data sharing and data reuse among and across public sector organisations, the government shared the benefits of open data with the public sector. In presenting the multiple advantages of open government data, the Danish government aimed to create collective engagement across the broad public sector in order to encourage all public sector organisations to publish, share and reuse government data.

A business case for the free opening up of government data was prioritised over the sole provision of legal requirements to release government data as open data. In this line, this business case drew upon the value of data as a strategic asset to foster public sector modernisation and increase efficiency in the public sector.

In providing this value proposition for open data, the government sought to promote an inherent interest among public sector organisations to publish government data as open data (i.e. the government sought to create intrinsic motivation to release open government data, see Box 4.3 in Chapter 4).

Drawing upon public sector organisations' interest and understanding of the benefits of open data, the government encouraged these organisations to join the Basic Data Programme, which focuses on releasing high-value datasets to increase both the financial and social benefits of data.

The case of Denmark is a clear example of the provision of inherent motivation to publish government data as open data, rather than on the use of legal requirements to compel public sector organisations to do so.

Building a general understanding across the public sector and a common strategic approach to government data, the government succeeded in offering an alternative business model to compensate for its free release as open data. Public sector organisations were led to see the long-run benefits of open government data, as opposed to the direct benefits of a fee-based model for government data sharing.

Source: OECD (2018a), *Digital Government Review of Colombia: Towards a Citizen-Driven Public Sector*, OECD Digital Government Studies, OECD Publishing, Paris, https://doi.org/10.1787/9789264291867-en; OECD (2016a), *Open Government Data Review of Mexico: Data Reuse for Public Sector Impact and Innovation*, OECD Digital Government Studies, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264259270-en.

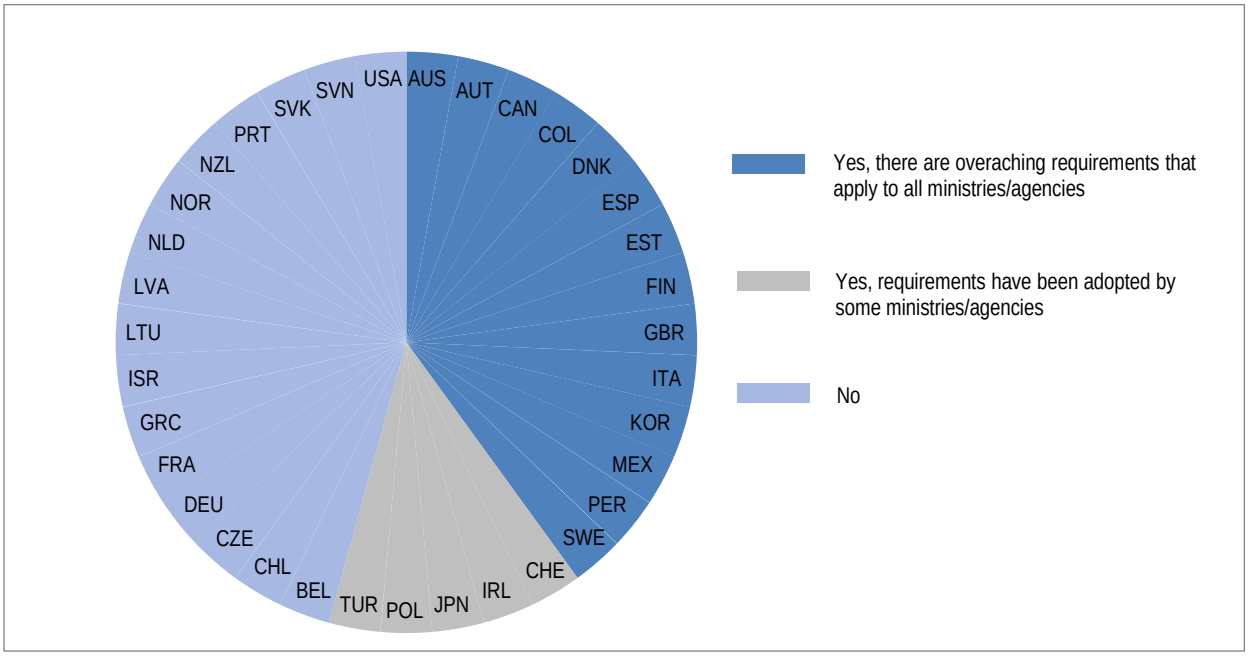
Historical data records

The maintenance of access to historical copies of datasets is an important element to encourage time series analysis and/or trend analysis. In fact, maintaining historical copies of datasets as long as they remain valuable provides greater opportunities for open data users. For example, analysis and reuse of the same data over time can help forecast capacities.

It is important for countries to maintain access to historical copies of datasets as long as they remain valuable for users in order to promote the benefits of open government data and stimulate its reuse across time.

Currently, evidence from the OECD Open Government Data Survey 3.0 indicates that 40% of countries have established formal requirements for all central/federal ministries/agencies to systematically maintain access to historical copies of datasets as long as they remain valuable for users (see Figure 3.5).

Figure 3.5. Requirements to maintain access to historical copies of datasets across OECD countries and partner economies



Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 15. Are there requirements for central/federal ministries/agencies to systematically maintain access to historical copies of datasets as long as they remain valuable for users?

In **Korea**, for example, data are registered in time series, and thus existing data are systematically retained, except under specific circumstances. That is, users can access all the older versions of a dataset as these are in general terms maintained on the OGD portal. In the specific circumstance where a historical dataset is to be removed, public sector organisations first need an official approval by the Open Data Strategy Council (ODSC). Prior to the provision of the official decision, the dataset must be maintained on the portal. If then the decision is to remove it, public sector organisations must still maintain its access for another three months before its removal.[18]

This is similar in **Austria**, where - following the principle of durability (one of the principles of the Framework for Open Government Data Platforms*)* - upon dataset updates the previous version remains available on line for at least three months. Public sector organisations document the changes to the dataset as part of the metadata and announce them through the administration's communication channel.[19]

In the **United Kingdom**, not all historical copies of government data have to be maintained; only those that are considered to have a historical value to the public sector organisation are. That is, historical copies of datasets that can promote openness, accountability and encourage future research, using the dataset.[20] Under the UK Public Records Acts, all central ministries and agencies are required to select specific datasets and ensure access to historical copies until these datasets are transferred to the National Archives or to another appointed place of deposit.[21]

In some countries, although there are no formal requirements for all ministries and agencies to maintain access to historical copies of datasets, practices vary across public sector organisations. For example, in **Poland**, depending on the decision of the data holder, some historical copies of datasets are made available on the open government data portal.[22]

In **Ireland**, only some public sector organisations, such as the Central Statistics Office or local government bodies, currently maintain historical copies of datasets within their organisations. However, the Open Data Strategy 2017-2022 will require, in Year 5 of the implementation plan, that all public sector organisations adopt a lifecycle approach regarding data management, which will also consider matters of archiving.[23] This approach will consider engaging actors such as information professionals and librarians in order to draw upon their expertise on data management and archiving and build data stewards across all stages of the research data management cycle (Irish Department of Public Expenditure and Reform, 2017).

Disaggregated and granular data

The disaggregation of data implies deeper levels of detail in the datasets, which can, in turn, provide a broader scope of insights from the datasets, thus increasing the possibility of deriving deeper insights from data, take targeted policy action and expand the types of potential reuse.

In **Belgium,** there are legal requirements whereby all federal bodies are to ensure the provision of data disaggregated by gender when possible. Thus, federal public sector organisations are required to safeguard the disaggregation by gender in their data collection and processing activities, whenever it is considered, under the organisation's discretion, relevant to do so. The purpose of this legal requirement is according to Belgium the first step to identify possible gender disparities between women and men.[24]

Also in **Israel**, requirements have been established for the Bureau of Statistics to publish data disaggregated by gender whenever possible. The Statistics Ordinance includes requirements for the Bureau of Statistics to appoint someone to ensure data collection and processing across public sector organisations disaggregated by gender.[25]

These efforts reflect and emanate from the growing consent in the tech world concerning the lack of inclusion of women in the technology sector. Disaggregation by gender is essential to promote, for instance, the creation of mobile applications specifically targeted to analyse policy gaps in terms of gender inclusion in different policy areas and support gender-specific types of analyses. In this line, open government data, with disaggregation by gender, becomes an important asset to address gender issues, in collaboration with the open data ecosystem (see Box 3.8).

Box 3.8. Open government data and gender

There is an increasing consensus on the important role technology and data can play to promote gender equality and inclusiveness, and underpin accountability for achieving such goals. Open data is a tool to better assess and address the differentiated impacts of health, education, safety or economic policies, on people from diverse backgrounds.

Towards strengthening linkages between open data initiatives and gender equality objectives, the OECD Recommendation on Gender Equality in Public Life (OECD, 2016b) recommends that governments collect, publish and widely disseminate relevant data at all levels of government in a gender-disaggregated fashion. It is increasingly recognised that such data should take into consideration intersecting identity factors beyond gender, such as age, disability, sexual orientation, and ethnicity. The Recommendation and its accompanying Toolkit on Mainstreaming and Implementing Gender Equality (OECD, 2018b) also encourage consultations with non-governmental actors to identify and gather further data on potential gender issues or disparities.

In regard to the use of open data to pinpoint specific issues affecting women as well as minorities, recent examples have indicated that in some countries, efforts are advancing:

- In the **United Kingdom**, the government has required a number of private and public organisations to publish gender pay gaps in order to help employers assess the equality deficits in their respective organisations and address them accordingly. Furthermore, the government aims through the release of such data to implement measures to improve gender equity through the provision of public services. Thus, more than 9 000 employers (with over half of the workforce in the United Kingdom) released the data on gender pay gaps as of April 2018. Data included gender gap figures in terms of salaries and bonuses paid out during a given year.
- In **Sierra Leone**, according to information from the Open Government Partnership, the government is planning to publish open government data on sexual and gender-based violence in order to increase government accountability regarding its efforts to defend against sexual- and gender-based violence. Such initiatives have also been implemented in **Brazil**, where the government has committed to publishing government data as open data on homicides of women.

In parallel to the OECD, other international organisations are scaling up the discourse around the role of women in technology and the benefits of the latter for them:

- The Open Government Partnership is working to include gender elements in open government commitments. In fact, the release of government data regarding gender issues stands as one of their recommendations to increase government accountability relative to gender.
- The World Wide Web Foundation has indicated that matters of gender should be included in the future methodology of the Open Data Barometer, considering the important role of open data for gender issues.
- The Open Heroines initiative is an international online community of over 350 women, who work in the fields of open government, open data, and civic tech. Open Heroines was conceived in 2015 at the Open Government Partnership (OGP) Summit in Mexico as an informal space for women to support one another. Today, the group is a safe virtual space (via Slack) where women can meet like-

minded women, share their experiences and organise events to amplify the voices of women and their work. Open Heroines also has an online blog (https://openheroines.org/) to share women's writing in the field.

Source: Author, with information from OECD (2018b), "OECD Toolkit for Mainstreaming and Implementing Gender Equality", OECD, Paris, www.oecd.org/gender/governance/toolkit/toolkit-for-mainstreaming-and-implementing-gender-equality.pdf; OECD (2016b), *2015 OECD Recommendation of the Council on Gender Equality in Public Life*, OECD Publishing, Paris, https://doi.org/10.1787/9789264252820-en; OECD (2017b), "OECD Open Government Data Survey 3.0", unpublished; Open Government Partnership (2018), "Gender", webpage, www.opengovpartnership.org/theme/gender (accessed 10 July 2018); World Wide Web Foundation (2017), "The case for gender and the Open Data Barometer", https://webfoundation.org/2017/09/the-case-for-gender-and-the-open-data-barometer/ (accessed 10 July 2018). Additional contributions and revisions were provided by the Open Heroines Initiative and the OECD Gender Policy and Justice Unit in the OECD Governance Reviews and Partnerships Division, OECD Directorate for Public Governance.

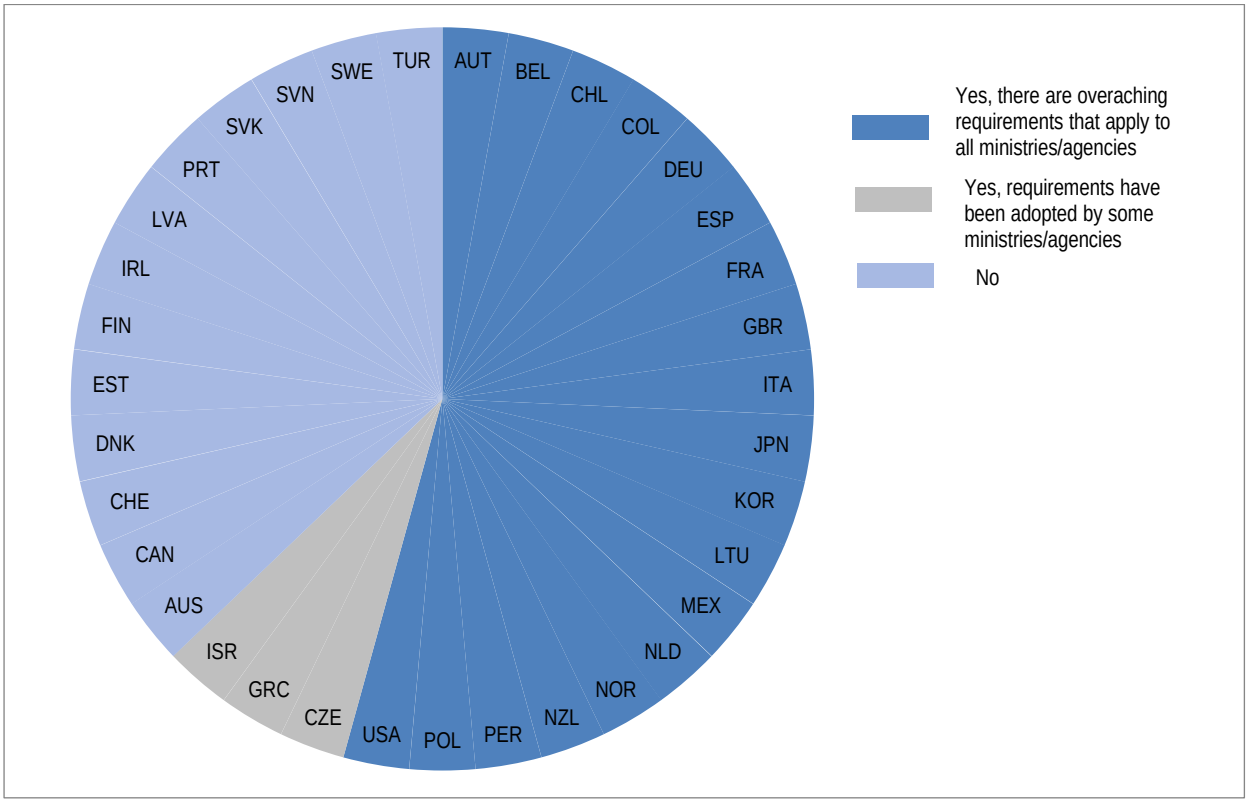
Furthermore, governments could consider even deeper levels of disaggregation (e.g. gender by ethnicity) in order to foster more sophisticated levels of analysis and understanding of policy issues, carried out in collaboration with non-governmental actors, through the open government data portal, for instance.

In general, there is an important disparity across OECD countries and partner economies regarding the availability of formal requirements guiding the publication of open data in a disaggregated fashion. In fact, 18 out of 32 OECD countries and partner economies (that is 56%) report the availability of such requirements applicable for all public sector organisations, while 14 countries have still not implemented such requirements (see Figure 3.6).

However, the disaggregation of data will remain paramount if governments want to leverage OGD to promote the identification of specific issues affecting specific groups, which can enable improved policy making – i.e. using OGD to spot and target more efficiently and appropriately specific issues affecting certain segments of the population. In line with this thinking, requirements would need to be set for all public sector organisations to systematically publish data in a disaggregated way when applicable. Furthermore, if necessary, governments could set requirements for specific types of disaggregation, such as by gender, race or age, in order to encourage deeper levels of analysis of government data released as open data and support a more sophisticated understanding of policy matters and societal trends.

These measures can significantly contribute to strengthening governments' understanding of the relevance of establishing technical requirements applicable to the collection and processing of government data to stimulate deeper levels of analysis, understanding and subsequent reuse of data to spot and solve policy and societal problems.

Figure 3.6. Requirements to publish data in a disaggregated way across OECD countries and partner economies



Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 5. At the central/federal level, are there formal requirements to publish data in a disaggregated way when applicable?

Notes

1. See, for instance, www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/.
2. Based on information received from OECD countries and partner economies in response to the Open Government Data Survey 3.0 (2017), Section 1, Questions 36 and 36a.
3. For more information, see http://guidance.data.gov.uk/.
4. For more information, see www.dof.gob.mx/nota_detalle.php?codigo=5397117&fecha=18/06/2015.
5. Based on additional information provided by Mexico to Question 37, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.dof.gob.mx/nota_detalle.php?codigo=5397117&fecha=18/06/2015.
6. For more information, see www.dati.gov.it/content/linee-guida-nazionali-valorizzazione-patrimonio-informativo-pubblico.
7. For more information, see www.agid.gov.it/sites/default/files/documentazione_trasparenza/cdc-spc-gdl6-interoperabilitasemopendata_v2.0_0.pdf.

8. Based on additional information provided by Spain to Question 37, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.boe.es/boe/dias/2013/03/04/pdfs/BOE-A-2013-2380.pdf.

9. Based on information Slovenia provided to the OECD on 12 August 2018.

10. For more information, see https://open.canada.ca/en/open-government-licence-canada.

11. For more information, see www.data.gouv.fr/fr/licences.

12. For more information, see https://datos.gob.mx/libreusomx.

13. For more information, see www.nationalarchives.gov.uk/doc/open-government-licence/version/3/.

14. Based on information received from OECD countries and partner economies in response to Question 59a, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

15. Based on information from the OECD missions to Stockholm in November 2017 and March 2018 in the context of the Digital Government Review of Sweden.

16. Based on information provided by Spain to Question 59a, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

17. Based on information provided by Austria to Question 59a, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

18. Based on additional information provided by Korea to Question 15, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

19. Based on additional information provided by Austria to Question 15, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.data.gv.at/wp-content/uploads/2013/08/Framework__for_Open_Government_Data_Platforms_1.1.pdf.

20. More information is available at www.nationalarchives.gov.uk/documents/records-collection-policy-2012.pdf.

21. Based on additional information provided by the United Kingdom to Question 15, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.nationalarchives.gov.uk/information-management/manage-information/selection-and-transfer/selecting-records/.

22. Based on additional information provided by Poland to Question 15, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

23. Based on additional information provided by Ireland to Question 15, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.per.gov.ie/wp-content/uploads/Draft-Open-Data-Strategy-2017-2022.pdf.

24. Based on additional information provided by Belgium to Question 5, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at http://igvm-iefh.belgium.be/fr/activites/gender_mainstreaming/application/statistiques_et_indicateurs.

25. Based on additional information provided by Israel to Question 5, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.cbs.gov.il/www/statistics_ordinance_e.pdf.

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Annex 3.A. Annex tables

Annex Table 3.A.1. Requirements to provide government data with an open license across OECD countries and partner economies

	Formal requirements for line ministries / agencies to provide government data with an open license	Authorised activities with data provided with an open license			
		Download	Copy	Use	Distribute
Australia	●	▲	▲	▲	▲
Austria	●	▲	▲	▲	▲
Belgium	■	▲	▲	▲	▲
Canada	●	▲	▲	▲	▲
Chile	●	▲	▲	▲	▲
Czech Republic	■	◊	◊	◊	◊
Denmark	■	□	□	□	□
Estonia	●	▲	▲	▲	▲
Finland	●	▲	▲	▲	▲
France	●	▲	▲	▲	▲
Germany	●	▲	▲	▲	▲
Greece	●	▲	▲	▲	▲
Ireland	●	◊	◊	◊	◊
Israel	●	▲	▲	▲	▲
Italy	●	▲	▲	▲	▲
Japan	●	▲	▲	▲	▲
Korea	●	▲	▲	▲	▲
Latvia	■	◊	◊	◊	◊
Mexico	●	▲	▲	▲	▲
Netherlands	■	▲	▲	▲	▲
New Zealand	●	▲	▲	▲	▲
Norway	●	▲	▲	▲	▲
Poland	○	-	-	-	-
Portugal	○	-	-	-	-
Slovak Republic	●	◊	◊	◊	◊
Slovenia	■	◊	◊	◊	◊
Spain	●	▲	▲	▲	▲
Sweden	○	-	-	-	-
Switzerland	●	▲	▲	◊	◊
Turkey	○	-	-	-	-
United Kingdom	●	◊	◊	◊	◊
United States	●	▲	▲	▲	▲

	Formal requirements for line ministries / agencies to provide government data with an open license	Authorised activities with data provided with an open license			
		Download	Copy	Use	Distribute
OECD total					
Yes, there are overarching requirements that apply to all ministries/agencies ●	22				
Yes, requirements have been adopted by some ministries/agencies ■	6				
Yes ♦					
No ○	4				
All data (100%) ▲		21	21	20	20
Most data (50-99%) ◊		6	6	7	7
Some data (1-49%) □		1	1	1	1
No data (0%) X		0	0	0	0
Colombia	●	▲	▲	▲	▲
Lithuania	●	□	□	□	X
Peru	●	▲	▲	▲	▲

Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 31 and Question 33. The questions were: At the central/federal government are there formal requirements for line ministries/agencies to provide government data: - Free of charge - With an open license *and* Do the existing requirements to provide government data with an open license allow users to carry out the following actions with the data: - Download - Copy - Use - Distribute.

Annex Table 3.A.2. Requirements to provide government data free of charge across OECD countries and partner economies

	Formal requirements for line ministries / agencies to provide government data free of charge	Authorised activities with data provided free of charge			
		Download	Copy	Use	Distribute
Australia	●	▲	▲	▲	▲
Austria	●	▲	▲	▲	▲
Belgium	●	◊	◊	◊	◊
Canada	●	▲	▲	▲	▲
Chile	●	▲	▲	▲	▲
Czech Republic	■	◊	◊	◊	◊
Denmark	○	-	-	-	-
Estonia	●	▲	▲	▲	▲
Finland	●	▲	▲	▲	▲
France	●	▲	▲	▲	▲
Germany	●	□	□	□	□
Greece	●	▲	▲	▲	▲
Ireland	●	◊	◊	◊	◊
Israel	●	▲	▲	▲	▲
Italy	●	▲	▲	▲	▲
Japan	●	▲	▲	▲	▲
Korea	●	▲	▲	▲	▲
Latvia	■	◊	◊	◊	◊
Mexico	●	▲	▲	▲	▲
Netherlands	■	▲	▲	▲	▲
New Zealand	●	▲	▲	▲	▲
Norway	●	▲	▲	▲	▲
Poland	●	◊	◊	◊	◊
Slovak Republic	●	◊	◊	◊	◊
Slovenia	■	◊	◊	◊	◊
Spain	●	◊	◊	◊	◊
Sweden	■	□	□	□	□
Switzerland	●	▲	▲	◊	◊
Turkey	■	◊	◊	◊	◊
United Kingdom	●	◊	◊	◊	◊
United States	●	▲	▲	▲	▲
OECD total					
Yes, there are overarching requirements that apply to all ministries/agencies ●	25				
Yes, requirements have been adopted by some ministries/agencies ■	6				
Yes ♦					
No ○	1				
All data (100%) ▲		19	19	17	17
Most data (50-99%) ◊		10	10	11	11
Some data (1-49%) □		2	2	3	3
No data (0%) X		0	0	0	0

	Formal requirements for line ministries / agencies to provide government data free of charge	Authorised activities with data provided free of charge			
		Download	Copy	Use	Distribute
Colombia	●	▲	▲	▲	▲
Lithuania	●	□	□	□	X
Peru	●	▲	▲	▲	▲

Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 31 and Question 32. The questions were: At the central/federal government are there formal requirements for line ministries/agencies to provide government data: - Free of charge - With an open license *and* Do the existing requirements to provide government data free of charge allow users to carry out the following actions with the data: - Download - Copy - Use – Distribute.

Chapter 4. Towards effective implementation of open government data policies

This chapter discusses how a different set of actions and measures can all contribute to sustained, effective and efficient implementation of open government data policies. For example, fostering the implementation of an open-data-by-default culture, developing organisational capacities in the public sector and promoting data literacy more broadly across the ecosystem of re-users are all intermediate steps that, if planned and executed adequately, can become important preconditions for strategic publication and use of open data. This chapter discusses the approaches countries have followed in relation to these aspects and highlights the relevance of user engagement, policy dissemination, communication actions, and user-capacity-building initiatives for implementation.

Lithuania was not an OECD Member at the time of preparation of this publication. Accordingly, Lithuania does not appear in the list of OECD Members and is not included in the zone aggregates.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Introduction

While data qualities such as completeness and machine-readability add to the accessibility and reusability of open government data (OGD) (see Chapter 3), openness by default is a broader concept that exceeds the technical realm. As highlighted in Chapter 2 of this report, building an "open by default" culture within the public sector goes beyond the definition of legal requirements supporting government openness. In this light, *open by default* is an overarching concept that touches on legal, regulatory, cultural and organisational aspects, moving the discussion around open government data from a technical dimension to strategic approaches:

- From a **policy** perspective, it means opening up to engage data users throughout the whole policy-making cycle, for instance, to identify data demand, crowdsource collective knowledge and obtain citizen feedback for policy re-design in an iterative fashion.
- From a **technological/technical** point of view, it means setting the right data governance policy tools to secure the availability of good quality data (as discussed in Chapter 3), to promote a culture of openness by default by balancing this trend with the need to reassure the public about the existing conditions for safeguarding the protection of personal data privacy and security (also Chapter 3) and to enable the right context for the further adoption of emerging technologies such as artificial intelligence and of related trends such as data analytics.
- From an **organisational** point of view, it means creating the right context – including the processes, internal business models, sets of capacities and competencies inside public sector organisations – to enhance the readiness to embark on efficient open data initiatives and scale them up (see Chapters 1 and 2). It also means, therefore, redesigning organisational processes and rebooting legacy systems hindering or blocking data sharing and data-driven policy developments, e.g. starting from scratch rather than transforming existing processes.
- From a **cultural** point of view, it comprises actions aimed to incentivise the willingness and proactiveness of the government and the public sector to communicate, co-ordinate, collaborate and engage with the open data ecosystem to co-create public value and jointly address policy challenges. This approach also comprises the relevance of increasing the awareness of public officials and external actors in regard to the value of open data.
- From a **legal and regulatory** perspective, it embeds the availability of an enabling framework supporting and, when needed, enforcing the publication of open government data in a proactive fashion and within the limits of personal data protection.
- From a **financial** point of view, it means working to reassess the business models for public sector organisations so that: 1) open data policy is well funded across the broad public sector; and 2) public sector organisations are incentivised to provide open data for free in order to increase the inclusiveness of the open data policy (see Chapters 1 and 3).

On the one hand, all together the above-mentioned elements contribute to promoting an open-by-default, system-wide culture in the public sector where public officials understand open data not only as a technical subject but also as a way to build greater government openness and reinforce government-citizen collaboration. On the other, these efforts reinforce the construction of a digital government, contribute to the digital

transformation of the public sector, and underline the need to define sound governance models for open data policies that support coherent policy implementation (see Chapter 1). Parallel actions should also take place to reach and communicate with the ecosystem on the relevance and potential of open data, thus aiming to pave the way for greater data reuse.

This chapter presents the efforts of OECD countries and partner and other economies to define and implement policy actions to build an open-by-default culture in the public sector. These efforts are in line with Pillar 1 (data availability) and Pillar 3 (government support for data reuse) of the Open Useful and Reusable data (OURdata) Index (see Background: The OECD Open Useful and Reusable data [OURdata] Index). These sub-pillars measure the relevance of engaging users to prioritise the publication of open government data with a user-driven approach (e.g. by identifying data demand), and reach and engage them in raising awareness on the relevance of open data in order to co-design data-driven solutions for policy problems (see Box 4.1).

Box 4.1. How the 2017 OURdata Index measures the construction of an open-by-default culture in the public sector

The f**requency of public consultations** on open government data plans is measured as part of Pillar 1 of the 2017 OURdata Index, Data availability.

- Sub-pillar 1.2 *Stakeholder engagement for data release* assesses the number of times the central/federal government consulted either of the following groups from January 2015-December 2016: private sector organisations, citizens, journalists, civil society organisations, civil servants and academia.

The requirements to consult open data users for open government data plans are measured as part of Pillar 1 of the 2017 OURdata Index, Data availability.

- Sub-pillar 1.2 *Stakeholder engagement for data release* assesses the availability of formal requirements for central/federal ministries and agencies to regularly consult open data users to inform open data plans.

The elements supporting effective consultations for open government data plans are measured as part of Pillar 1 of the 2017 OURdata Index, Data availability.

- Sub-pillar 1.2 *Stakeholder engagement for data release* assesses the availability of written guidance on how to conduct consultations with open data users. It also assesses the availability of formal requirements to: 1) systematically inform the public in advance on public consultations on open government data; 2) set minimum periods for responding to a public consultation on OGD; and 3) systematically publish on line the results of consultations with open data users.

The efforts to engage businesses are measured as part of Pillar 3 of the 2017 OURdata Index, Government support for data reuse.

- Sub-pillar 3.1 *Data promotion initiatives and partnerships* assesses the number of times focus groups/information sessions with businesses to understand their data needs were conducted by central/federal

ministries/agencies.

Efforts to engage the civil society are measured as part of Pillar 3 of the 2017 OURdata Index, Government support for data reuse.

- Sub-pillar 3.1 *Data promotion initiatives and partnerships* assesses the number of times focus groups/information sessions with civil society representatives so as to understand their data needs were conducted by central/federal ministries/agencies.

Main challenges to the implementation of OGD policies and initiatives

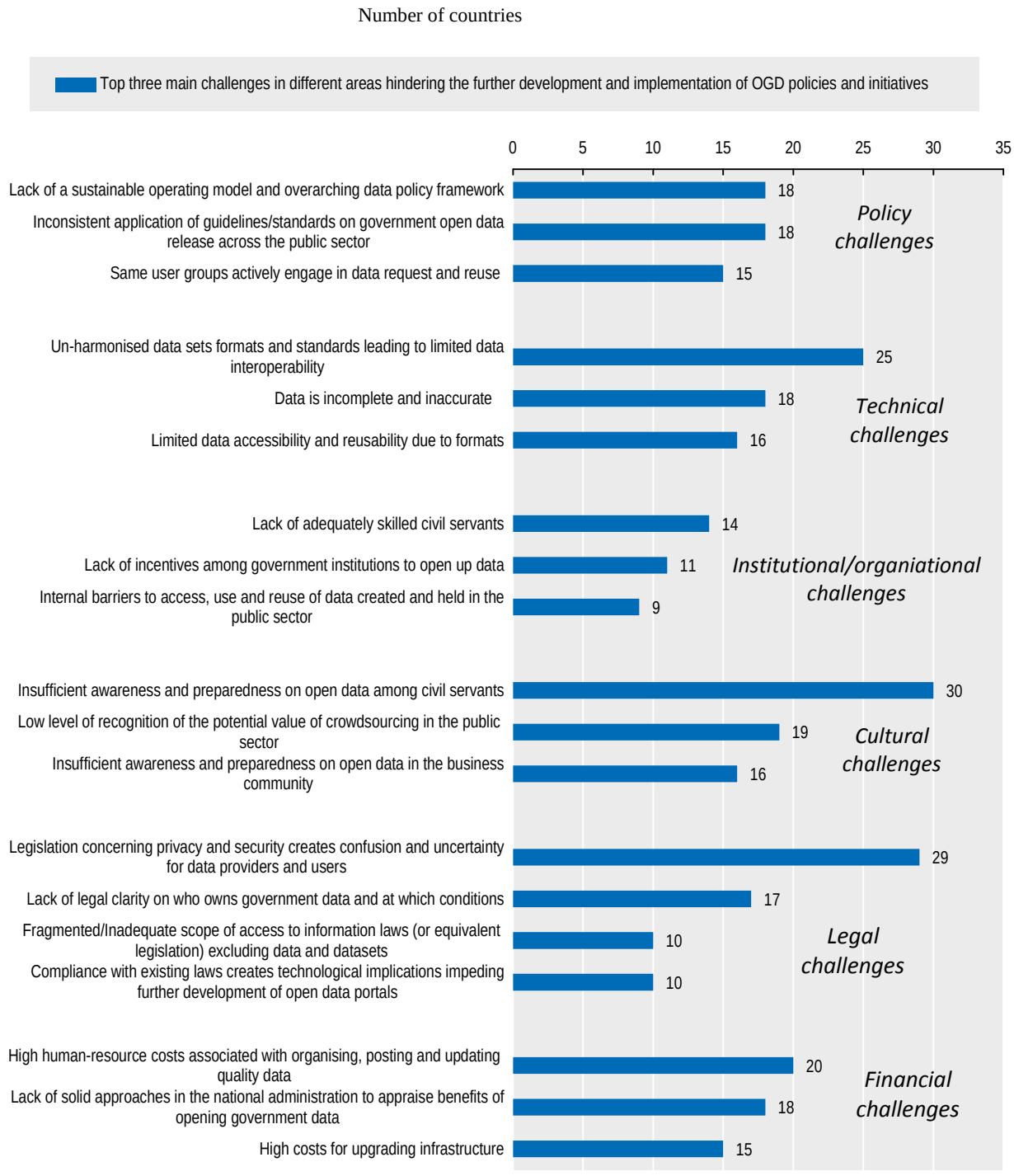
If governments are to encourage the development and implementation of open government data policies, recognising their horizontal nature is paramount. In line with this thinking, evidence from the OECD Open Government Data Survey 3.0 shows that OECD countries need to consider and address the different areas of challenges hindering advancements in the swift and efficient implementation of open government data policies and strategies (Figure 4.1):

- From a **policy** point of view, results indicate that for most countries (18 out of 34), the main challenges are the lack of a sustainable operating model and overarching data policy framework, as well as an inconsistent application of guidelines and standards on open government data release across the public sector. That is, in general terms, the absence of a common overarching vision and strategic approach to open government data stands as a barrier to government-wide policy implementation. Governments, to optimise implementation of open government data policies, need to provide a clear strategic vision and foster a practical approach to the open government data policy as well as assist institutions during the implementation process (e.g. providing guidelines for the release of government data as open data) (see Chapters 1 and 3).
- At the **technological/technical** level, 25 countries out of 34 survey respondents indicate that the un-harmonised dataset formats and standards - causing limited data interoperability – are the main technical challenge to further implementation of open government data policies. This is mainly the result of a silo-based culture within the public sector affecting the management of government data that impedes data interoperability. Thus, in line with policy-related challenges, governments need to provide overarching guidelines and standards regarding government data (e.g. data formats, metadata, licenses, etc.) if data interoperability is to be encouraged across the public sector (see Chapter 3).
- From an **organisational** perspective, the main challenge to the further implementation of open government data policies and initiatives is the lack of adequately skilled civil servants. For some countries (14 out of 34), the absence of capacity-building exercises within the public sector undermines the practical implementation of open government data policies. Thus, governments need to define overarching open government data policies and consider its implementation in practice, which calls for awareness and training initiatives (see Reaching out to the broad ecosystem, further below).
- From a **cultural** perspective, 30 countries out of 34 survey respondents indicate that the main challenge to the implementation of open government data policies and initiatives is the insufficient awareness and preparedness on open data among

civil servants. Countries need to, therefore, ensure that the actual implementers of open government data policies and initiatives (i.e. public servants) are adequately equipped and aware to act as data custodians and stewards rather than perceiving themselves and acting as data owners and data publishers. The focus should, therefore, be on building a solid awareness base on open government data. During this process, it is important for public officials to proactively reach and engage the ecosystem so that open data becomes user-driven.

- From a **legal** point of view, legislation concerning privacy and security, which creates confusion and uncertainty for data providers and users, stands as a main legal barrier to further the implementation of open government data policies and initiatives in 29 out of 34 countries. The existing legal framework, with a strong emphasis on data protection, does not seem to help promote openness by default across the public sector and often it is perceived as the source of confusion. In order to address this confusion, governments need to create a legal environment which reconciles both elements. That is, a framework encouraging data openness while safeguarding data protection, needs to be implemented (see Chapter 1).
- From a **financial** point of view, the main challenge hindering the further implementation of open government data policies and initiatives is the high human resource costs associated with organising, posting and updating government data of good quality. That is, in most countries (20), the constant financial investments required to maintain data accessibility stands as a barrier to further implement open government data policies. Governments could, therefore, consider alternative routes, opting for advancing on automated release and updates, to reduce the costs. Additionally, financial barriers appear to revolve around existing funding arrangements – under which in most cases there is no specific overall budget linked to the implementation of the open data policy and efforts are left at the goodwill or the financial and human capacity of individual public sector organisations - and fee-based revenue models in individual organisations. Governments will need to provide incentives for continuous and reliable financial investments in open government data by learning how to present a business case for OGD built on presenting its cross-cutting benefits. To support the continued implementation of open data policies and deliver the expected benefits identifying the adequate funding model and rebooting the financial model within the organisation is thus paramount to sustain its continuity and reliability (see Chapters 1 and 3).

Figure 4.1. Main challenges to the implementation of OGD policies and initiatives across OECD countries and partner economies



Source: Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Questions 77-82.

Creating capacities inside the public sector for efficient and effective implementation

Capacity-building bodies

As discussed in Chapter 2, securing the availability of a capable, aware and adequately skilled public sector is essential. Practices and trends from around the world show that as efforts aimed to develop the right culture and capacities across the public sector for a sustained, efficient and effective implementation of open data policies include the establishment of taskforces dedicated to supporting public sector institutions in publishing data as open data. This initiative can help increase awareness and capacities in the public sector for the preparation, publication and potential reuse of open data. The creation of specific bodies in charge of providing guidance and support to public sector institutions would contribute for instance to the coherent implementation of open data policies and compliance with guidelines and standards for data publication.

These bodies may take a highly relevant role during the policy implementation stage, especially in those countries where data and digital skills are not widespread within the public sector. Currently, 71% of OECD countries and partner economies do have such a taskforce. For instance:

- In **Belgium**, the FPS Policy and Support (BOSA), being part of the Open Data Task Force, provides assistance to public sector organisations regarding all technical aspects of open government data.[1]
- In **Mexico**, the government created the Open Data Squads as a specific body within the general Direction of Open Data to provide guidance and help public sector institutions release their government data. This unit includes a blend of policy, legal, technical and data experts[2] and plays a role in the data-cleaning process (as a data certifier) prior to the publication of these data in the central open data portal.
- In **Canada**, the Open Government Team in the Treasury Board of Canada Secretariat (TBS) provides technical and policy guidance to public sector organisations so as to foster the collection, classification and publication of government data as open data. The purpose of the guidance is to ensure high levels of consistency, quality, accessibility and searchability for the government data published on the federal open government data portal of Canada.[3]
- In the **Czech Republic**, there is a unit under the Department of the E-government Chief Architect that provides technical and methodological support to public sector organisations as well as open government data training courses. This unit, therefore, supports public sector organisations in the release of government data as open data both in theoretical and practical terms.[4]
- In **Colombia**, the E-government Office, the Open Data Group and Strategic Coordinators (public organisations that are part of the Ministry of Information Technology and Communication) are responsible for providing assistance to public sector organisation to publish open government data. Notably, a guide was published to inform public sector organisations on open data and equip them with the practical tools to release government data as open data.[5]
- In the **United Kingdom**, the team in charge of the central open government data portal also supports all government departments to publish their data as open data. In fact, the team collects feedback from the specific teams in public sector organisations that publish government data as open data and use that feedback to

update the portal. The portal is thus improved through iteration to facilitate the publication of high-quality open government data. Feedback collection and updates of the portal (i.e. iteration) are at the heart of the United Kingdom's approach to support the publication of open government data.[6]

- In **Israel**, it is the ICT Authority which assists public sector organisations in the publication and updating of open government data. However, the authority also aims to support and guide public organisations for the collection, cleaning and management of open government data. This will, in turn, promote data interoperability across the Israeli public sector.[7]

Given the multifaceted nature of open government data, governments must be able to reconcile experts and officials from different fields, namely, policy experts, public managers, senior officials, technical experts as well as legal experts. A focus on one aspect (e.g. technical) at the expense of the other will undermine the effective and strategic implementation of open government data policies and strategies. For this reason, the composition of capacity-building bodies should mirror such a multifaceted nature in order to staff these bodies with the right and broad set of skills (e.g. legal, technical, managerial, innovative) (see Box 4.2) or decide when to bring external actors in to work on ad hoc projects.

Box 4.2. Prototyping public bodies: The case of the GovLab in Chile

In Chile, the set-up of the GovLab (Laboratorio de Gobierno, a body within the Chilean Economic Development Agency, Ministry of Economy) followed a design-thinking approach in an effort to decide which skills were needed inside the GovLab, in line with specific policy goals and the mandate of this body.

An ad hoc group of consultants and experts in different areas was put together to work specifically on one (the first) project of this body, and in order to use this project to identify which core skills and competencies were needed by default within the lab. The results of this experiment were useful to inform the right set of skills needed to kick off the formal activities of the lab.

Source: OECD (2017a), *Fostering Innovation in the Public Sector*, OECD Publishing, Paris, https://doi.org/10.1787/9789264270879-en; OECD (2017b), *Innovation Skills in the Public Sector: Building Capabilities in Chile*, OECD Public Governance Reviews, OECD Publishing, Paris, https://doi.org/10.1787/9789264273283-en.

Incentives to publish open data

The evidence demonstrates that generally speaking, most countries do not provide incentives to public sector institutions to publish government data. When done (10 out of 31 countries that responded to OECD Survey on Open Government Data 3.0), these incentives focus on the provision of financial resources and awards, which are used to propel open data efforts, primarily for efforts at early implementation stages and focused on making data available for public access.

In **France**, for example, the Future Investment Programme offered a large amount of funds for local territories to publish their government data as open data. In **Greece**, there are actually legal requirements whereby awards are provided to public sector institutions that set up effective and innovative processes in opening up their datasets as well as in

promoting its reuse. This approach of offering awards to public sector institutions also prevails in **Slovenia**. Indeed, the Slovenian Information Commissioner grants awards to public sector institutions or non-public sector institutions with the best initiative in terms of transparency and open data.

Colombia, too, offers such incentives through public sector competitions based on open data publication and open data use. These competitions prompt public bodies to improve their digital government performance, including government data release. In 2016 for example, through these competitions, more than 300 critical datasets where published in Colombia.

However, the above-mentioned evidence shows that there is room for improvement for the provision of extrinsic incentives to stimulate data opening and reuse across the public sector. Efforts aimed to provide incentives as policy drivers to spur open data initiatives across the public sector and align them with central policy guidelines and standards also opens the discussion with regard to the effectiveness of these efforts in the long term and how their availability can impact the sustainability of open data initiatives (see Box 4.3).

Box 4.3. Balancing intrinsic and extrinsic motivation to advance open government data efforts: Hitting the target, but missing the point

Intrinsic motivation refers to an activity that is performed because of its inherent satisfaction rather than for a separable consequence (Ryan and Deci, 2000). Thus, an intrinsic motivation to release government data as open data refers to a situation where public servants have a proactive inherent interest and see a value-added in publishing open government data and engaging with the ecosystem, without there being an external incentive provided for them to do so (reactiveness).

That is, through an understanding of the potential value of open government data as a tool to address policy challenges, public servants develop a readiness, eagerness and interest in releasing government data as open data with a purpose. Government data is therefore shared for its own sake, and not for a financial reward, or punishment, one could get for its release (Ryan and Deci, 2000).

Conversely, extrinsic motivation refers to an activity that is performed in order to obtain a separable outcome (Ryan and Deci, 2000). That is, the action is performed because of the potential reward offered or the punishment that can be avoided. In the open government data realm, extrinsic motivation is also the result of legal and regulatory instruments forcing public officials to make data available but without a strategic approach or problem-solving mindset.

Extrinsic motivation to publish open government data refers to a situation where external incentives trigger the publication of open government data. For instance, financial bonuses, subventions and penalties are offered/applied to public sector organisations and/or public officials if government data is released as open data.

This means that public servants do not publish open government data for its own sake, considering its numerous cross-cutting benefits, but because of the reward stemming from its publication (i.e. there is an instrumental value for releasing OGD) (Ryan and Deci, 2000).

In fact, in the short term, for governments to advance their open government data

strategies, financial incentives could be provided to public sector organisations so as to encourage large amounts of open government data release.

However, as highlighted in Bénabou and Tirole's paper (2003), in the long term, providing financial incentives to open government data can undermine motivations to do so. In fact, as financial incentives to publish government data as open data are offered, in the long run, motivations to do so can decrease, if no further and increasing rewards are offered.

Financial incentives for open government data can promote short-term engagement on behalf of public sector organisations, but in the long term, it will undermine re-engagement as further financial rewards will have to be provided to sustain continual open government data publication (Bénabou and Tirole, 2003).

To sustain government data release as open data, in the long run, providing public sector organisations with inherent motivations to do so will be paramount. Therein lies the need to work with public sector organisations in order to help them better understand the numerous benefits open government data can generate, and develop inherent reasons to publish it.

For open government data to remain relevant in the long term, governments will need to develop an open data culture and data stewardship, with inherent motivations for open government data publication at its heart, focusing on the problem that data is aiming to help address from the start.

Source: Author, based on Bénabou, R. and J. Tirole (2003), "Intrinsic and Extrinsic Motivation", *The Review of Economic Studies*, Vol. 70, No. 3, pp. 489-520; Ryan, R.M and E.L. Deci (2000), "Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions", *Contemporary Educational Psychology* 25, pp. 54–67.

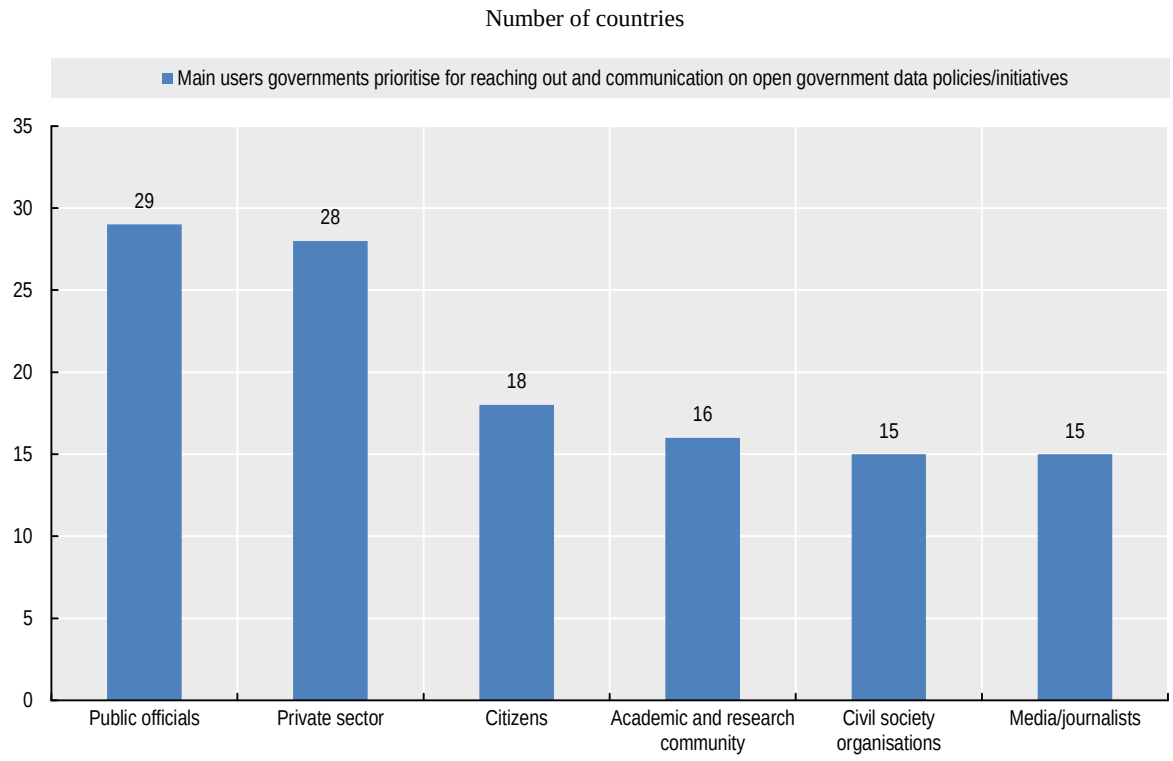
Reaching out to the broad ecosystem

Dissemination and communication

In 28 of the 33 countries that responded to the OECD Survey on Open Government Data 3.0, the private sector is the second main user group governments prioritise for reaching out to, communicate with and target with initiatives on open government data policies, just after public officials. This seems to be in line with the prevailing relevance across OECD countries and partner economies given to the economic impact of open government data, as shown by the evidence presented in Chapter 1.

In more than 54% of the countries that completed the 2016/17 OECD Survey (18 countries out of 33), civil society organisations and/or journalists are not seen as priority communities for reaching out and communicating on OGD initiatives and/or policies. Thus, formal requirements to raise awareness among both businesses and civil society organisations seem to be implemented in some countries to mainly prioritise awareness to businesses. Key stakeholders of the ecosystem, such as journalists and academia remain third-tier groups in terms of priority (see Figure 4.2).

Figure 4.2. Users prioritised by governments for reaching out to and communicating about OGD policies/initiatives across OECD countries and partner economies



Source: Based on information provided by 30 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 25b. Which users does the central/federal government prioritise for reaching out and communication (e.g. based on policy priorities or key policy sectors)?

These results are to be understood in the context of the main targeted goals and drivers behind national open data policies (e.g. OGD for the data-driven economy, OGD for anti-corruption) (see "The main objectives of open data policies" in Chapter 1).

In addition, while social media stands as the most used tool to support dissemination and communication efforts, actions aimed at reaching out to a diversified set of stakeholders should also follow a digital-by-design approach (see Box 4.4). This means ensuring the broader reach of these initiatives comprising non-digital and digital channels to enhance the inclusiveness of the open data policy.

Box 4.4. What is digital by design?

The digital-by-design principles refer to a government that has absorbed the full potential of digital technologies and data right from the start when formulating policies and designing public services. Thus, governments that are digital by design: 1) mobilise new digital technologies to rethink, re-engineer and simplify internal processes and procedures; 2) promote a digital culture; and 3) develop the digital skills of their public servants.

In so doing, these governments can deliver the same efficient, sustainable and user-driven public services, regardless of the channel used by the user to interact with public authorities.

Thus, the "digital-by-design" principle does not narrow the service delivery channel to a digital one, but rather allows users to access non-digital channels, which still offer the same quality of service (as opposed to the digital-by-default principle, which narrows down the service delivery channel to a digital one), thanks to the full digitalisation of processes, procedures and ways of working in the back end.

However, digital by design is a continuous process that requires constant reassessment. As new digital opportunities become available, it is the duty of the relevant public sector authority to continuously reassess existing service delivery modalities to improve the service externally, or the supporting process internally.

Source: OECD (forthcoming), "Issue Paper on the 'Digital Government Framework'", OECD Publishing, Paris.

Towards strategic and user-driven data publication

Enabling government data as a platform for value co-creation requires balancing the supply and demand of data. On the one hand, the supply of open government data (top-down approach) can help governments address policy challenges in line with their national agenda and policy priorities. The close collaboration with external partners such as civil society organisations and the connection between policy goals and the provision of specific data taxonomies that can help in their achievement are key elements of this approach.

On the other hand, the demand side (bottom-up) centres on the goals and needs of data users; therefore, the relevance of engaging with the ecosystem to evaluate data demand and prioritise the publication of those data that respond to user needs is essential from this perspective. When balanced, both approaches contribute to the development of a data infrastructure that capitalises on the value of data as a strategic asset for public value co-creation.

In general terms, the approach that OECD countries and partner economies take often shows the maturity of their open data policy (see Box 4.5).

Box 4.5. The OECD maturity model for open data policies

The OECD work on open government data, established in 2013, has collected evidence and expertise on specific characteristics that determine the maturity level of open government data policies across OECD countries and partner economies. The OECD is developing an eight-stage maturity level model to assess, in general terms, the state of development of the open data policy, including:

- The **lowest-hanging fruit**: With a strong focus on the supply side, this level of development strictly centres on data publication as the main objective of the open data policy. The government releases those data that are easier to publish often without a clear strategy behind this decision. Standards and guidelines for data publication and quality (see Chapter 3) are in most cases absent. There is not a full understanding of the concept of open data among public sector institutions (e.g. proprietary formats, PDFs). Extrinsic drivers motivate data publication (legal compliance, financial incentives).
- The **transparency approach**: Focus is on the supply of data. Data publication is reactive, passive and often opportunities are missed out for it to be strategic. While some datasets are available on the portal, user action is needed to request data. Data request tools are often inefficient and build on freedom of information channels (public sector information access requests). There is a strong focus on the publication of aggregated databases in proprietary formats (e.g. the use of APIs [application programming interfaces] is not considered).
- **Early consultation**: Governments and public sector organisations start showing signs of acknowledging the value of user engagement. Some initiatives to identify data demand are in place. Guidelines and standards are available, but further capacity-building exercises are needed to help public sector organisations understand open data. User engagement and feedback stress the relevance of good quality data. Metadata emerges as a key element of open government data. There is early discussion on data governance tools (e.g. data catalogues).
- **User engagement**: The focus shifts from consultation to collaboration. These exercises inform data publication. Initiatives such as hackathons are implemented, but sometimes without a clear purpose. Champions and data stewardship emerge in the public sector. Data request and feedback channels are available on the portal. Developing skills and creating capacities within the external ecosystem emerge as a key element of open data policies. Intrinsic motivation drives open data initiatives.
- **Problem-solving approach**: In parallel with recognising the relevance of data demand, the government acknowledges the contribution of open government data to the broad policy agenda. The data supply takes a strategic approach. High-value data taxonomies are published on the portal in line with their contribution to the achievement of policy goals and the political agenda. User engagement exercises centre on the problem to be addressed, not the data. There is a focus on the sustainability of these initiatives and on the open data policy as a whole. Discussion on the impact of open data policies emerges, as well as on the need to establish data causality. Attention to skill development moves from a focus on open government data to broader digital transformation skills development efforts inside the public sector (digital, innovation and data skills). Automated data

exchange is in place. Multiple but inter-connected government data sources exist (e.g. data harvesting).

- **Data as infrastructure** (Data as a Platform, DaaP): The government balances data supply and demand. Open government data is identified as a product of broader data governance efforts in the public sector and a result of the data value chain. Efforts are targeted, and open government data is further embedded in sectoral policies. High-quality and timely open government data are used as an asset for the development of services and products. OGD emerges as a long-term commitment, not a short-term, ad hoc activity.
- **Government as a Platform** (GaaP): Multi-stakeholder engagement, value co-creation, online and physical collaboration spaces and data communities are at the centre of this approach. The value of the portal is not only based on the data it provides (DaaP) but also on its value for the ecosystem. The government portal is a driver for data-driven digital innovation and knowledge sharing: The central open government data portal changes to a portal for open data and a community platform. Data supply from external users. The discussion is centred on data policies, not on open government data policies, with a clear connection to digital government and public sector digital transformation policies, and open data is clearly acknowledged as a means to reach this end rather than being seen as an end in itself.

Source: Author, ongoing work.

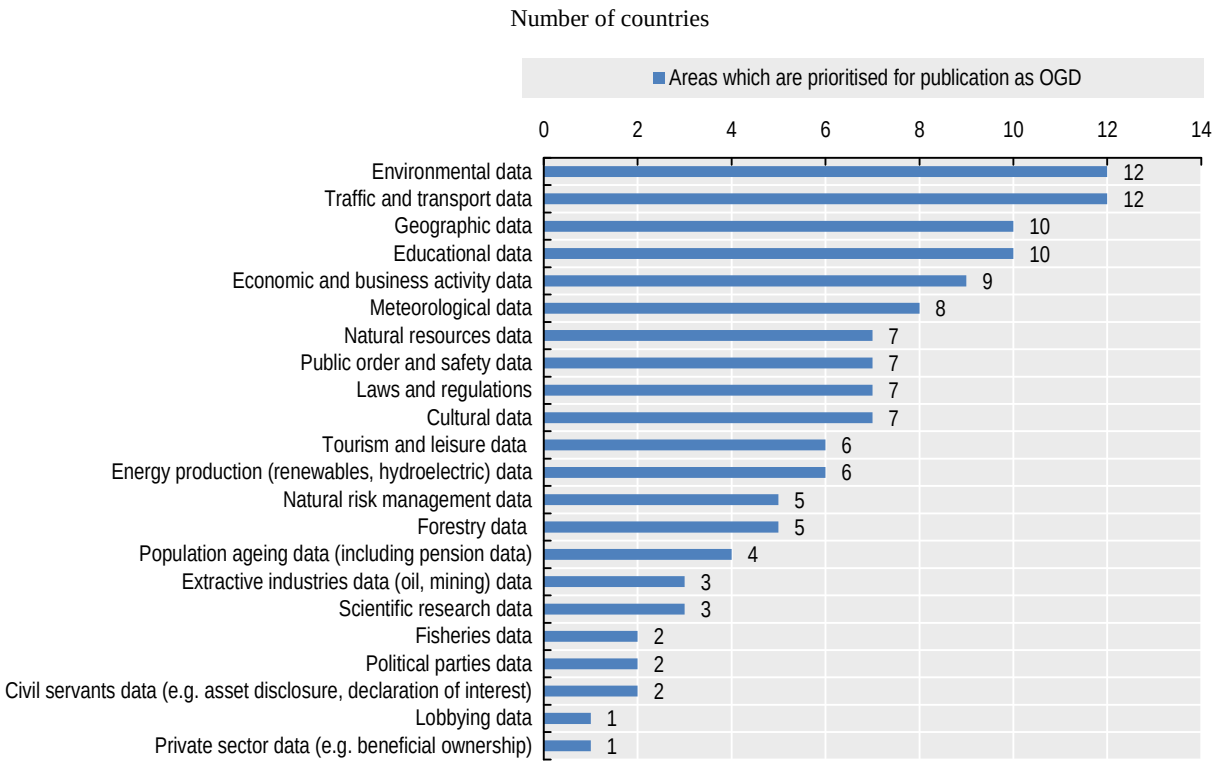
Focus on data supply

Recent OECD work and evidence from the OECD Open Government Data Survey 3.0 shows different levels of development among OECD countries and partner economies in terms of the approach taken in terms of data publication. While some countries prioritise government data release based on the needs of the user communities – identified for example through public consultations - in other countries, prioritisation for the publication of open government data is based on the most requested public sector information. Of the 34 respondent countries, 18 follow this more reactive user-driven approach to determine the release of open government data (see Annex 4.A.).

Results also show that most governments do not follow a problem-solving approach in the release of government data as open data. That is, for most countries, open government data is not released based on identified national policy goals, to which the use of government data could contribute. In fact, only 10 out of 34 OECD countries and partner economies that completed the survey prioritise the release of government data as open data based on national policy goals.

In terms of data taxonomies, OECD countries and partner economies report the prioritisation of environmental, transport and geographic data as those data taxonomies that are prioritised for data publication (see Figure 4.3).

Figure 4.3. Public policy areas prioritised for publication as open government data by OECD countries and partner economies



Source: Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 11a. If the central government has prioritised data publication based on overarching policy goals (development, climate change, public sector integrity), please select the areas or sectors which are currently prioritised for publication as open government data.

The above-mentioned results are in line with the trends observed around the globe in terms of growing recognition of governments to the publication of geodata and the development of data-driven models to improve urban mobility (see Box 4.6).

In some countries, Open Data Executives Decrees request the release of specific government datasets as open data. For instance, in **Argentina** and **Brazil**, public sector organisations are required to release specific datasets in order to fight corruption and conflicts of interest inside public sector organisations (OECD, 2017c).

In **Argentina**, the Executive Decree on Data Opening Plan, released in January 2016, requires that public sector organisations publish as open data information on salaries of all public servants and public sector employees, budget credits, and public procurement (e.g. calls for tenders, awards) that are included in the Electronic System of Public Contracting. Other elements such as salary scales applicable to the different public employment regimes are also to be released as open data (OECD, 2017c).[8]

Box 4.6. The growing relevance of geographic data

Governments across the globe have come to recognise the strategic importance of geographical data (geodata). Thus, different measures, either on a national or international level, have been implemented to manage geodata as well as promote its reuse.

On the international level, the EU INSPIRE Directive (European Commission, 2018) promotes the creation of a European spatial data infrastructure so as to:

- promote government data sharing of geodata among public sector organisations across the European Union
- facilitate the access to geographic data across Europe for public sector organisations, and non-governmental actors
- help governments in policies that could also affect other territories (i.e. governments' analysis of geodata across boundaries allows them to implement better-suited policies).

The Directive thus aims to create an infrastructure that will promote more efficient EU environmental policies and national policies affecting the environment. To ensure a coherent united spatial infrastructure, the Directive is based on legally binding implementing rules for all EU members (based on the INSPIRE Implementing Directive) in terms of: 1) metadata; 2) data specifications; 3) network services; 4) data services and data sharing; 5) spatial data services; and 6) reporting of the monitoring of the implementation of the Directive (European Commission, 2018).

Additionally, although non-legally binding, the Directive offers a series of technical guidance so as to provide guidelines on how the Implementing Rules of the Directive can be implemented. This is done in particular to ensure further interoperability across the spatial infrastructure (European Commission, 2018).

On a national level, countries have implemented different initiatives to manage geographical data and promote its reuse. In **Sweden**, the Strategy for Environmental Data Management is a cross-government initiative of different public sector organisations that offers a series of recommendations on the management of environmental data. The aim of the strategy is also to create an environmental data infrastructure in Sweden that promotes the management, accessibility and reuse of environmental data (Swedish Environmental Protection Agency et al., 2016).

Additionally, in a number of countries, central/federal geodata portals/platforms have been created to support the access and use of geographic data. In **Canada** for example, the Federal Geospatial Platform facilitates access to geographic data and tools so as to encourage its analysis and reuse across the federal government. One of the intentions of the portal is to assist public sector organisations in their decision-making processes in line with government priorities (Government of Canada, 2016).

Source: European Commission (2018), "About INSPIRE", webpage, http://inspire.ec.europa.eu/about-inspire/563 (accessed 5 July 2018); Swedish Environmental Protection Agency et al. (2016), "Strategy for Environmental Data Management", www.naturvardsverket.se/upload/sa-mar-miljon/oppna-data/miljodatastrategi/strategy-for-environmental-data-management-161107-ver-1.02.pdf; Government of Canada (2016), "The Federal Geospatial Platform", webpage, www.nrcan.gc.ca/earth-sciences/geomatics/canadas-spatial-data-infrastructure/geospatial-communities/federal (accessed 23 August 2018).

In **Brazil**, the Executive Decree, published in May 2016, establishing the open data policy requires that government data on assets registered in the Integrated Services Administration System, on the Integrated System of Financial Administration (Siafi) or again on civil servants in managerial and directive positions in state-owned enterprises and subsidiaries be released as open data (OECD, 2017c). Other datasets are required to be published in line with public interest, such as data on births, marriages, divorces and deaths.[9]

In the **Czech Republic**, for example, open government data is selected based on the Government Decree 425/2016, which provides a taxonomy of public sector information to be published as open data as a priority (this include mainly datasets relating to transport, budget, and finance). Additionally, the central government prioritises the most demanded sets of datasets through public consultations.[10]

In **Canada**, the government has established a working group on open government that develops specific criteria for identifying high-value datasets and provides recommendations for the release of priority datasets across levels of governments. These recommendations range from releases on water quality data to government procurement data to pay scales data.[11]

Focus on data demand

In terms of user engagement and consultation, the OECD has found evidence of different levels of maturity in terms of the discourse on the need of engaging users to identify demand and on existing practices themselves.

In most countries, there are no formal requirements for ministries and agencies at the central/federal level to regularly conduct consultations with users to inform open data plans. In fact, evidence shows that 19 OECD countries of the 32 that responded to the Open Government Data Survey 3.0 do not have formal requirements for central/federal ministries and agencies to regularly conduct consultations with users to inform open data plans (see Annex 4.A).

Additionally, most countries do not require ministries and agencies to implement different procedures to guarantee the effectiveness of public consultations with open data users either (see Annex 4.A). While most OECD countries and partner economies (23 out of 35 respondents to the OECD Survey) have not developed specific formal requirements for public sector organisations to inform the public in regard to upcoming public consultations, survey results do confirm that some countries have established such requirements.

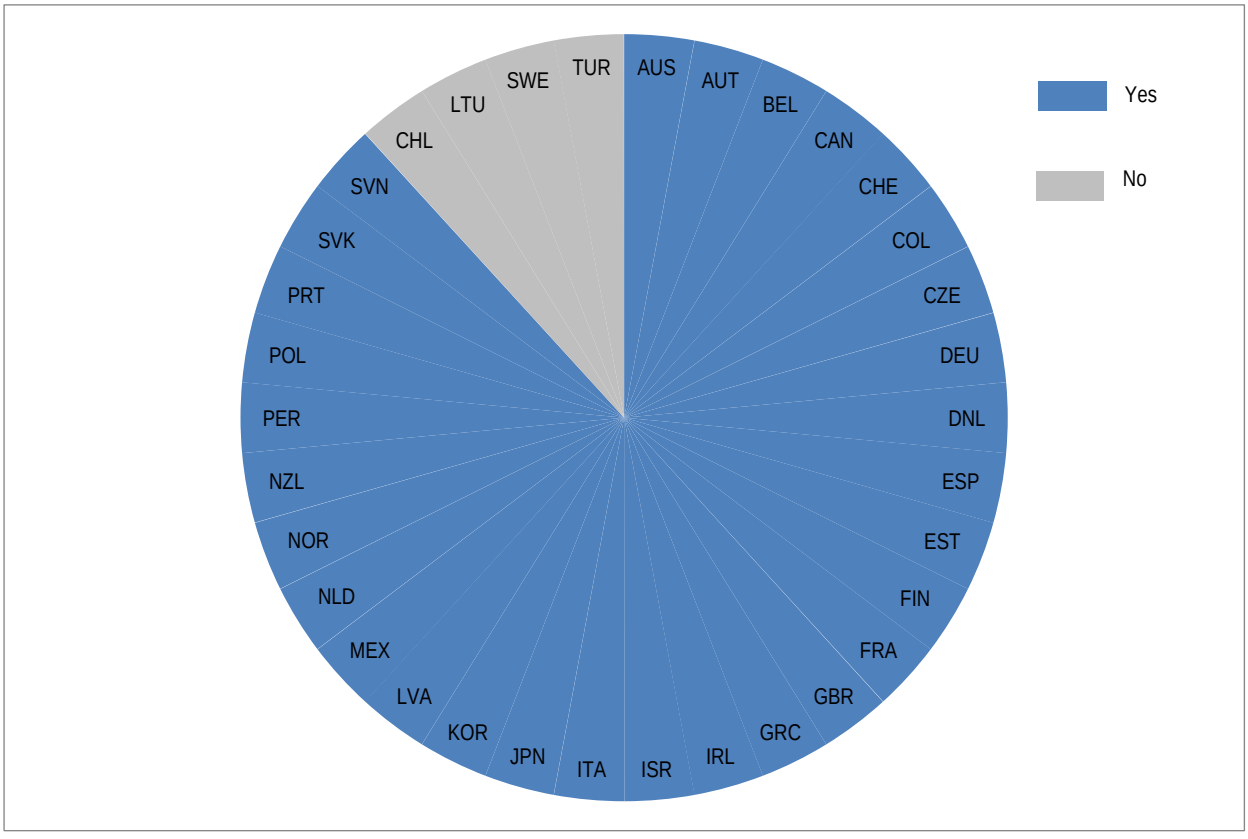
For example, in **Korea**, the Open Data Law, in Article 10, requires that the central government conducts fact-finding surveys in order to inform their future open government data policies. Additionally, through the Open Data Master Plan Drafting Guidelines and the Open Data Law Enforcement Decree, ministries and agencies are also required to provide certain documents for public consultations, inform the public in advance regarding open government data consultations, or again allow minimum periods for responding to consultations.[12]

In the **United Kingdom**, although there are requirements in just some ministries and agencies to regularly conduct consultations with users to inform open data plans, the Cabinet Office has released the Open Policy Making Toolkit, which provides sets of guidelines for public sector institutions regarding public consultations. For example, the toolkit provides guidelines on social media engagement, on conducting workshops with

policy benefactors and on other forms of consultation.[13] Such guidelines are provided to ensure the high quality of the different forms of consultations ministries or agencies decide to adopt.

Outside of formal requirements, when it comes to implementation, countries do indeed consult open data users and stakeholders (see Figure 4.4), although these exercises take place on an irregular basis.

Figure 4.4. Practical consultation of open data users and stakeholders by the central/federal government across OECD countries and partner economies

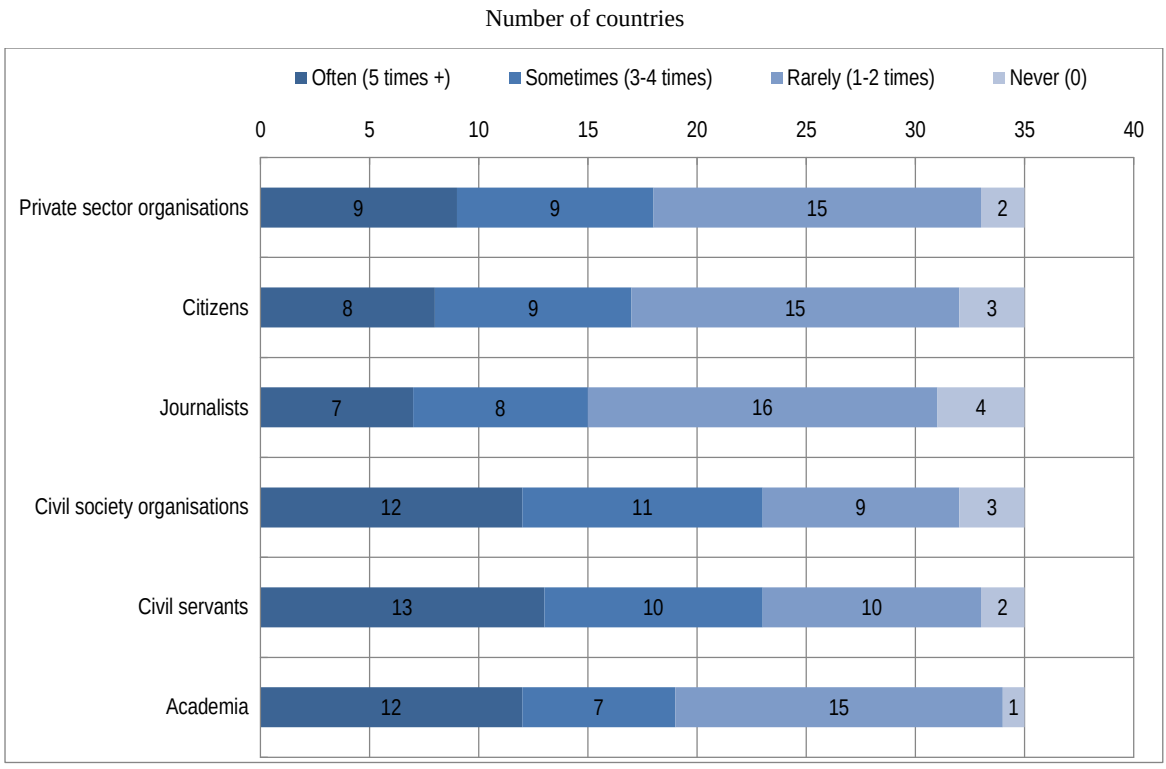


Source: Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 25c. Does the central government consult (in practice) open data users and stakeholders (e.g. discuss OGD policy objectives, receive and reply to data requests, collect demands on data needs)?

In **Australia**, for example, there are no formal requirements to conduct consultations with open data users on open government data release plans, but in practice, open data users are consulted. This is also the case in **Estonia**: the government has had consultations with open data users despite no formal requirements to do so.[14]

However, the absence of formal requirements makes it more challenging to ensure that public consultations to inform open government data plans occur on a regular basis. Public sector organisations are free to consult open data users without guidelines on the content of the consultation and the procedures to follow to guarantee relevance and effectiveness. Evidence corroborates that most countries do not regularly consult open data users to inform open data plans of the central/federal government (see Figure 4.5).

Figure 4.5. Frequency of consultation of open data users among OECD countries and partner economies



Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 27. In practice, since January 2015, how many times were the following groups of users consulted to inform open data plans of the whole central/federal government? (This question excludes ad hoc comments' transmissions from users, for instance through feedback sections in government portals).

In most countries, since January 2015, private sector organisations, citizens, journalists and academia have all been rarely (one or two times) consulted to inform the open data plans of the government. In 15 countries out of 35, for example, private sector organisations were rarely consulted since 2015. Additionally, only 8 out of 35 countries have often consulted citizens more than five times between January 2015 and December 2016. For journalists, figures are even lower, whereby only seven countries (Colombia, Czech Republic, Japan, Korea, Netherlands, New Zealand and the United Kingdom) have often consulted this group.[15]

In **Greece**, citizens and private sector representatives, as well as civil society organisations were all consulted for the Third National Action Plan for the Open Government Partnership. However, the only other consultation that took place with these groups was for the annual report of the Ministry of the Interior and Administrative Reconstruction on open data publication and reuse.[16]

Conversely, countries with formal requirements for public sector organisations to regularly conduct consultations with users to inform open data plans have on average had more consultations on open data plans with all different user groups.

For example, in **Mexico**, the private sector, civil society organisations and academia have all been regularly consulted to inform open data plans through the Open Data Council and

the development of the Strategic Open Data Infrastructure. Citizens, too, were sometimes (between three to four times since January 2015) consulted to contribute to the Open Data Implementation Policy Guide, and for the second Open Data Policy.[17]

Similarly, in **Norway**, private sector organisations, journalists or civil society organisations were all sometimes consulted via one-to-one meetings, for the transposition of the PSI EU Directive on the reuse of public sector information in Norwegian law as well as on the types of data users would like to have.[18]

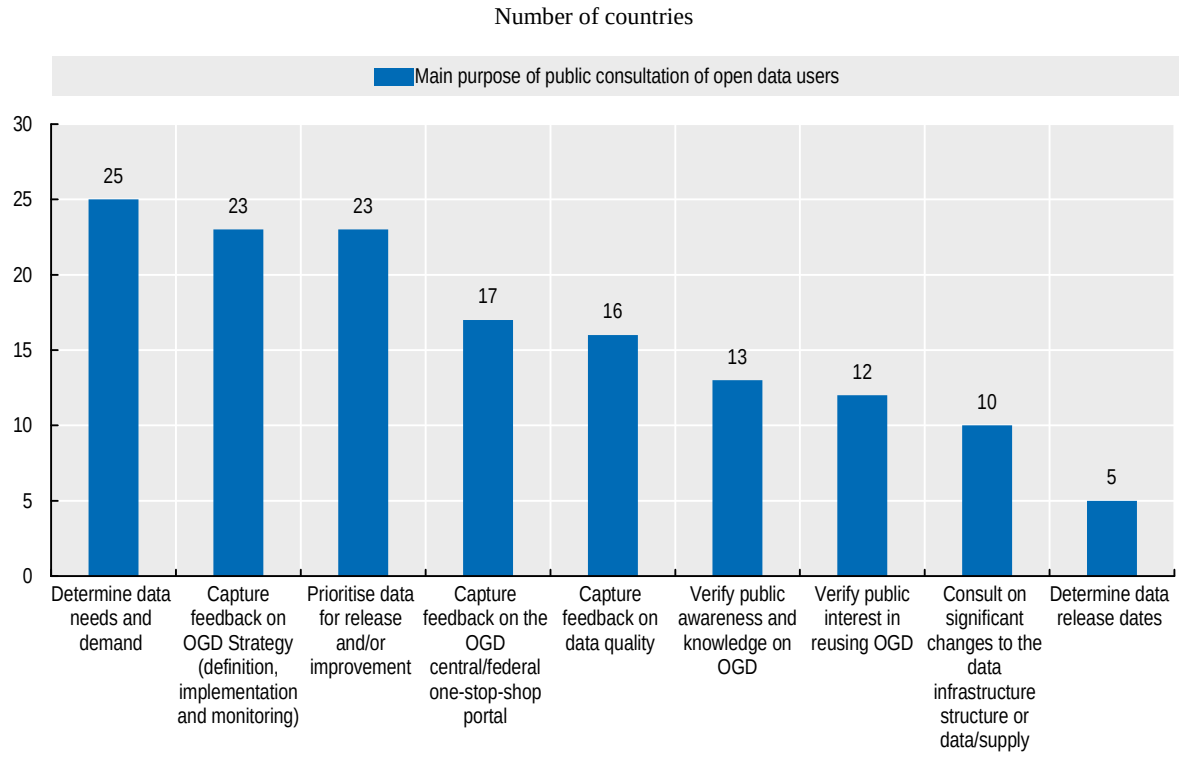
The **United Kingdom** has also had a number of public consultations to inform open data plans (more than five since 2015). For example, a physical consultation was organised to gather user opinions on the National Information Infrastructure, an official document intended to list high-value datasets that should generate the most economic impact. Online consultations were also made, for example, to gather information on how the government can use data to both improve public services and decision making.[19]

In terms of the goals and purposes of consultations, most countries aim to determine the data needs and demand for open government data and to prioritise datasets that should be released as open data, or that require improvement. In fact, in 25 countries, one of the main purposes for public consultations with open data users is to determine their data needs and identify the demand. Additionally, in 23 countries, another main purpose for public consultation of open data users is to prioritise open government data that should be released or improved.

Thus, in most countries, the release of government data as open data focuses on the demand side, although countries still seem to be in the "early consultation" stage. That is, the focus remains on initial consultation rather than on collaboration.

In fact, this is all the more apparent considering that few countries (12) consult users to verify their actual interest in reusing open government data. Thus, the purpose of most consultations focuses on the publication stage of government data, rather than on considerations regarding its reuse (see Figure 4.6).

Figure 4.6. Main purposes of open data user public consultations among OECD countries and partner economies



Source: Based on information provided by 28 OECD countries and 2 partner and other economies (Colombia and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 25d. What is the main purpose of public consultation of open data users?

Governments should also consider the channels used for consultations. Depending on the user group targeted and the intent of the consultation, governments should adopt a channel for consultation that guarantees both a wide range of participation as well as efficient and useful feedback from participants.

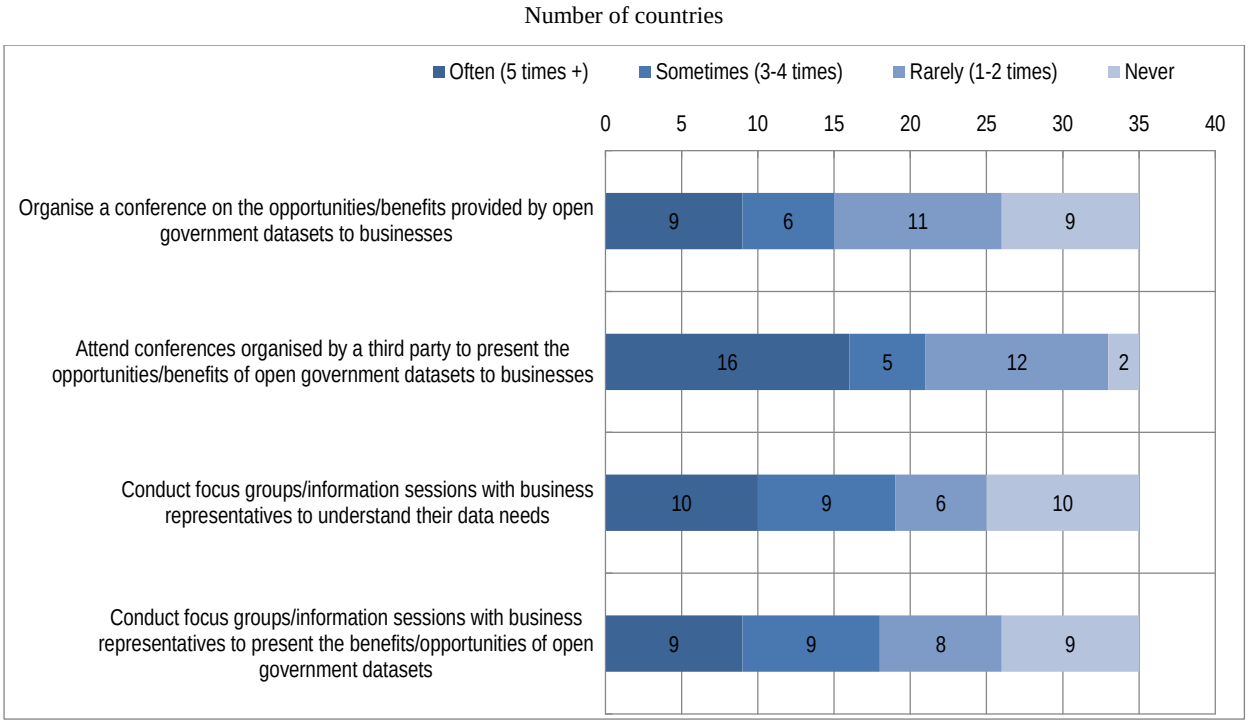
In fact, it is essential for governments to engage users through the most efficient channel to guarantee and encourage government-citizen collaboration. However, channels used should not also become exclusive, in that doing so would prevent certain groups of citizens from participating. Thus, although some specific channels could be used, alternatives channels should remain available in order to encourage the engagement of all citizens.

Thus, in the case of citizens, for example, the use of social media and online consultations would stand as the most appropriate channel for consultation on data needs and release.

In fact, results confirm that most countries have gone through online means to query citizens on their data needs. Thus, 18 respondent countries report using online consultations, and 14 have used social media to consult citizens on their data needs (see Figure 4.7).

For the consultation of public officials on their data needs, most countries have rightfully adopted physical consultations. In fact, 24 countries out of 30 responding countries have used physical consultations, through focus or working groups, for example, to consult public officials on their data needs.

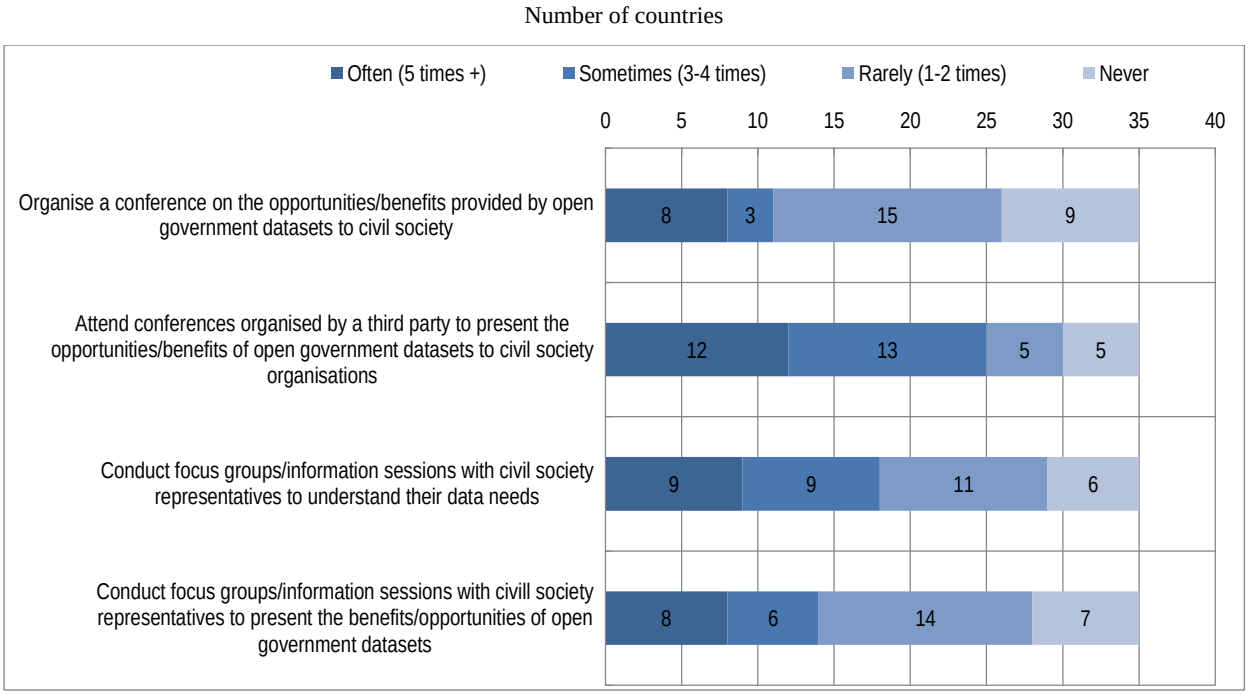
Figure 4.7. Means governments use to consult open data users across OECD countries and partner economies



Note: Data is not available for countries that responded "No" to Question 25c. Does the central government consult (in practice) open data users and stakeholders (e.g. discuss OGD policy objectives, receive and reply to data requests, collect demands on data needs)? That is, data is not available for Chile, Lithuania, Sweden and Turkey.
Source: Based on information provided by 28 OECD countries and 2 partner and other economies (Colombia and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 25e. Which users does the central/federal government consult to prioritise data release and through which channels?

In terms of focus groups/information sessions to understand the data needs of businesses, results are generally more positive. In fact, since January 2015, 10 out of 35 respondent countries have often (five times or more) organised focus groups/information sessions to understand the data needs of businesses, and 9 countries have organised these focus groups/information sessions between three to four times (see Figure 4.8).

Figure 4.8. Means governments use to consult open data users across OECD countries and partner economies

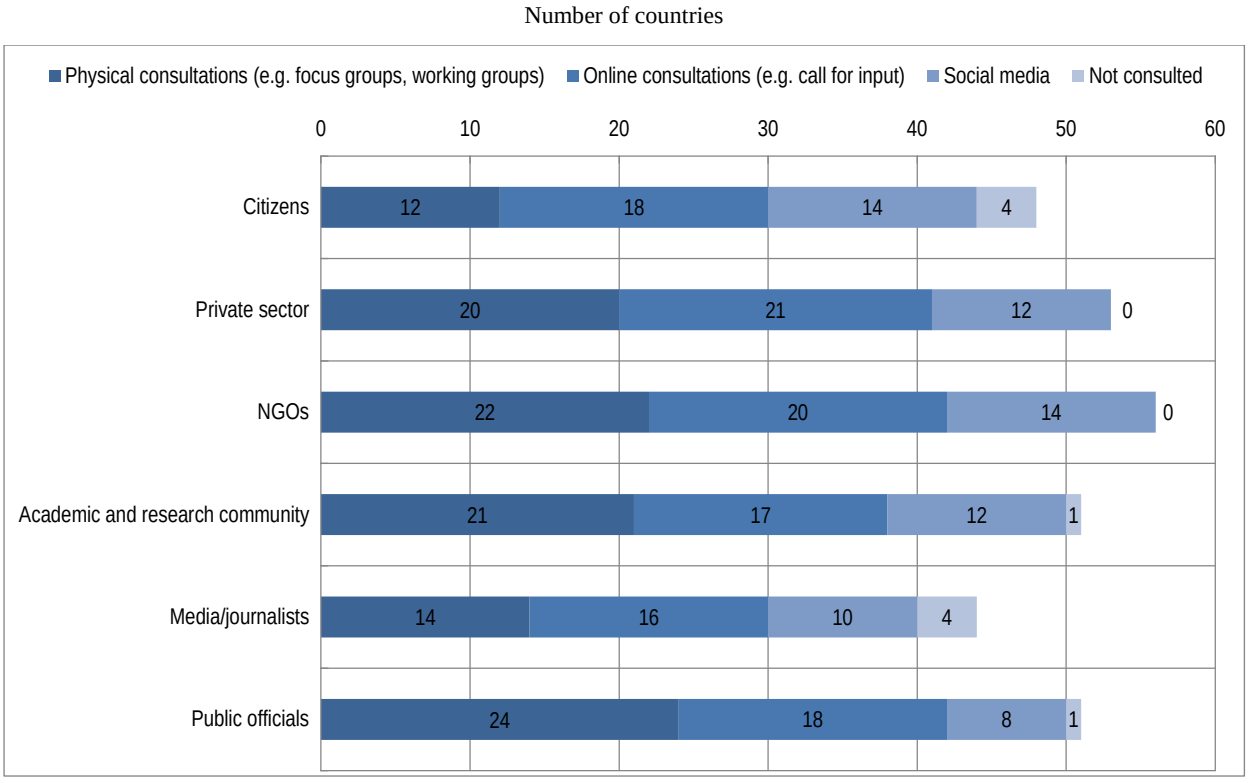


Source: Based on information provided by countries in response to the OECD Survey on Open Government Data 3.0. (2017): Section 1, Question 44. In practice, since January 2015 how often have representatives from central/federal ministries/agencies been involved in the following events/activities aimed at promoting the reuse of open government data among businesses?

For example, in the **United States**, focus groups were often organised with business representatives to understand their data needs. The White House Open Data Innovation Summit and Solutions Showcase is a good example of such initiatives. The event discussed, in particular, open government data reuse to promote economic growth and innovation as well as the future steps to promote the further use of open government data.

For civil society, in terms of focus groups/information sessions to understand data needs, results are very similar. In fact, nine countries (Austria, Germany, Israel, Japan, Korea, Mexico, Netherlands, Spain and the United States) have often organised such focus groups/information sessions to understand the data needs of civil society (see Figure 4.9). In **Germany**, through bilateral meetings, several information sessions have been held with different civil society groups to understand their data needs.

Figure 4.9. Frequency of different government initiatives to understand the data needs of civil society across OECD countries and partner economies



Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 50. In practice, since January 2015 how often have central/federal ministries/agencies participated in the following events aimed at promoting the reuse of open government data among civil society?

It is essential for governments to engage the different members of the open data ecosystem in order to encourage open government data reuse, particularly when impact is expected in specific policy areas (e.g. anti-corruption, see Chapter 6). In fact, governments need to both establish a strategy for the publication of open government data as well as for its reuse (see Chapter 7). This will require the consultation of a wide range of different open data users, through different channels. Countries need to become more proactive in the engagement of open data users but also innovative and open in the means adopted to engage the different communities of re-users.

In this line, the value of the portal as a channel to both pinpoint the data demand and engage open data users is very relevant. The open government data portal stands as both a central access point for all government data released as open data, but also, and especially, as a platform to engage non-governmental actors. The portal should, therefore, offer functions that allow and foster such engagement, through which the data demand can be identified (see Chapter 5).

In **New Zealand**, through the online data request function of the central open data portal, the government determines the high-value datasets that are to be prioritised for publication on the portal.[20] Although other forms of engagement are used in New Zealand (such as hackathons, direct contacts with open data users), the main channel used to engage users remains the open government data portal. In **Japan** too, the central open

government data portal is used as the main channel to determine government data that is to be prioritised for release as open data.[21]

In the **United Kingdom** as well, prioritisation of government data to be released as open data is done through the data request process on the central open government data portal.[22] The portal is therefore used both to publish open government data as well as to engage users on their data needs. In the **Netherlands**, progress has been made from a supply-side approach, focusing on the feasibility to publish data in open formats (lowest-hanging fruit approach, see Box 4.5), to a more demand-driven approach building on the idea of using the open government data portal to pinpoint the data demand and publish accordingly.[23]

Balancing supply and demand

In 10 OECD countries out of the 34 that completed the Open Government Data Survey 3.0,[24] the user-driven approach adopted for the prioritisation of open government data release shows the approach to balance data supply and demand, although in most of these cases, this is highly driven by transparency-related arguments coming from the demand side. That is, the central/federal government prioritises open data release based on both the needs of the communities (determined primarily through public consultations) and on the most popular requests for public sector information.

Few countries have taken action to balance supply and demand (see Box 4.7). **France** stands as the most relevant example in terms of enabling its central open data portal to also serve as a community open data platform (see Chapter 5).

Box 4.7. Enabling data as infrastructure: The case of Mexico

In Mexico, between 2013 and 2017 the central government implemented a series of initiatives to transform government data as an infrastructure, encouraging social and economic development. In that line, efforts were made to ensure that high-value datasets from different policy fields were identified and released as open data on the federal open government data portal.

In 2015, Mexico developed the Strategic Open Data Infrastructure (Infraestructura Estratégica de Datos Abiertos, IEDA). The strategy consisted of running public consultations to gather votes on a pre-defined set of high-value datasets to be released as open data.

In 2017, the Strategic Open Data Infrastructure was updated with the MX Open Data Infrastructure (Infraestructura de Datos Abiertos MX, IDMX). Following a similar approach, the IDMX ran an online survey for open data users to identify high-value datasets that they considered should be prioritised for release as open data. As opposed to the approach taken in 2015, a pre-defined set of high-value datasets was not imposed on the users; the users were rather free to pinpoint for themselves which datasets should be treated as high value, and to be released as open data.

The IDMX has been effective in leading the prioritisation efforts for government data release in Mexico, as it has emphasised a user- and demand-driven approach for the publication of government data as open data. Public sector organisations and open data users are brought together to discuss the high-value datasets that strengthen data as an

infrastructure.

The development of the IDMX strategic open data infrastructure in Mexico was essential to ensure the long-term relevance and sustainability of open data policies in the country, as it focuses on the expected impact of open government data before its actual release, and corresponds to an equilibrium between data supply and demand.

Source: OECD (2018), *Open Government Data in Mexico: The Way Forward*, OECD Digital Government Studies, OECD Publishing, Paris, https://doi.org/10.1787/9789264297944-en.

Paving the way to data reuse: Building capacities among external users

Open data literacy is part of the soft infrastructure that can lead to government data reuse. The maturity of the open data ecosystem is indeed essential to increase the reuse of open government data that will drive value creation, which therefore depends on the existence of a critical mass of skilled users capable of consuming OGD. This is why greater emphasis should be placed on incrementing data literacy amongst all actors of the ecosystem, both within and outside the public sector.

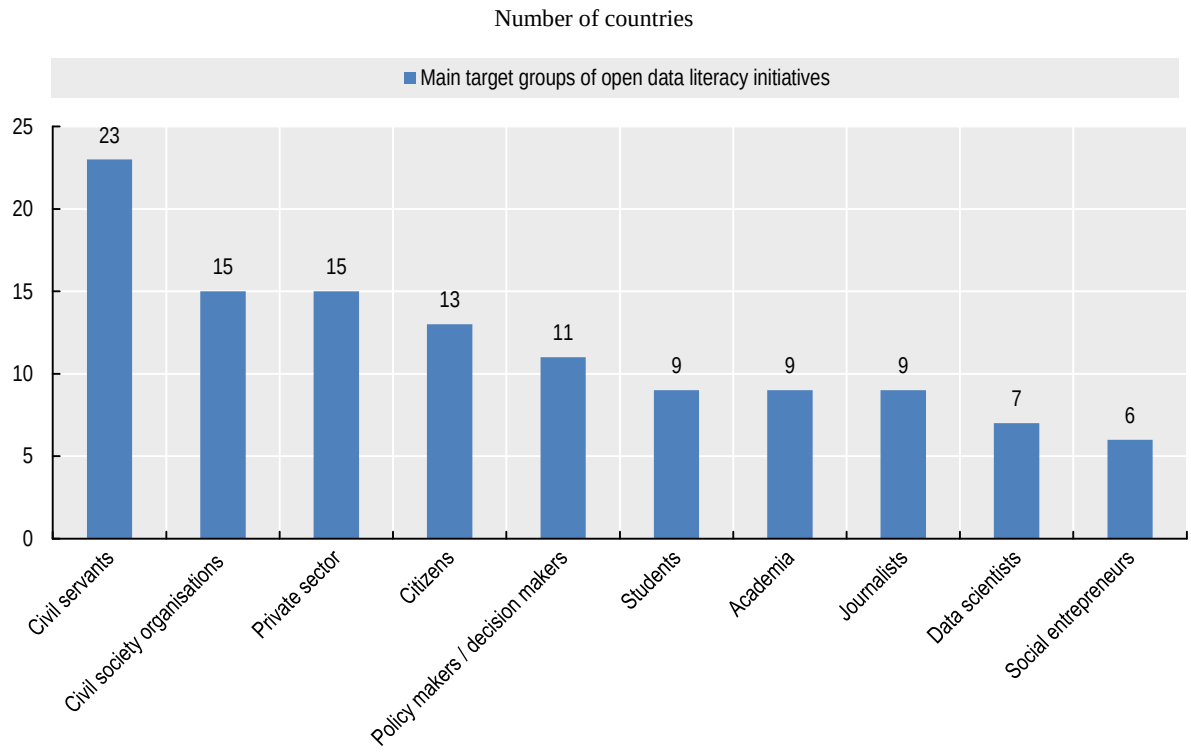
Considering how open data literacy among key communities of users - such as businesses and civil society organisations - is a foundational step to support the reuse of government data, governments need to invest in increasing open data literacy among data suppliers (public or private) and consumers (public or private), for example through the availability of central/federal open data literacy programmes.

The provision of open data literacy programmes is in particular essential to increase the range of open data users, as marginalised communities, for instance, can also begin to benefit from open government data. They can help make open data policies and related impacts more inclusive, and therefore help reduce the criticism of open data as an elitist policy biased in favour of those with data-related skills. Additionally, skills building efforts are to be also understood in the context of digital inclusion and the digitalisation of economies and societies.

Evidence confirms that in terms of capacity building, public officials remain the main target group in 23 countries (see Chapter 1). But results also demonstrate that there has been little emphasis across countries on increasing open data literacy more broadly among the primary users of open government data. In fact, citizens are one of the main target groups of open data literacy initiatives in only 13 countries. The private sector is a main target group in 15 countries, which means that less than 50% of country respondents actually target either group (see Figure 4.10).

Challenges also remain in terms of capacity-building efforts targeting other groups such as academia, journalists and social entrepreneurs. All of these groups are relevant due to their work in areas such as open science and research (see Chapter 7), data-driven journalism (OECD, 2017c) and civic tech.

Figure 4.10. Targets groups of government open data literacy initiatives among OECD countries and partner economies



Note: For countries that responded No in Question 18 - Does your central/federal government focus on increasing open data literacy either inside the government and/or among the community of data re-users (e.g. app producers, developers) in society? - the response option No was selected by default for all categories available in Question 18a.
Source: Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 18a. If yes, who is the main target group?

Generally speaking, most countries have not prioritised providing open data literacy programmes for either businesses or civil society organisations. In fact, according to results of the OECD Open Government Data Survey 3.0, 23 out of 35 OECD countries and partner economies do not have a central/federal programme that aims to support open data literacy development among businesses. Similarly, 22 countries do not have a central/federal programme that aims to enhance open data literacy of civil society organisations (see Annex 4.A).

In fact, Austria, Denmark, Japan, Korea, Mexico and Spain are the only countries reporting the availability of a formal open data literacy programmes for businesses across all public sector organisations. For example, in **Spain**, a free online open data literacy course was developed and made available on the central open government data portal. In **Denmark**, as well, the government has put in place the open data school, which is intended to help businesses use open government data.

In **Korea**, the government created the Open Square D initiative, which aims to support open government data-based start-ups. The initiative is a platform for data entrepreneurs to learn and share knowledge on open data and offers opportunities for public-private partnerships to increase open data skills. Through these capacity-building initiatives,

Korea aims to promote the building-up of a business community using open data (OECD, 2016).

In **Mexico**, several initiatives have also been implemented to strengthen the open data skills of key actors in the open data ecosystem. For example, the Labora Initiative, launched in 2016, supports data-driven start-ups in Mexico. It offers a platform that supports civil and social entrepreneurs through technical and business training programmes, mentorship in the reuse of open data and mechanisms to promote partnerships with other businesses.[25] Thus, this initiative fosters a culture of innovation using open data[26] (OECD, 2018). Different workshops have also been organised in 2017 to build the open data capacities of different user groups (e.g. civil society organisations, local civil society partners, citizens) (OECD, 2018).

Notes

1. Based on additional information Belgium provided to Question 13, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).
2. Based on additional information Mexico provided to Question 13, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).
3. Based on additional information Canada provided to Question 13, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).
4. Based on additional information the Czech Republic provided to Question 13, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).
5. Based on additional information Colombia provided to Question 13, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).
6. Based on additional information the United Kingdom provided to Question 13, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://data.blog.gov.uk/2017/02/01/making-it-simpler-to-publish-data/.
7. Based on additional information Israel provided to Question 13, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).
8. More information is available at http://servicios.infoleg.gob.ar/infolegInternet/anexos/255000-259999/257755/norma.htm.
9. More information is available at http://planalto.gov.br/ccivil_03/_Ato2015-2018/2016/Decreto/D8777.htm.
10. Based on additional information the Czech Republic provided to Question 11, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).
11. Based on information the Canadian Delegation provided to the OECD on 10 August 2018. More information is available at https://open.canada.ca/data/en/dataset/e26db340-df16-4796-8b0b-55dacacfbcd5.
12. Based on additional information Korea provided to Question 23 and Question 24, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at http://law.go.kr/engLsSc.do?menuId=0&subMenu=5&query=%EA%B3%B5%EA%B3%B5%EB%8D%B0%EC%9D%B4%ED%84%B0%EC%9D%98%20%EC%A0%9C%EA%B3%B5%20%EB%B0%8F%20%EC%9D%B4%EC%9A%A9%20%ED%99%9C%EC%84%B1%ED%99%94%EC%97%90%20%EA%B4%80%ED%95%9C%20%EB%B2%95%EB%A5%A0#.

13. Based on additional information the United Kingdom provided to Question 23 and Question 24, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.gov.uk/guidance/open-policy-making-toolkit.

14. Based on data received in response to Question 25c, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

15. Based on data received in response to Question 27, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

16. Based on additional information Greece provided to Question 27, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

17. Based on additional information Mexico provided to Question 27, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

18. Based on additional information Norway provided to Question 27, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

19. Based on additional information the United Kingdom provided to Question 23 and Question 27 of Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://data.blog.gov.uk/2014/09/13/revisiting-the-national-information-infrastructure-workshop-1-definition-and-scope/ and www.gov.uk/government/consultations/better-use-of-data-in-government.

20. Based on additional information New Zealand provided to Question 11, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

21. Based on additional information Japan provided to Question 11, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

22. Based on additional information the United Kingdom provided to Question 11, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

23. Based on additional information the Netherlands provided to Question 11, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

24. Based on data received in response to Question 11, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). See Annex 4.A.

25. Information is also based on data received in response to Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

26. More information is also available at https://datos.gob.mx/blog/conoce-a-los-emprendedores-de-la-primera-generacion-de-labora?category=noticias&tag=economia.

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Annex 4.A. Annex tables

Annex Table 4.A.1. Approaches used by OECD countries and partner economies to prioritise the publication of government datasets as open data

	Central/ federal government decides based on the feasibility for datasets to be published as open data	Central/ federal government decides based on national policy goals	Central/ federal government decides based on the needs of the user communities	Public sector institutions should prioritise the most requested public sector information for its publication as open government data
Australia	○	○	●	●
Austria	○	○	○	●
Belgium	○	○	●	●
Canada	●	○	○	●
Chile	●	○	●	○
Czech Republic	○	○	●	●
Denmark	○	○	○	○
Estonia	○	○	●	○
Finland	●	●	●	●
France	●	●	●	○
Germany	●	○	○	○
Greece	●	○	○	○
Ireland	○	●	○	○
Israel	○	○	○	●
Italy	●	●	●	●
Japan	●	●	●	●
Korea	○	●	●	●
Latvia	○	○	●	●
Mexico	●	●	●	●
Netherlands	●	●	○	●
New Zealand	○	○	●	○
Norway	○	○	○	●
Poland	●	●	●	●
Portugal	○	○	○	○
Slovak Republic	●	○	●	●
Slovenia	●	○	○	○
Spain	○	○	●	○
Sweden	○	○	○	○
Switzerland	●	●	○	●
Turkey	○	○	●	○
United Kingdom	○	○	○	●

	Central/ federal government decides based on the feasibility for datasets to be published as open data	Central/ federal government decides based on national policy goals	Central/ federal government decides based on the needs of the user communities	Public sector institutions should prioritise the most requested public sector information for its publication as open government data
OECD total				
Yes ●	14	10	17	18
No ○	17	21	14	13
Colombia	○	●	○	○
Lithuania	○	●	○	●
Peru	●	●	○	○

Source: Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 11. Does your government have a specific approach to prioritise the publication of government datasets as open data?

Annex Table 4.A.2. Requirements to consult open data users to inform open data plans and elements in place to support effective consultation with users across OECD countries and partner economies

	Formal requirements for ministries/agencies at the central / federal level to regularly conduct consultations with users to inform open data plans	Written guidance on how to conduct consultations with data users is available	Formal requirements to provide certain documents (e.g. comprehensive list of data holdings) when conducting user consultations	Formal requirements to systematically inform the public in advance that a public consultation on open government data is planned to take place	Formal requirements regarding minimum periods for responding to a government consultation on open government data	Formal requirements to systematically publish on line the results of consultations with users
Australia	○	○	○	○	○	○
Austria	○	○	○	○	○	○
Belgium	○	○	○	○	○	○
Canada	○	○	○	○	○	○
Chile	○	○	○	○	○	○
Czech Republic	●	▲	○	○	▲	▲
Denmark	○	○	○	○	○	○
Estonia	○	○	○	○	○	○
Finland	■	♦	○	○	○	○
France	●	▲	♦	♦	♦	▲
Germany	■	▲	○	○	○	▲
Greece	○	♦	♦	♦	♦	♦
Ireland	○	♦	♦	♦	♦	♦
Israel	●	○	○	○	○	○
Italy	○	○	○	○	○	○
Japan	●	♦	♦	♦	♦	♦
Korea	●	♦	♦	♦	♦	♦
Latvia	○	○	○	○	○	○
Mexico	●	♦	♦	♦	○	○
Netherlands	○	○	○	○	○	○
New Zealand	○	♦	♦	♦	♦	♦
Norway	●	♦	♦	♦	♦	○
Poland	●	♦	○	○	♦	♦
Portugal	○	○	○	○	○	○
Slovak Republic	●	○	○	○	○	○
Slovenia	■	▲	▲	○	○	○
Spain	○	♦	○	○	♦	○
Sweden	○	○	○	○	○	○
Switzerland	○	○	○	○	○	○
Turkey	○	○	○	○	○	○
United Kingdom	■	▲	▲	▲	▲	▲
United States	○	○	○	○	○	○

	Formal requirements for ministries/agencies at the central / federal level to regularly conduct consultations with users to inform open data plans	Written guidance on how to conduct consultations with data users is available	Formal requirements to provide certain documents (e.g. comprehensive list of data holdings) when conducting user consultations	Formal requirements to systematically inform the public in advance that a public consultation on open government data is planned to take place	Formal requirements regarding minimum periods for responding to a government consultation on open government data	Formal requirements to systematically publish on line the results of consultations with users
OECD total						
Yes, there are overarching requirements that apply to all ministries/agencies ●	9	-	-	-	-	-
Yes, requirements have been adopted by some ministries/agencies ■	4	-	-	-	-	-
Yes, formal requirements/written guidance that apply to all ministries / agencies ♦	-	10	8	8	9	6
Yes, formal requirements/written guidance exist in some ministries / agencies ▲	-	5	2	1	2	4
No ○	19	17	22	23	21	22
Colombia	●	♦	○	♦	♦	♦
Lithuania	○	○	○	○	○	○
Peru	○	○	○	○	○	○

Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 23 and Question 24. The questions were: Are there formal requirements for central/federal ministries/agencies to regularly conduct consultations with users to inform open data plans? *and* Are the following elements in place to support effective consultations with users on open government data plans?

Annex Table 4.A.3. Availability of central/federal programmes that aim to support open data literacy among businesses/civil society organisations across OECD countries and partner economies

	Availability of a central/federal programme that aims to support open data literacy among businesses	Availability of a central/federal programme that aims to support open data literacy among civil society organisations
Australia	■	■
Austria	●	○
Belgium	○	○
Canada	○	○
Chile	○	○
Czech Republic	○	●
Denmark	●	○
Estonia	○	○
Finland	○	○
France	■	■
Germany	○	○
Greece	○	○
Ireland	○	○
Israel	○	○
Italy	○	○
Japan	●	●
Korea	●	●
Latvia	○	○
Mexico	●	■
Netherlands	○	●
New Zealand	○	○
Norway	○	○
Poland	○	●
Portugal	○	○
Slovak Republic	○	○
Slovenia	○	○
Spain	●	●
Sweden	○	○
Switzerland	○	○
Turkey	○	○
United Kingdom	■	■
United States	○	○
OECD total		
Yes, there is an overarching programme that applies to all ministries/agencies •	6	6
Yes, programmes have been adopted by some ministries/agencies ■	3	4
No ○	23	22
Colombia	○	■
Lithuania	○	○
Peru	○	○

Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 45 and Question 51. The questions were: Is there a central/federal programme that aims to support open data literacy among businesses? *and* Is there a central/federal programme that aims to support open data literacy among civil society organisations?

Chapter 5. Open data portals: Enabling government as a platform

This chapter presents the efforts taken by OECD countries and partner economies in terms of data quality, publication and accessibility. It presents these efforts in terms of the value of data as a platform and in line with the implementation of proactive policy and data governance tools such as guidelines and standards presented in previous chapters. The chapter also presents the most relevant function of open government data portals and their value as enablers of government as a collaborative platform.

Lithuania was not an OECD Member at the time of preparation of this publication. Accordingly, Lithuania does not appear in the list of OECD Members and is not included in the zone aggregates.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

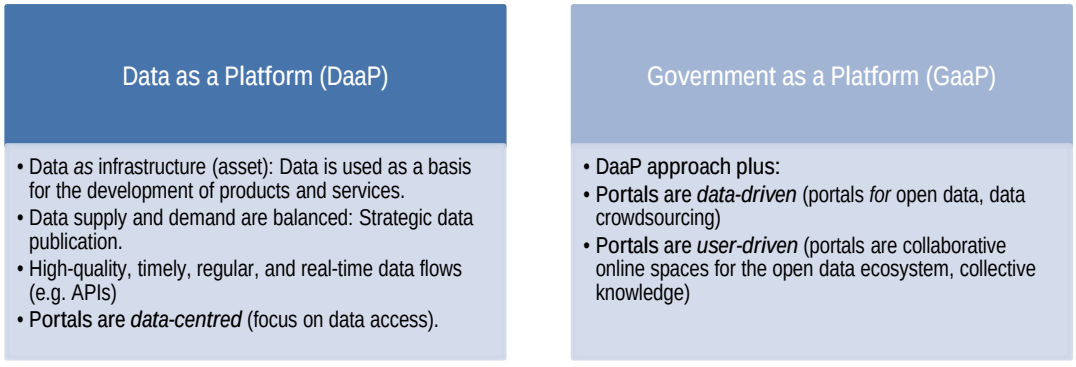
Introduction

In the earlier stages of open data policy development, the establishment of open data portals was highly driven by the pressing demand for increased access to public sector information led by transparency and open government movement advocates; open data was considered more as a policy goal in itself than an intermediary good for value creation (see Chapter 4). This approach is gradually changing as a result of placing data at the core of the digital transformation of society, business activity and the public sector.

Central open government data portals are slowly, but increasingly, understood from a data as infrastructure perspective (see Chapter 4) that, when paired with other policy actions, can contribute to enabling data as a platform (DaaP) (see Figure 5.1). Yet, when the core of open government data (OGD) policies evolve from data provision to data-driven collaboration, data policies, including OGD policies, this can help to enable governments as platforms (GaaP) (see Figure 5.2).

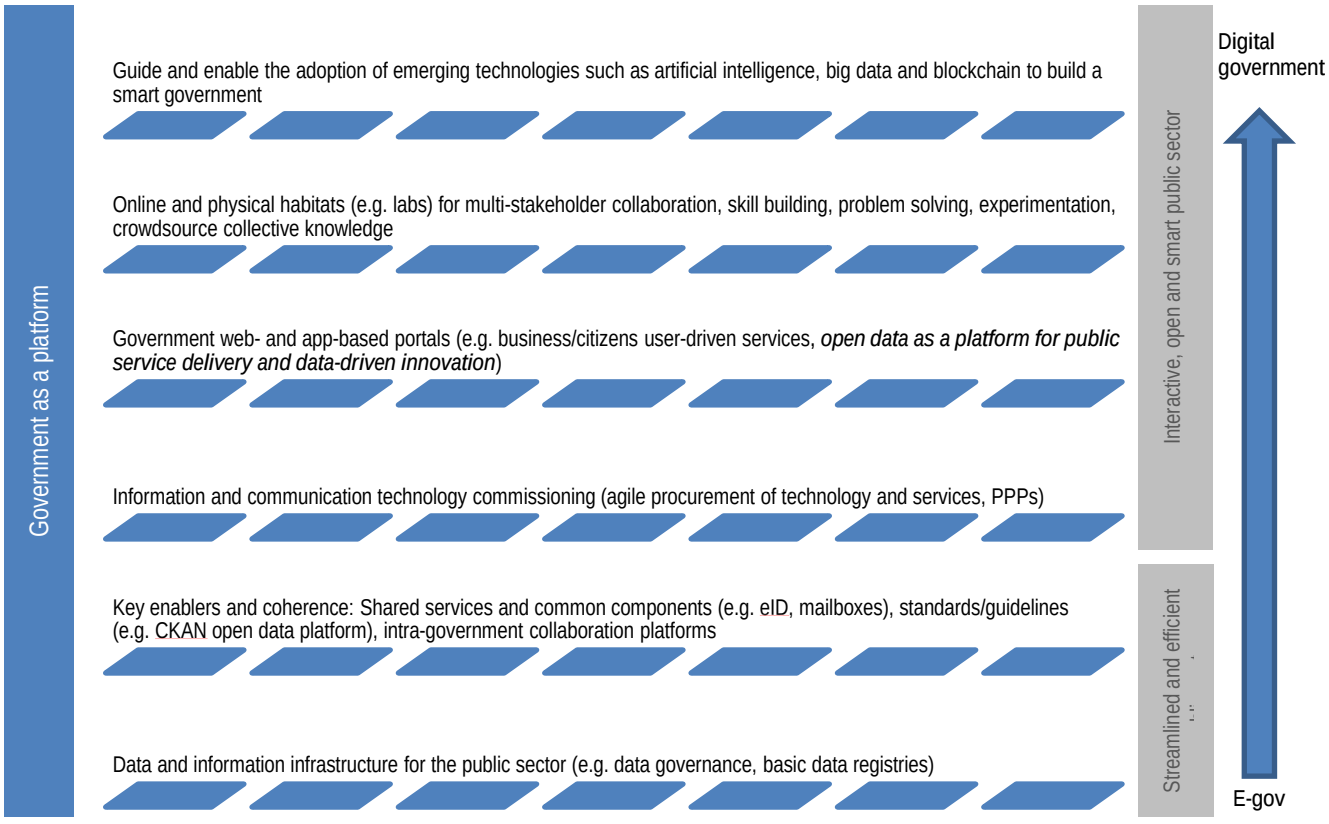
This includes not only the growing availability and access to good quality open government data (see Chapter 3), and the creation of a critical mass of data that can be used to create value, but also the recognition of the potential value of data as an enabler of collaboration for the co-development of products and services, and an asset to support more strategic, predictive and informed decision making, drawing upon data crowdsourcing and user-driven collaboration models.

Figure 5.1. Using data to enable government as a platform



Source: Author.

Figure 5.2. Government as a platform: A digital government perspective



Source: Originally created by the author for OECD (forthcoming), *Digital Government Review of Sweden: Enabling Government as a Platform Through a Data-driven Public Sector*, OECD Publishing, Paris. With research from different sources, including Brown, A. et al. (2017), "Appraising the impact and role of platform models and Government as a Platform (GaaP) in UK Government public service reform: Towards a Platform Assessment Framework (PAF)", *Government Information Quarterly*, Vol. 34, Issue 2, pp. 167-182, https://doi.org/10.1016/j.giq.2017.03.003; Margetts, H. and A. Naumann (2017), "Government as a Platform: What can Estonia Show the World?", Working Paper funded by the European Social Fund, University of Oxford, www.politics.ox.ac.uk/materials/publications/16061/government-as-a-platform.pdf; O'Reilly, T. (2011), "Government as a Platform", *Innovations: Technology, Governance, Globalization*, Vol. 6, Issue 1, Winter 2011, pp. 13-40, https://doi.org/10.1162/INOV_a_00056; Ubaldi, B. (2013), "Open government data: Towards empirical analysis of open government data initiatives", *OECD Working Papers on Public Governance*, No. 22, OECD Publishing, Paris, http://dx.doi.org/10.1787/5k46bj4f03s7-en; UK Government Digital Service (2018), "About Government as a Platform", https://governmentasaplatform.blog.gov.uk/about-government-as-a-platform// (accessed 6 April 2018).

This chapter discusses open government data as a platform in action. It presents the current state of functionalities and features of the central open government data portals in OECD countries and partner economies, the data taxonomies available for public access, their quality (in line with the discussion in Chapter 3) and how open data portals can help move towards a government as platform approach.

The assessment is in line with sub-pillars 1.3 (Implementation) and 2.2 (Stakeholder engagement for data quality and completeness) and 2.3 (Implementation) of the OECD Open Useful and Reusable data (OURdata) Index (see Background: The OECD Open Useful and Reusable data [OURdata] Index and Box 5.1).

Box 5.1. How the 2017 OURdata Index measures the availability and accessibility of open government data in action

The availability of high-value datasets is measured as part of Pillar 1 of the 2017 OURdata Index, Data availability.

- Sub-pillar 1.3 *Implementation* measures the availability of different data taxonomies on the central/federal open government data portal.

The availability of a central/federal open government data portal is measured as part of Pillar 2 of the 2017 OURdata Index, Data accessibility.

- Sub-pillar 2.3 *Implementation* assesses the availability of a single entry point to access open government data (i.e. a central/federal open government data portal).

The structure and formats of the open government data available on the central/federal OGD portal are measured as part of Pillar 2 of the 2017 OURdata Index, Data accessibility.

- Sub-pillar 2.3 *Implementation* assesses the proportion of data on the central/federal OGD portal that is provided: 1) in a structured format; 2) in multiple formats; and 3) in machine-readable format.

The functions available on the central/federal OGD portal are measured as part of Pillar 2 of the 2017 OURdata Index, Data accessibility.

- Sub-pillar 2.2 *Stakeholder engagement for data quality and completeness* assesses the availability of different functions on the central/federal OGD portal, such as forums for discussions or the possibility to receive notifications when specific datasets are added.

The availability of a user feedback section on the central/federal OGD portal is measured as part of Pillar 2 of the 2017 OURdata Index, Data accessibility.

- Sub-pillar 2.2 *Stakeholder engagement for data quality and completeness* assesses the availability of a user feedback section on the central/federal OGD portal, and if information on the number of user requests sent through the user feedback section are collected. It also measures if that information is published on line. The sub-pillar 2.2 also measures if comments provided in the user feedback section are visible for all visitors.

The possibility of users to add datasets and/or data visualisations are measured as part of Pillar 2 of the 2017 OURdata Index, Data accessibility.

- Sub-pillar 2.2 *Stakeholder engagement for data quality and completeness* assesses if the central/federal OGD portal allows users to: 1) add datasets; and 2) add a data visualisation.

OGD portals across OECD countries and partner economies

Central/federal open government data portals are essential tools to promote data-driven, multi-stakeholder collaboration (see Table 5.1). Nevertheless, for this to happen, the one-stop-shop open government data portal should not be conceived as an end in itself, but as

a platform for government to engage and collaborate with the public, rather than simply a single entry point to government data. For instance, the **Mexican** open data portal was used as a platform for crisis management during the earthquake of 19 September 2017. Real-time publication on the portal of data on hospitals, damaged buildings, collection centres, and other relevant information enabled collaboration among different actors (OECD, 2018a).

Table 5.1. Central OGD portals in OECD countries and partner economies

Country	Portal	Country	Portal
Australia	data.gov.au	Austria	data.gv.at
Belgium	data.gov.be	Canada	open.canada.ca
Chile	datos.gob.cl	Czech Republic	data.gov.cz
Denmark	www.digitaliser.dk/catalogues	Estonia	opendata.riik.ee
Finland	avoindata.fi/fi	France	data.gouv.fr
Germany	govdata.de	Greece	data.gov.gr
Ireland	data.gov.ie	Israel	data.gov.il
Italy	dati.gov.it	Japan	data.go.jp
Korea	data.go.kr	Latvia	data.gov.lv
Mexico	datos.gob.mx	Netherlands	data.overheid.nl
New Zealand	data.govt.nz	Norway	data.norge.no
Poland	danepubliczne.gov.pl	Portugal	dados.gov.pt
Slovak Republic	data.gov.sk	Slovenia	data.gov.si
Spain	datos.gob.es	Sweden	oppnadata.se
Switzerland	opendata.swiss	United Kingdom	data.gov.uk
United States	data.gov	Colombia	datos.gov.co
Lithuania	opendata.gov.lt	Peru	datosabiertos.gob.pe

Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 66. Is there a central/federal one-stop-shop portal for open government data?

Data taxonomies

In order for countries to enable central/federal open government data portals to become platforms for collaboration, the first essential step is to publish high-value and high-quality datasets that provide a critical mass of data supporting value co-creation.

In general terms, the availability of specific datasets on the open government data portal varies greatly across countries and is highly driven by the government's specific approach in terms of data publication (supply-driven, demand-driven, data as infrastructure) (see Chapter 4), and by the policy priorities, for instance:

- Data on public transport timetables are published by 21 out of 35 countries, for example. This is in line with the prioritisation of public transport and geographical data for publication as presented in Chapter 4. Accordingly, the OECD is working to support member and partner countries on the use of open and big data for transport within the context of the OECD International Transport Forum.These activities aim to help countries to fully reap the benefits of data for automated, smart and data-driven urban mobility.
- As of 2016/17, the **United Kingdom** was the only country among the 35 countries that responded to the OECD Survey on Open Government Data 3.0 that had open data on beneficial ownership available on its central open government

data portal. These efforts are strongly linked to the objectives of the UK 2017-2022 Anti-Corruption Strategy[1] (see Chapter 6).

- In contrast, regarding data on population census, **Lithuania** is the only country that did not publish such data as open data on its central open government data portal.
- In 11 of 35 respondent countries, data on disaster relief were available on their central/federal open government data portals. In **Germany**, for example, the federal open government data portal contains data on the location of emergency shelters in case of storms and other types of disasters.[2] Making available real-time data on emergency response, aligning open data and risk management policies can help countries better respond to natural emergencies and increase citizens' resilience (see Box 5.2).
- In terms of data on education, as another example, most countries do not have open data available on their open government data portals on either performance of schools or digital skills being targeted as an area of development among youth. The release of education-related data may be extremely useful for peer pressure among schools in the same administrative district to secure a certain level of education, hence helping to improve the overall quality and equality of services across a country. Additionally, performance-related data can also empower individuals by enabling more informed decisions on schools.

Box 5.2. Data-driven emergency response: The case of the 2017 earthquake in Mexico

On 19 September 2017, Mexico experienced a 7.1 earthquake that caused severe damage in the states of Morelos, Chiapas Estado de México, Guerrero, Oaxaca and Mexico City.

Minutes after the earthquake, the Mexican government, through its National Digital Strategy (EDN) and the National Emergency Committee activated various tools and protocols to respond to the emergency through digital technologies and open data:

- The Coordination of the National Digital Strategy made a public call to the population in order to crowdsource information about damage, shelters and collapses through an open, online database. The exercise resulted in roughly 17 000 data points that were used by public officials and civic organisations to map emergency response initiatives.
- To complement the above-mentioned crowdsourcing exercise, the government of Mexico released high-value datasets about public Wi-Fi spots, hospitals, structural evaluation of buildings and the list of municipalities declared in "emergency or damage".
- A communication protocol was established between technology companies and the central government in order to multiply the efficiency of the initiatives implemented by different sectors. The objective was to help the population in need and co-ordinate the use and promotion of digital tools such as Google's Person Finder, Alerts and Crisis Map; Waze's data about traffic in Mexico City; Facebook's Safety Check and automated chatbot; Twitter's communication efforts; and Carto's mapping infrastructure.
- Co-ordination with diverse third-sector efforts (e.g. comoayudar.mx and sismomexico.org) contributed to better multi-stakeholder co-ordination for emergency response, better share of data through public APIs (application programming interfaces), and the dissemination of information on robust civic initiatives through official channels.
- Drawing upon previous similar efforts no longer in place, Mexico launched an open-data-based portal to follow up on the damage and the use of resources for reconstruction. The portal uses the Transparencia Presupuestaria online platform (managed by the Ministry of Finance) – one of the leading public sector openness practices in Mexico.

Currently, the Mexican government is planning to use open data to increase government's resilience by working through the National Civil Protection Council to institutionalise a Data and Technology Working Group, high-value open data and to establish co-ordination mechanisms with civil society and industry to respond to natural disasters.

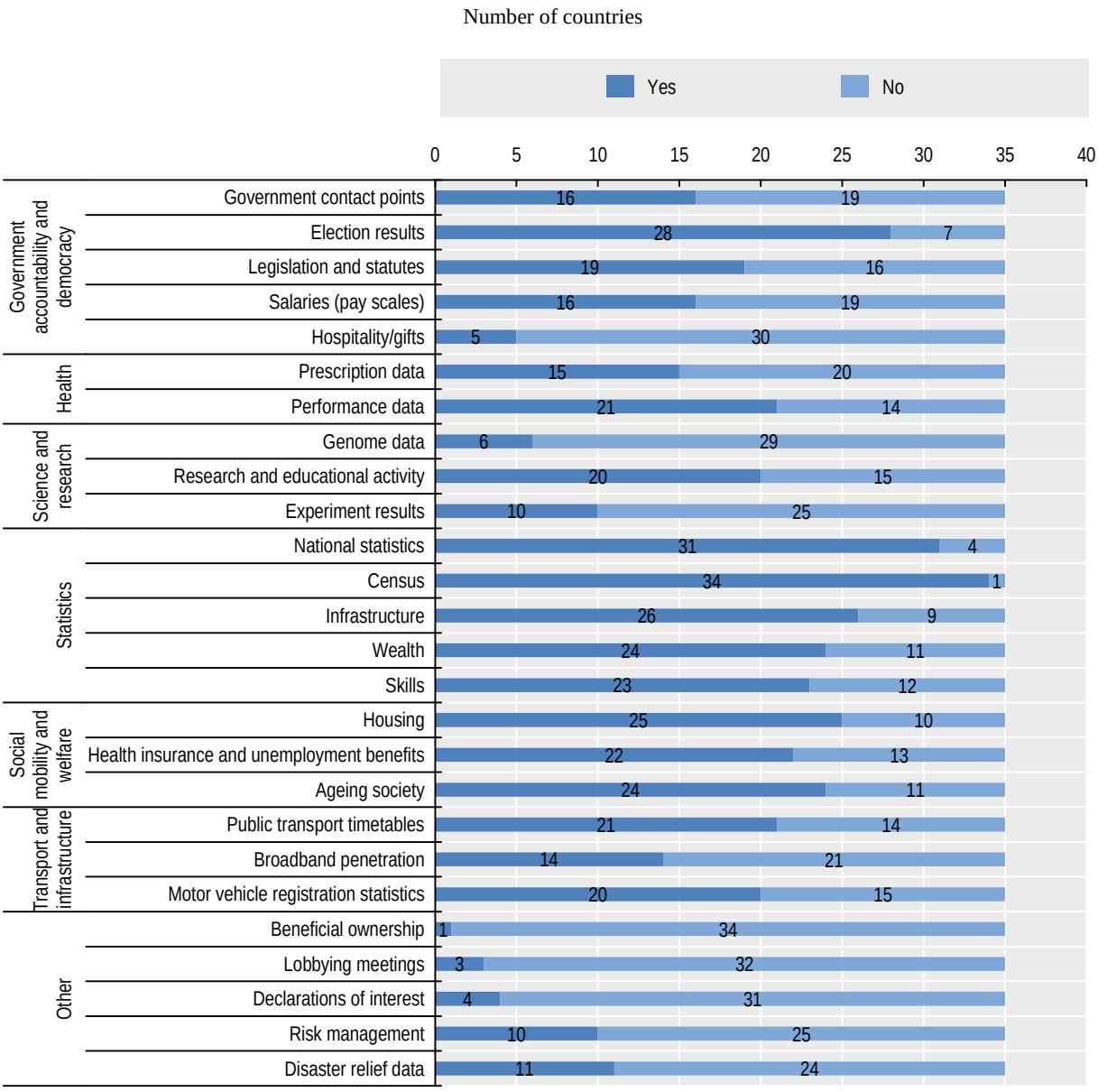
Source: OECD (2018a), *Open Government Data in Mexico: The Way Forward*, OECD Digital Government Studies, OECD Publishing, Paris, https://doi.org/10.1787/9789264297944-en with information provided by the Mexican government.

For more details on the data taxonomies made available on the central/federal OGD one-stop-shop portals in OECD countries and partner economies, see Figure 5.3 and Figure 5.4.

Figure 5.3. Availability of data taxonomies on the central/federal OGD one-stop-shop portal in OECD countries and partner economies (Part 1)

Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 68. On the federal/central government "one-stop-shop" portal, are the following data publicly available (either directly or indirectly)?

Figure 5.4. Availability of data taxonomies on the central/federal OGD one-stop-shop portal in OECD countries and partner economies (Part 2)



Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 68. On the federal/central government "one-stop-shop" portal, are the following data publicly available (either directly or indirectly)?

Data discoverability and accessibility in practice

Data quality is crucial to strengthen the value of data as infrastructure, and its overall potential as a platform for collaboration. For this purpose, OECD countries and partner economies have developed guidelines and standards aiming to ensure that, when published, government data will observe standards that, by enhancing open data quality, will contribute to its overall accessibility (see Chapter 3). Therefore, in line with the

discussion presented in Chapter 3, this sub-section presents the efforts that countries have taken to move from the development of policy and data governance instruments to put them into practice.

Oversight of data-quality processes

In practice, 13 out of 34 OECD countries and partner economies report the availability of a harmonised control process to oversee data quality - in most cases having, for instance, the central government as a data quality broker:[3]

- In **Japan**, while each ministry and agency checks the quality of the data, the Administrative Management Bureau of the Ministry of Internal Affairs and Communications conducts the final double checks prior to data publication. Also, the Cabinet Secretariat of the Japanese National Office of Information and Communication Technology (ICT) carries out assessments to ensure that government data respects provided guidelines relevant to machine-readability.[4]
- The **Korea** Data Agency conducts quality assessments of the data released as open data by public sector organisations. The assessment, based on different quality factors, leads to a data quality certification, which depends on the overall quality of the data.[5] Korea also uses automated data-cleaning procedures. In fact, the automatic inspection of data occurs once data is registered on the portal, and this inspection is based on pre-defined data standards the data is supposed to follow.
- In **Ireland**, the data audit tool on the portal assists public bodies in completing metadata in relation to a dataset being added.[6]
- In **Sweden**, the sandbox.oppnadata.se tool (a side functionality of the open data portal) enables data testing and evaluation. It can be used by providers of metadata to ensure that their metadata follow standards and meet the requirements for publication.[7]
- In **Austria**, the data harvesting functionality of the portal (see the section on data harvesting later in this chapter) checks for any inconsistency of the provided data with the underlying data schema.[8]
- In **Mexico**, the Open Data Squad (the open data taskforce of the Office of the President) reviews the quality of priority datasets, makes recommendations to the public sector institutions in terms of data quality, and plays an active role during the data publication process.[9]

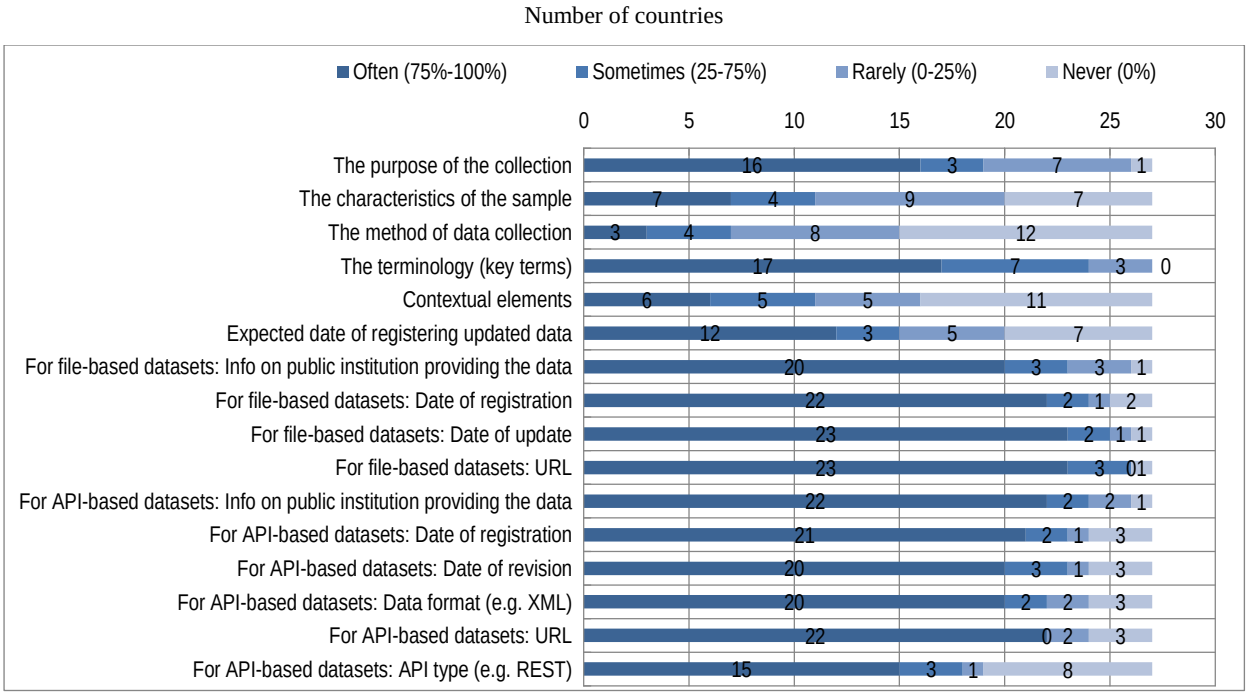
In general terms, evidence shows that governments have not adopted a broad and common set of tools to ensure and maintain a high quality of the open data published on the portal. Thus, with the exception of standardised mechanisms for data publication (e.g. standards on metadata, on the updating process) that are used in 28 countries, other available tools are not being used by most countries.[10] For example, 27 countries out of the 34 surveyed do not use either harmonised data-cleaning guidelines or automated data profiling and cleaning methods to safeguard the quality of government data provided on the central/federal OGD portal.[11]

Data quality

In terms of metadata coverage, evidence shows that *basic* metadata elements are provided for most – if not all - the data available on the central/federal open government data portal. Most countries provide information on the date of registration of the data, on its date of update or again on the key terms associated with it. For example, for file-based

datasets, 22 countries provide metadata on the date of registration of the data. For API-based datasets, 21 countries provide metadata on the date of registration. Additionally, in 16 countries out of 27 countries (i.e. 59%), metadata is provided on the purpose of the data collection (Figure 5.5).

Figure 5.5. Coverage of the metadata/users' guide for datasets available on the central/federal OGD one-stop-shop portal across OECD countries and partner economies



Source: Based on information provided by 25 OECD countries and 2 partner and other economies (Colombia and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 51. What does the metadata/users' guide provided on the central/federal OGD portal generally describe?

However, regarding more detailed metadata that could offer greater information on the dataset, few countries often provide them.

Metadata covering the method of data collection, contextual elements and/or the characteristics of the data sample are not offered in most countries for most of the datasets on the OGD portal. In fact, in terms of metadata on the method of data collection, 3 countries out of 27 offer it for 75-100% of their datasets on the central/federal open government data portal.

In terms of metadata on contextual elements, Canada, France, Japan, Korea and Spain are the only OECD countries that provide it for most of their datasets available on the portal (75-100% of datasets). For instance, in **Canada**, some datasets, for example, do link to reports, laws and documents that are related in some way or another to the dataset. In **Spain**, legal documents in line with the dataset are also associated with the data for users to better understand the legal context.[12]

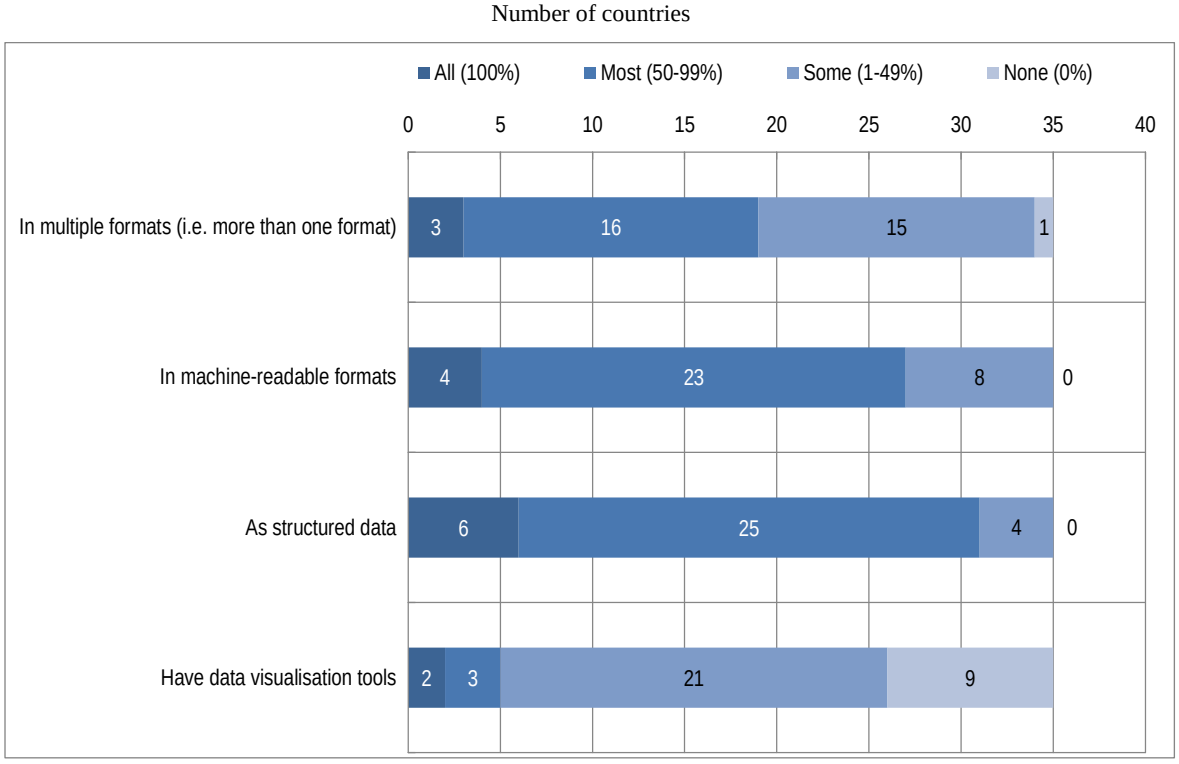
Thus, the breadth of metadata supplied to increase the provision of contextual details to enhance the understanding of the data remains rather limited. The provision of more specific details, in addition to the general information on the data, which can help

broaden the depths of users' understanding of the data, and foster the subsequent reuse, is not a reality yet in most countries for most datasets on the OGD portal.

There seems to be an implementation gap in terms of metadata. While formal requirements are available in most countries to publish open data with their associated metadata (see Chapter 3), countries would benefit from ensuring that in practice those requirements are observed, in order to increase the accessibility and quality of those datasets.

Evidence also indicates that countries actually provide most of their datasets on the central/federal open government data portal in machine-readable format and as structured data. In fact, 28 countries provide most of their government data (50-99%) in machine-readable format on the portal. Similarly, 25 countries, in 2016/17, provided most of their data, but not all, as structured data (see Figure 5.6).

Figure 5.6. Proportion of government data provided in multiple formats, in machine-readable format, as structured data and with data visualisation tools across OECD countries and partner economies



Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 75. On the central/federal one-stop-shop portal, what proportion of the data are provided: - As structured data - In multiple formats (i.e. more than one format) - In machine-readable formats - Use Uniform Resource Identifiers (e.g. RDF) to denote elements - Have data visualisation tools - Are provided with their associated metadata?

Additionally, to stimulate further accessibility and subsequent reuse, governments should provide data on the central/federal open government data portal in multiple and non-proprietary formats. In fact, the provision of government data in multiple formats offers the opportunity for different types of data uses while the provision of non-proprietary

formats avoids vendor lock-in and increases the inclusiveness of the open data policy. Of 35 respondent countries, 15 reported that between 1% to 49% of their data on the central/federal open government data portal is available in multiple formats.

Important challenges still remain, nonetheless, in terms of data visualisation**.** This is quite important as the vast majority of average citizens are not data experts, which means that to stimulate even further the use, reuse and benefits of open government data, governments should also associate data visualisation tools to datasets made available on the central/federal open government data portal, in order to increase data accessibility and the inclusiveness of the open data policy as a whole. The strategy is not to create visualisations of specific data series, but to provide web-based data visualisation tools that users can utilise to play and learn from the data.

Broken links

The release of open government data is not a one-time exercise, but one that requires continued action in order to guarantee constant accessibility. The establishment of mechanisms to monitor the existence of broken web links is essential to safeguard the continuous accessibility of open government data, as it contributes to user traffic, data reuse and the value of the portal as a whole.

In some countries, automatic mechanisms have been established to check for broken web links, whereas in others, this is done manually (see Figure 5.7). Either way, it is important for governments to establish mechanisms to actively monitor broken web links.

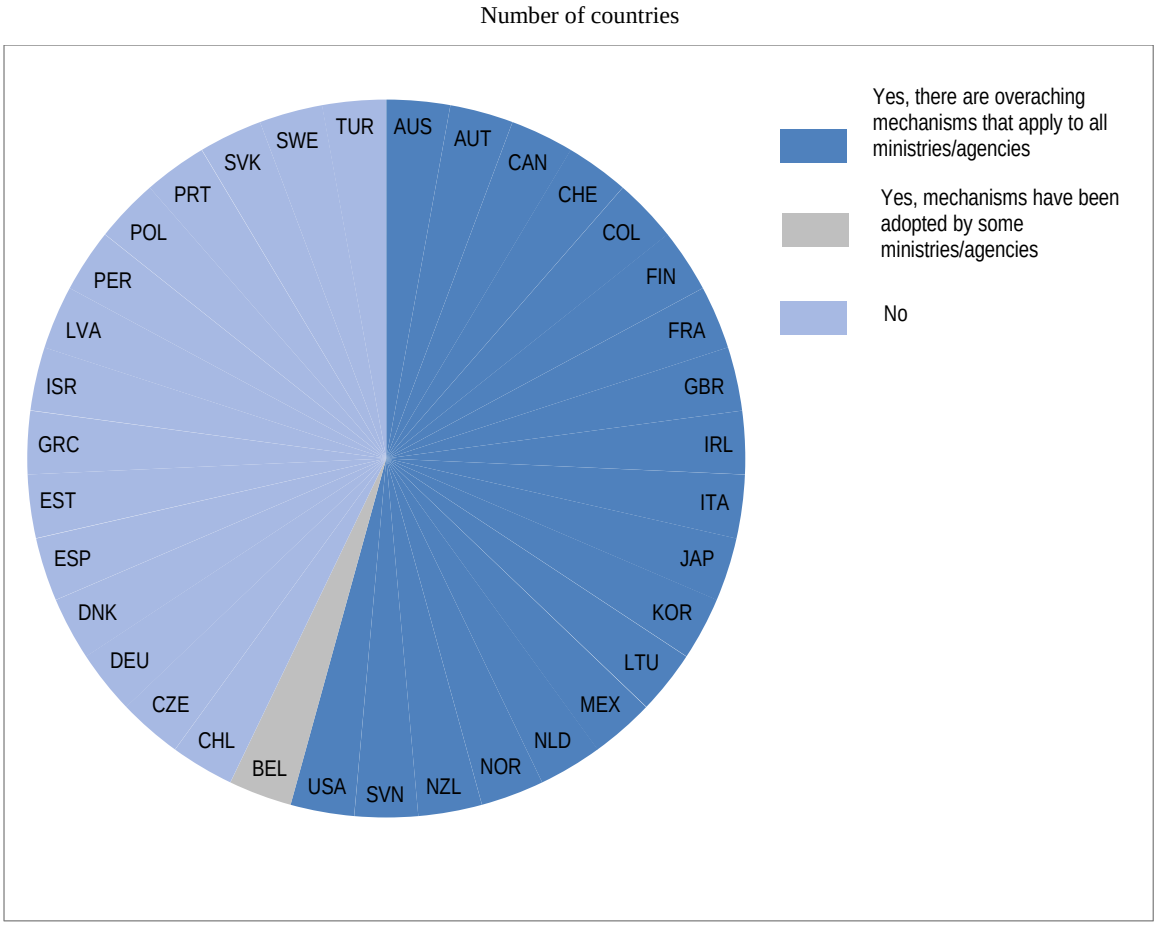
In **Switzerland**, the federal open government data portal has put in place a resource-link checker which automatically classifies the links on the portal between accessible and not accessible, and if a web link is not accessible, the publisher receives an automatic message requesting that the issue be corrected.[13] In **Lithuania** as well, there is an automatic mechanism that runs three times a month and sends automatic messages about possible inconsistencies to data providers.[14]

The **United States**, through the Project Open Data Dashboard, assesses each public sector organisation publishing government data on the OGD portal (see Chapter 8) to spot the percentage of web links that are working and the percentage of broken web links. This information is made available on line on the dashboard, through automatic update, and allows for assessments on public sector organisations' implementation of the Open Data Policy.[15] In **Australia**, the data harvesting function sourcing data from data catalogues monitors the availability of broken web links on the central open government data portal in real time[16] (more in the section below on Data-harvesting functionalities). In **France**, it is Etalab (the French Taskforce for Open Data) that monitors if there are broken links and then contacts the data provider to solve the issue.[17]

In **Colombia**, the Open Data Initiative of the Information and Communication Technology Ministry (MINTIC) assesses the quality of open government data released on the portal, including broken web links. If broken web links are identified, public sector organisations are informed and requested to provide a solution.[18] Similarly in **Slovenia**, upon the identification of a broken web link, the public sector organisation in charge of the dataset is contacted and called upon to repair the broken link.[19]

In **Canada**, it is rather users that signal broken web links by commenting on individual datasets: data providers are then notified of such comments in order for them to address the issue.[20]

Figure 5.7. Availability of mechanisms to monitor the existence of broken web links providing access to government datasets across OECD countries and partner economies



Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 39. At the central/federal government are there existing mechanisms to monitor the existence of broken web links (that provide access to government datasets)?

Data-harvesting functionalities

Data-harvesting functionalities are essential if governments wish to create a central/federal open government data portal that is interconnected with other government platforms. In fact, in order to improve data collection, discoverability, accessibility, sharing and its enhanced access, governments need to be able, through automatic mechanisms, to connect the main OGD portal to other portals.

Automatic mechanisms can make data collection more efficient, for example when the main open data portal is connected to other government platforms, which enables the extraction on an automatic basis of all government data that is not yet on the portal. Machine collection could, therefore, be prioritised over human collection if OGD platforms are to become hubs of open government data that are connected to all government portals.

Examples of portal-to-portal data-harvesting functionalities to increase the automatic nature of government data collection are available in some OECD countries, for instance:[21]

- In **Canada**, the federal open government data portal harvests datasets from public sector organisations in the federal government. For example, the portal harvests data from both the National Resources Canada's Federal Geospatial Platform and the Natural Resources Canada's Geospatial Portal.[22]
- In **Slovenia**, the central OGD portal harvests data from the Statistical Office of Slovenia, the Bank of Slovenia, the Slovenian INSPIRE geo-portal and the National Assembly of Slovenia. It is also in the process of harvesting datasets from other portals such as the National Institute of Public Health portal, the Energy Portal and General Police Directorate portal.[23]
- In **Sweden**, the central open government data portal harvests metadata from both central and regional public sector organisations. The portal also harvests metadata from municipalities and non-government organisations (e.g. academia, such as the Swedish University of Agricultural Sciences).[24]
- In the **United Kingdom**, the central open government data portal indicates the different harvesting sources of the portal. In general, government data is harvested from public sector organisations from the central government level, their arm's length bodies and local public sector organisations.[25]
- In **Belgium** too, the federal open government data portal indicates the different harvesting sources of the portal, which are mainly regional portals, portals of the statistics office, and other federal portals.[26]
- In **Peru**, the government OGD portal harvests data from all public entities that have their own open government data portal, or catalogue of open data.[27]

Protecting public officials from liabilities

To encourage the release of government data as open data, civil servants need to be guaranteed that there can be no civil or criminal liability against them for damages incurred to data re-users due to the data published. The provision of immunity for civil servants regarding government data released constitutes an important legal incentive that governments could provide in order to create a legal environment that promotes a trust culture, removing any deterrence to the publication of open government data, within the limits of national legislation and data protection.

Currently, 62% of the countries that responded to the OECD Survey on Open Government Data 3.0 do not provide protection to civil servants from civil and criminal liability for damages incurred to data re-users due to the quality of open government data. Among those who do provide such immunity, it is usually explicitly stated in the open license for government data released on the central/federal open government data portal.[28]

For example, in the **United Kingdom**, immunity for civil servants is included in the Open Government License for public sector information.[29] In **Mexico**, the Free License MX states that because the reuse of government data does not constitute an official position of the government, no public servant can be held liable for damages incurred to third parties due to reuse of the data.[30]

In **Canada** as well, the Open Government Licence specifies that "the information provider is not liable for any errors or omissions in the information, and will not under any circumstances be liable for any direct, indirect, special, incidental, consequential, or

other loss, injury or damage caused by its use or otherwise arising in connection with this licence or the information, even if specifically advised of the possibility of such loss, injury or damage."[31]

In **Colombia**, in Article 3 of the Law 1712, the principle of responsibility in use on information implies that users of open government data are responsible for the data they use, and therefore civil servants cannot be held liable for any damage incurred by data re-users. In addition, the main open license used in Colombia also offers a liability clause that protects civil servants.[32]

In **Spain**, a specific section in the legal advice presented on the open government data portal indicates that public sector organisations cannot and will not be held responsible for the use of their data, whether or not it causes damages or losses. In fact, this section also argues that the government takes no guarantee to ensure the quality of the government data provided as open data.[33]

In **Norway**, the Norwegian Licence for Open Government Data (NLOD) 1.0 states that errors can prevail in the government data provided as open data. That is, the license indicates that it cannot guarantee the general quality of the data provided. Additionally, the license expands on the fact that public servants cannot be held liable for damages experienced by data re-users due to the quality of government data.[34]

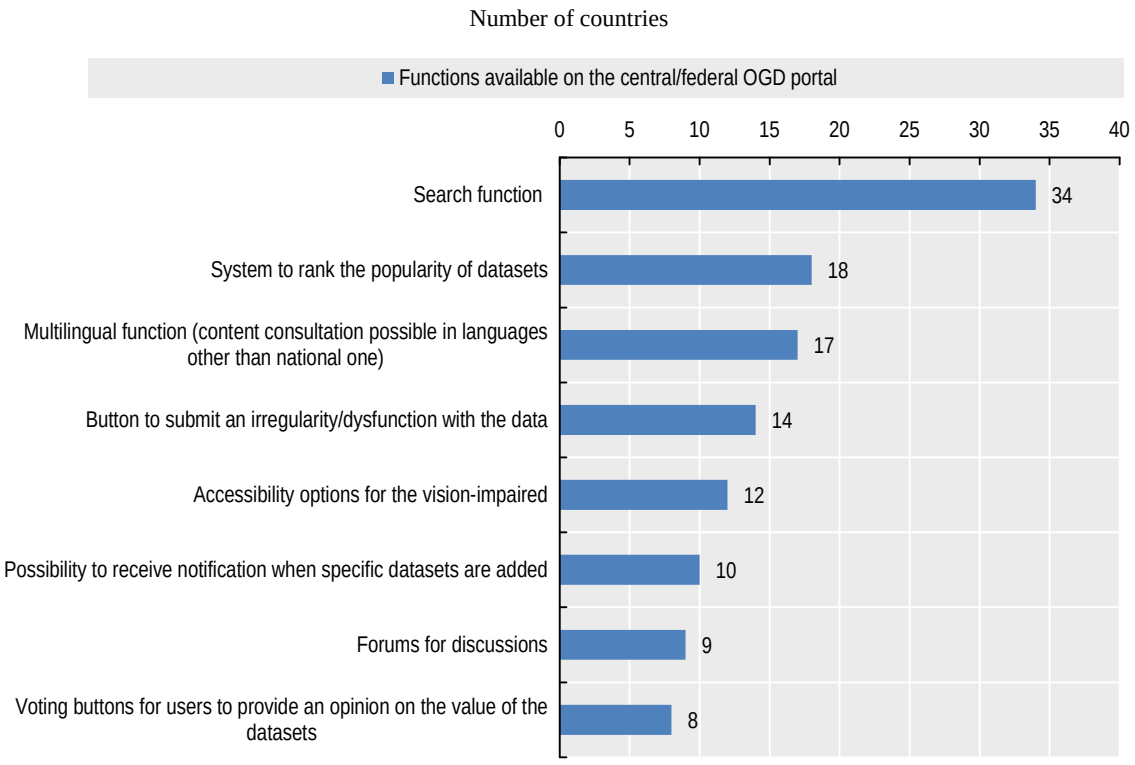
Towards government as a platform

Central/federal open government data portals should facilitate user experience, promote collaboration and encourage data reuse. The extent to which an open government data portal is user-centric or data- and user-driven, accessible and inclusive depends strongly on the availability of specific characteristics ranging from entry-level functionalities such as discussion forums and data rankings to accessibility options for the vision impaired, multilingual functions, and data crowdsourcing tools.

Generally speaking, central open data portals across OECD countries and partner economies are data-centric, for their main goal is the provision of government data. The central/federal open government data portal in most of the countries that participated in the OECD Survey on Open Government Data 3.0 cannot be described as user-driven. Most of them do present the key functionalities that facilitate collaboration. The challenge is more a problem of design than a problem of data delivery, as portals are mainly conceived as data access points instead of collaborative platforms.

Basic one-way functions such as search options are widely adopted. However, more collaborative tools are absent. For example, 26 out of the 35 respondent countries do not have forums for discussion where users can converse, comment and interact. Additionally, 12 out of 35 countries, that is, less than 35%, have accessibility options for the vision impaired, and 28% (10 countries) offer on their portals the possibility to receive notifications when specific datasets are added (Figure 5.8).

Figure 5.8. Available functions on the central/federal OGD one-stop-shop portal across OECD countries and partner economies



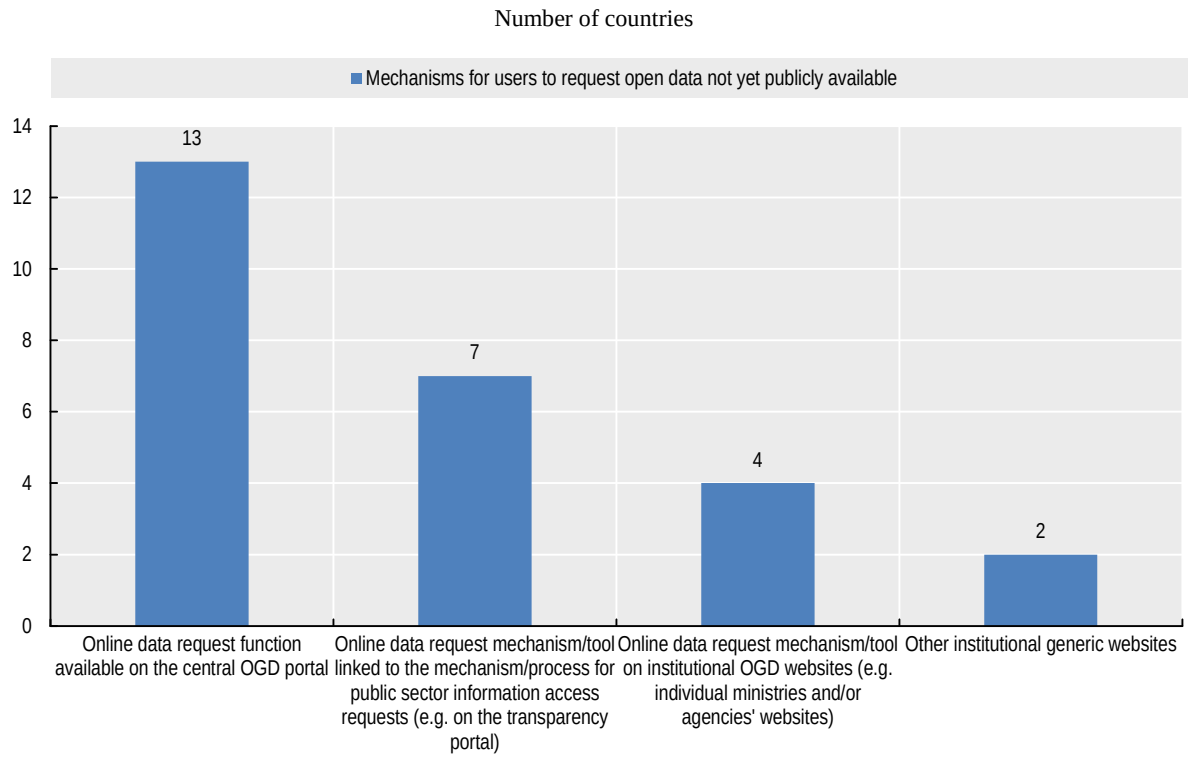
Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 76. Which of the following functions are available on the central/federal one-stop-shop portal? - Search function - System to rank the popularity of datasets - Forums for discussions - Voting buttons for users to provide an opinion on the value of the datasets - Multilingual function (content consultation possible in languages other than national one) - Accessibility options for vision impaired - Possibility to receive notification when specific datasets are added - Portal accessible through app for mobile phones/tablets - Button to submit an irregularity/dysfunction with the data?

Data requests

In terms of data requests, the availability of specific mechanisms for users to request open government data that is not yet publicly available is paramount to inform and prioritise data publication. A supply-driven approach should not be imposed on users; rather, users should be free and empowered to determine and express their own open government data needs, which the government should acknowledge and satisfy, within the limits of national legislation (e.g. personal privacy, data protection). These tools should help move from a "low-hanging fruit" and transparency-driven approach (see Chapter 4) towards a strategic data publication process, one that balances supply and demand.

Currently, of the 21 countries (out of 34 respondent countries) with such specific mechanisms through which users can request unavailable open government data,[35] 13 countries offer this through the central/federal open government data portal (see Figure 5.9). This is the case for example in Australia, Colombia, Ireland, New Zealand and the United Kingdom.[36]

Figure 5.9. Mechanisms available for users to request open government data that is not yet publicly available across OECD countries and partner economies



Source: Based on information provided by 19 OECD countries and 2 partner economies (Colombia and Lithuania) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 26a. If yes, which mechanism(s)?

Furthermore, of those 13 countries, users commonly provide their name and contact details through the request function available on the open government data portal.

Regarding the provision of contact details and name, in six countries (Ireland, Israel, Korea, Netherlands, New Zealand and Spain), requesters are required to provide contact details such as an email address, and in nine countries (Australia, Colombia, Ireland, Israel, Korea, Netherlands, New Zealand, Spain and the United Kingdom) the name of the requester should be provided.[37]

At times, users are requested to provide information on the intended use of data through the data request function on the open government data portal. This is the case in five countries: Ireland, Korea, Mexico, Netherlands and the United Kingdom.[38]

Setting aside the "big brother" approach, so much feared by many communities of data re-users (particularly those advocating transparency and public sector integrity), the provision of information on the intended use of the requested government data is essential for governments to be able to gather information on types of data, users and uses. This can help to better monitor usage, and be better informed on the establishment of the best conditions for value creation (OECD, 2018b).

The provision of information on the intended use of the data requested can become a data collection instrument for countries to pinpoint important government data to be released for greater data reuse (OECD, 2018a). The request for information on the intended use of

the data requested enhances monitoring mechanisms to assess data reuses and their subsequent impact. Better feedback for future government data release can be generated, and in turn promote better feedback in OGD policies and strategies (OECD, 2018a).

User feedback

The availability of a user feedback section on the central/federal open government data portal is another essential foundation of a user-driven portal. In effect, users need to be offered the opportunity to provide feedback on the datasets made available on the open government data portal. Evidence demonstrates that most countries have indeed understood the importance of a user feedback section: 25 OECD countries do indeed provide such a user feedback section on their portals.[39]

However, in order to encourage exchange between users, as well as improve data analyses and data reuse, it is essential for the comments provided in the user feedback section to be made visible to all visitors. The sole availability of the user feedback section is insufficient to make the open government data portal more user-driven, and other information should be made visible to all users to increase the user-driven nature of the user feedback section. Examples include information on the number of user requests sent through the user feedback section, as well as information on the average length to respond to requests sent through the user feedback section. Such information can stimulate interest regarding specific datasets, and subsequent reuse. However, results demonstrate that in general, most countries have solely focused on providing a user feedback section, rather than considering its connection to efforts to create a user-driven portal.[40]

Only two OECD countries, Austria and Korea, provide online information on the average length to respond to requests sent through the user feedback section.[41] Additionally, 10 OECD countries, out the 25 with a user feedback section, do not allow all visitors to see comments provided in the user feedback section.[42]

Crowdsourcing data and collective knowledge

Governments need to actively invest in the central/federal open government data portal to transform it into a platform for data crowdsourcing and collaboration. In fact, this is fundamental for the portal to become more data- and user-driven, as it will enable governments to better engage users, increase collaboration and promote greater public value creation. Countries need to understand the role that open government data portals play in promoting government as a platform and therefore invest towards that end.

The **French** open data portal data.gouv.fr is the most relevant example of a portal that, managed by the central government, stands as a platform for user collaboration, community building and data crowdsourcing - instead of a mere open government data access portal. The French *open data* portal (not *open government data* portal; thus its comprehensiveness) enables data users to upload their own datasets, register as data providers and contribute with data reuse cases.

In **Mexico**, the General Direction of Open Data established collaboration with datamx.io - a civic and private open data portal managed by Codeando Mexico (a Mexican civil society organisation) to connect the data available on the central OGD portal datos.gob.mx with datamx.io. Whereas this effort seeks to enhance the overall discoverability and availability of open government data, it also underlines the value of non-governmental open data portals as platforms for collaboration and data crowdsourcing (OECD, 2018a).

In **Austria**, the government, in collaboration with Wikimedia and Open Knowledge International, created a non-governmental open data portal allowing non-governmental actors to publish open data. Thus, users wishing to add non-governmental data are redirected to the portal in order to be able to add it there. These portals (the federal open government data portal and the non-governmental open data portal) are interlinked, thus facilitating discoverability and data crowdsourcing.[43]

Currently, most countries do not enable open data users to either add a dataset or register their organisation on the central/federal open government data portal. In fact, Finland, France and Peru (see Table 5.2) are the only countries that enable users to add their data on the central/federal open government data portal, and among that group, only Finland and France allow users to register their organisations as data publishers.[44]

Table 5.2. Activities open data users can perform on the OGD one-stop-shop portal in OECD countries and partner economies

	On the central/federal OGD portal users can add a dataset	On the central/federal OGD portal users can add a data visualisation	On the central/federal OGD portal users can add an organisation
Australia	○	○	○
Austria	●	●	●
Belgium	○	○	○
Canada	○	●	○
Chile	○	○	○
Czech Republic	○	○	○
Denmark	○	○	○
Estonia	○	●	○
Finland	●	●	●
France	●	●	●
Germany	○	○	○
Greece	○	●	○
Ireland	○	●	○
Israel	○	○	○
Italy	○	○	○
Japan	○	○	○
Korea	○	●	○
Latvia	○	○	○
Mexico	○	○	○
Netherlands	○	○	○
New Zealand	○	○	○
Norway	○	○	○
Poland	○	○	○
Portugal	○	●	○
Slovak Republic	○	○	○
Slovenia	○	○	○
Spain	○	○	○
Sweden	○	○	○
Switzerland	○	○	○
Turkey	○	○	○
United Kingdom	○	●	○
United States	○	○	○

	On the central/federal OGD portal users can add a dataset	On the central/federal OGD portal users can add a data visualisation	On the central/federal OGD portal users can add an organisation
OECD total			
Yes ●	3	10	3
No ○	29	22	29
Colombia	○	●	○
Lithuania	○	○	○
Peru	●	●	○

Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 71. On the central/federal one-stop-shop portal, can users complete the following procedures: - Add a dataset - Add a data visualisation - Add an organisation?

As a result, opportunities remain across OECD countries and partner economies in terms of further enabling their open data portals as online collaborative platforms, drawing upon the value of maximising collective knowledge and using external data for more informed, evidence-based decision making.

Notes

1. For more information, see https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/667221/6_3323_Anti-Corruption_Strategy_WEB.pdf
2. Based on additional information Germany provided to Question 68, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).
3. Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 43. Is there a harmonised oversight/quality control process to ensure the quality of the data provided by all central/federal ministries and agencies on the central/federal one-stop-shop portal?
4. Based on additional information Japan provided to Question 43, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). Based also on information found at www.data.go.jp/about-data-go-jp.
5. Based on additional information Korea provided to Question 42, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).
6. Based on additional information Ireland provided to Question 43, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).
7. Based on additional information Sweden provided to Question 43, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).
8. Based on additional information Austria provided to Question 43, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).
9. Based on additional information Mexico provided to Question 43, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). For more information, see OECD, 2018a.
10. Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government

Data 3.0 (2017), Section 2, Question 42. How do you ensure the quality of data provided by the different ministries and agencies?

11. Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 42. How do you ensure the quality of data provided by the different ministries and agencies?

12. Based on information provided by 25 OECD countries and 2 partner and other economies (Colombia and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 51. What does the metadata/users' guide provided on the central/federal OGD portal generally describe?

13. Based on additional information Switzerland provided to Question 39, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

14. Based on additional information Lithuania provided to Question 39, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

15. Based on additional information the United States provided to Question 39, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://labs.data.gov/dashboard/offices/qa.

16. Based on additional information Australia provided to Question 39, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

17. Based on additional information France provided to Question 39, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

18. Based on additional information Colombia provided to Question 39, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

19. Based on additional information Slovenia provided to Question 39, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

20. Based on additional information Canada provided to Question 39, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

21. Based on information provided by 27 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 34. Does the central OGD portal (if available) incorporate portal-to-portal data-harvesting functionalities?

22. Based on additional information Canada provided to Question 34, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

23. Based on information Slovenia provided to the OECD on 12 August 2018.

24. Based on additional information Sweden provided to Question 34, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

25. Based on additional information the United Kingdom provided to Question 34, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://data.gov.uk/harvest.

26. Based on additional information Belgium provided to Question 34, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://data.gov.be/fr/autres-portails.

27. Based on additional information Peru provided to Question 34, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

28. Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru)n response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 19. Does your government provide protection to civil servants (e.g. immunity) from civil and criminal liability for damages incurred to data re-users or third parties due to quality of government data published as open data?

29. Based on additional information the United Kingdom provided to Question 19, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.nationalarchives.gov.uk/doc/open-government-licence/version/3/.

30. Based on additional information Mexico provided to Question 19, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

31. Based on additional information Canada provided to Question 19, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://open.canada.ca/en/open-government-licence-canada.

32. Based on additional information Colombia provided to Question 19, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.mintic.gov.co/portal/604/articles-7147_documento.pdf and http://estrategia.gobiernoenlinea.gov.co/623/articles-9407_Guia_Apertura.pdf (Annex 1).

33. Based on additional information Spain provided to Question 19, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at http://datos.gob.es/es/aviso-legal.

34. Based on additional information Norway provided to Question 19, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://data.norge.no/nlod/en/1.0.

35. Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 26. Does your central/federal government have a specific mechanism for users to request open data that is not yet publicly available? (Not including feedback/comment sections).

36. Based on information provided by 19 OECD countries and 2 partner economies (Colombia and Lithuania) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 26a. If yes, which mechanism(s)?

37. Based on information provided by 11 OECD countries and 2 partner economies (Colombia and Lithuania) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 26b. If the option “Online data request function available on the central OGD portal and online format request” is selected, which of the following information must users provide to request data?

38. Based on information provided by 11 OECD countries and 2 partner economies (Colombia and Lithuania) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 26b. If the option “Online data request function available on the central OGD portal and online format request” is selected, which of the following information must users provide to request data?

39. Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 70. On the central/federal “one-stop-shop” portal, is there a user feedback section?

40. Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government

Data 3.0 (2017), Section 1, Question 70, Question 70a, Question 70b, Question 70c, Question 70d and Question 70e. The questions were: On the central/federal "one-stop-shop" portal, is there a user feedback section? *and* Do you collect information on the number of user requests sent through the user feedback section of the central/federal "one-stop-shop" portal? *and* Do you publish this information on line? *and* Are comments provided in the user feedback section visible for all visitors? *and* Do you collect information on the average length to respond to requests sent through the user feedback section of the central/federal "one-stop-shop" portal? *and* Do you publish this information online?

41. Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 70d and Question 70e. The questions were: Do you collect information on the average length to respond to requests sent through the user feedback section of the central/federal "one-stop-shop" portal? *and* Do you publish this information on line?

42. Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 70c. Are comments provided in the user feedback section visible for all visitors?

43. Based on additional information Austria provided to Question 71, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.data.gv.at/suche/daten-hinzufuegen/.

44. Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 71. On the central/federal one-stop-shop portal, can users complete the following procedures: - Add a dataset - Add a data visualisation - Add an organisation?

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Chapter 6. Delivering good governance value and reinforcing public trust

This chapter presents the efforts undertaken by OECD countries and partner economies in regard to the publication and use of open government data in areas that are key to building public trust and confidence in government and good governance, including public procurement, public budgeting and anti-corruption. The contribution of open data for an innovative, data- and user-driven public service delivery is discussed in Chapter 2.

Lithuania was not an OECD Member at the time of preparation of this publication. Accordingly, Lithuania does not appear in the list of OECD Members and is not included in the zone aggregates.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Introduction

In their quest to justify and secure investments in open data, governments around the world have focused on strengthening their capacity to argue and demonstrate the potential value of open data to produce economic benefits for the public sector and the economy at large, e.g. by enabling new business opportunities, business innovation and efficiencies. Nevertheless, there is much more that open data can do for governments. For instance, when linked to the achievement of specific policy goals, the publication of open government datasets can contribute to strengthening the capacity of governments to act "as a platform" (see Chapter 5) as the value of "data as infrastructure" is fully appreciated and as data is reused for value co-creation by the different communities from the entire ecosystem (see Chapters 4 and 7).

The strategic sharing, publication and reuse of open government data (OGD) by governments, civil society organisations and journalists, combined with digital technologies, can help build good governance. It can enable, for instance, better public service delivery (see Chapter 2), improved citizen engagement, enhanced government openness, and a data-driven basis for stronger government accountability and public sector integrity. Together, impacts in relation to these policy goals can contribute to reinforcing or building public trust in governments (see Box 6.1).

The Recommendation of the Council on Digital Government Strategies (OECD, 2014) highlights the relevance of ensuring the coherent use of digital technologies and data across different policy areas in order to enhance policy coherence, alignment and mutual reinforcement.

The OECD has also adopted additional legal instruments that stress the value of digital technologies and data, including open data, as core overarching policy tools supporting efforts targeting the achievement of more open and accountable governments, including the OECD Recommendations on Open Government (OECD, 2017a), Public Integrity (OECD, 2017b), Budgetary Governance (OECD, 2015a), and Public Procurement (2015b).

This chapter draws upon recent OECD work on digital government and open data, including the 2018 follow-up project (OECD, 2018a) of the 2016 Open Government Data Review of Mexico, (OECD, 2016), the *Digital Government Review of Colombia* (OECD, 2018b) and the *OECD Compendium of Good Practices on the Use of Open Data for Anti-Corruption* (OECD, 2017c), published within the framework of the activities of the G20 Anti-Corruption Working Group and in line with the G20 Anti-Corruption Open Data Principles.

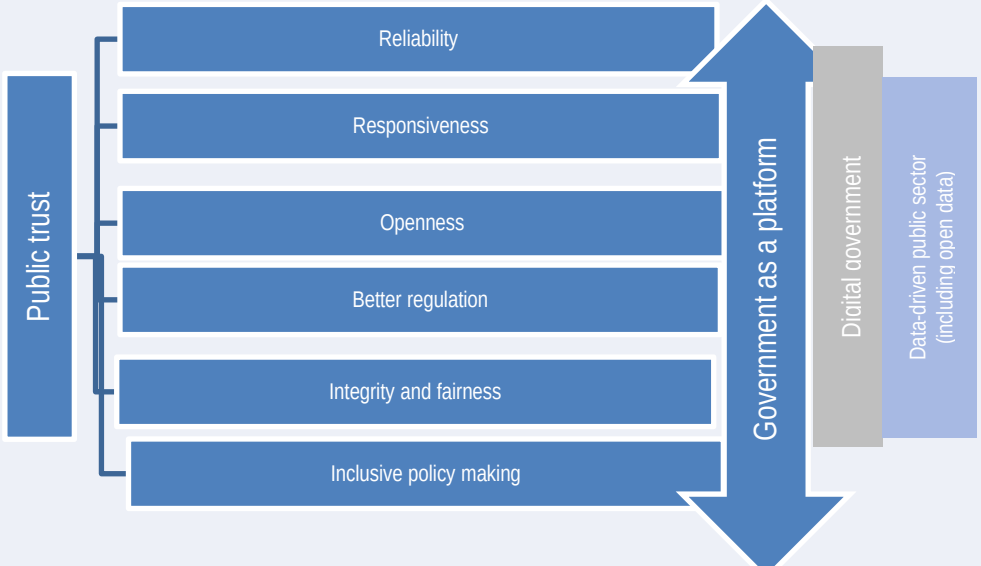
The above-mentioned policy areas are key areas of work for the OECD; thus, the OECD is actively collaborating with key international organisations of the global open data ecosystem, such as the International Open Data Charter,[1] the Open Contracting Partnership,[2] the International Budget Partnership[3] and 360 Giving.[4]

Box 6.1. Winning back public trust

OECD work on public trust has identified six areas that can help governments to restore, sustain and/or increase levels of public trust in governments:

- **Reliability**: Governments have an obligation to minimise uncertainty in the economic, social and political environment.
- **Responsiveness**: Trust in government can depend on citizens' experiences when receiving public services - a crucial factor of trust in government.
- **Openness**: Open government policies that concentrate on citizen engagement and access to information and open government data can increase public trust.
- **Better regulation**: Proper regulation is important for justice, fairness and the rule of law as well in delivering public services.
- **Integrity and fairness**: Integrity is a crucial determinant of trust and is essential if governments want to be recognised as clean, fair and open.
- **Inclusive policy making**: Understanding how policies are designed can strengthen institutions and promote trust between government and citizens.

Figure 6.1. Six areas for governments to win back trust



Source: Author, based on OECD (n.d.), "Trust in Government", webpage, www.oecd.org/gov/trust-in-government.htm (accessed 23 August 2018). Originally published in OECD (forthcoming), *Digital Government Review of Sweden: Enabling Government as a Platform Through a Data-driven Public Sector*, OECD Publishing, Paris.

Open contracting data: Towards more open and innovative procurement processes

Public procurement is one of the policy areas where governments have sought to strategically use first, information and technologies, in the context of e-government efforts (e.g. e-procurement platforms), and currently digital technologies and data in the context of digital government and innovation policies (see also Chapter 2), to improve public procurement as part of the broader digital transformation of the public sector (e.g. open and big data, artificial intelligence, blockchain) (see Box 6.2).

Opening up data on public procurement empowers citizens, civil society organisations, journalists, academics and researchers to follow the management of public resources and therefore contributes to strengthening participatory democracy. As a result, its publication can help build, establish and/or restore public trust.

By analysing the data, data users can, for instance, monitor public procurement decisions, assess the effectiveness of public spending and identify – and/or help prevent - risks of corruption in public contracting (see for instance OECD, 2017c and Appelt and Galindo-Rueda, 2016).

Box 6.2. The case for open data in public procurement

Public procurement, i.e. the purchase by governments and state-owned enterprises and entities of goods, services and works, is one of the largest government spending activities, representing on average up to 13% of gross domestic product (GDP) in OECD countries, and up to 29% of general government expenditure. At the same time, public procurement is a government function involving millions of contract awards each year and often considered by societies in many countries around the world as an area prone to corruption and budget deficit risks, causing inefficient public spending and subsequent discontent with governments (Fazekas and Czibik, 2017). This greatly matters for decreasing levels of public trust.

The rise of the "open government data" and "big data" movements has caused growing expectations on how applying a big data approach to spur open government data reuse, i.e. combining diverse data sources, can contribute to unlocking a whole new world of insights for policy making and research. The application of big data analytics techniques to public procurement data can indeed provide a number of opportunities for sounder policy making, stronger oversight of governments' activities and for the assessment of governments' performance (e.g. in terms of public spending or organisational behaviours).

Some of the advantages include, but are not restricted, to:

- **Assessing organisational behaviour**: Linking open data on multiple transactions over time (such as data on individual tenders, organisations, local governments' programmes, government programmes) can help better follow patterns in organisational behavioural patterns, decisions, investments, etc.
- **Embedding new performance indicators in policy making**: Linking public procurement data with other administrative datasets, such as national company registries, can provide new sources of evidence and

statistics to measure governments' performance. New performance indicators can be developed by combining qualitative and quantitative methods to describe public sector transparency, administrative capacity, and quality of government on various analytical levels.

- **Using market analytics to detect collusive behaviours**: Governments increasingly use public procurement data in an innovative way to detect collusion among suppliers and punish anti-competitive behaviour (Fazekas and Czibik, 2017). Signs of collusive behaviour can be detected by analysing price-related variables like bid distribution characteristics; specific bidding patterns like bid rotation or bid suppression; or market structure-related variables such as market concentration.
- **Holding governments accountable and safeguarding public spending**: Open government procurement data portals are meant to make these data available in a format that provides easy access for those who want to reuse them and a simple understanding (e.g. through visualisations) for those who want to interpret them. For example, not only data are published on each contract, but through data analysis and interpretation (e.g. based on data correlations, data mash-up, data linkages), suspicious tenders can be identified and red flags for potential corruption risks can be raised.
- **Sharing benefits with several types of users on open portals**: Suspicious citizens can check how projects are being managed and funded in the area of their interest; investigative journalists can save time when gathering information on public procurement cases; potential suppliers can explore new public procurement (Fazekas and Czibik, 2017); public oversight bodies can use these new sources of data to investigate specific situations.

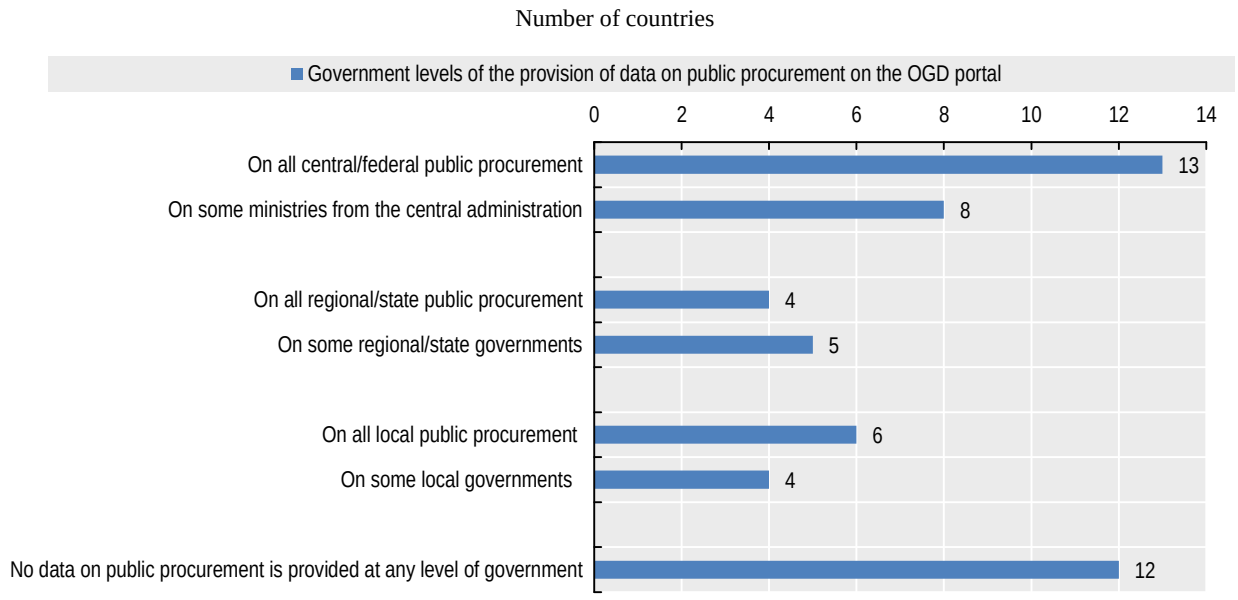
Source: Adapted from OECD (2017c), *Compendium of Good Practices on the Use of Open Data for Anti-Corruption*, OECD, Paris, www.oecd.org/gov/digital-government/g20-oecd-compendium-open-data-anti-corruption.htm with information from Fazekas, M. and A. Czibik (2017), "Diverse uses of government contracting data to improve spending of public funds", *Zenodo*, http://doi.org/10.5281/zenodo.810049.

Yet, evidence from the OECD Open Government Data Survey 3.0 demonstrates that there are major shortcomings across countries in terms of the discoverability and availability of open contracting data.

Most OECD countries and partner economies do not publish data on public procurement at any level of government on their central/federal OGD portals (see Figure 6.2). Only 13 countries out of 34 provide access to data on all central/federal public procurement on their central/federal OGD portals, either directly (data is "hosted" on the portal or harvested from other portals) or indirectly (the portal provides links to other portals where data is shown). This evidence nonetheless does not reflect to what extent open contracting data practices are adopted across the broad public sector (e.g. number of public sector organisations providing these data).

Four countries (Colombia, Korea, Latvia and Mexico) also provide data on all regional/state public procurement. Finally, only six countries (Colombia, Korea, Latvia, Lithuania, Mexico, and Portugal) provide data on local public procurement on their OGD portals.[5]

Figure 6.2. Provision of open contracting data across OECD countries and partner economies



Source: Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 73. On the central/federal OGD one-stop-shop portal, do you provide data on public procurement either directly, indirectly or both?

In view of the important nature of such government data to strengthen public governance and turn open data into a key policy tool for reinforcing public trust, it is important for governments to publish information on the whole public procurement process as open data, and if possible at the highest possible level of granularity in the name of the public good and within the framework of data protection, personal privacy and confidentiality legislation (see Chapter 3). However, even when available, often challenges remain in terms of available data comprehensiveness, i.e. coverage of the whole public contracting process.

Previous OECD work on open data for anti-corruption (OECD, 2017c) found evidence that in regard to open contracting data, G20 countries (which include 11 OECD countries) were showing the same challenging trend as observed in relation to the publication of public sector information on public procurement (e.g. as part of e-procurement platforms). When published, information and data covered the first stages of the public procurement process (pre-tendering and tendering phases) rather than during the post-award phase (see Box 6.3).

This trend was confirmed by the results of the OECD Open Government Data Survey 3.0 (see Figure 6.3), which show that, when published, open contracting data mainly focus on providing contract-related information (e.g. contractor details) and an initially allocated budget. Data availability decreases in regard to the publication of data after the awarding phase (e.g. data on final budget allocation, penalised contractors). For instance, only Korea, Latvia and Mexico publish data on penalised contractors and Canada, Latvia and Mexico are the only countries publishing data on person(s) with significant control over companies receiving funds from public sector organisations.[6]

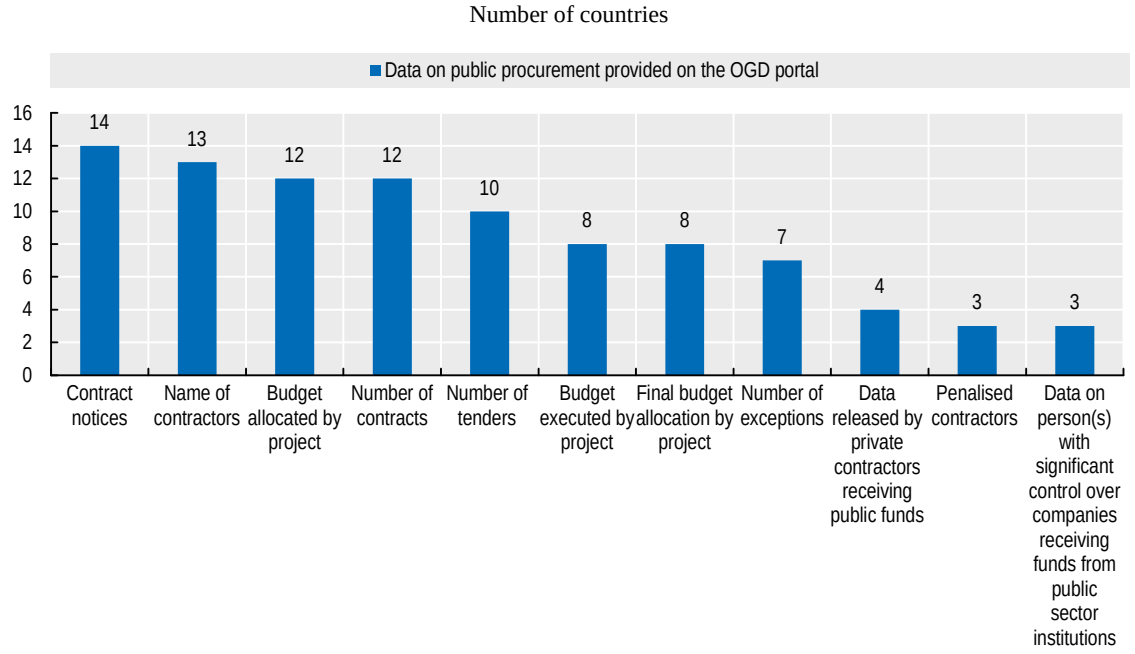
Box 6.3. Publication of public procurement information across selected G20 and OECD countries: A basis for open contracting data

By 2010, public procurement information (e.g. contracts and evaluation criteria) was being disclosed by selected G20 countries across the whole procurement process (pre-tendering, tendering and post-award phases) (OECD, 2011). For instance, information on contract awards was being published in G20 countries such as Australia, Brazil, Canada, Italy, Japan, Korea, Mexico, Spain, the United Kingdom and the United States. Yet, when the procurement process is disaggregated by stage, evidence for 2011 showed that countries more frequently made information available about the pre-tendering and tendering phases than during the post-award phase (OECD, 2011). While in 2010 open data policies were not widely spread, these earlier procurement practices paved the way towards the implementation of open data initiatives within this policy domain (e.g. open contracting data).

Yet, according to the results of the OECD 2014 Survey on Public Procurement, this trend has remained the same as OECD countries (which include selected G20 members) still focus on the publication of information related to the pre-tendering and tendering phase. For instance, by 2014, *ex post* contract management was mandatory and published in e-procurement systems only in Turkey and the United States; it was not mandatory but provided in Germany, Italy, Japan and Korea; and it was not provided in Australia, Canada, France, Mexico, and the United Kingdom (OECD, 2015c).

Source: Text from OECD (2017c), *Compendium of Good Practices on the Use of Open Data for Anti-Corruption*, OECD, Paris, www.oecd.org/gov/digital-government/g20-oecd-compendium-open-data-anti-corruption.htmwith data from OECD (2015c), *Government at a Glance 2015*, OECD Publishing, Paris, http://dx.doi.org/10.1787/gov_glance-2015-en and OECD (2011), *Government at a Glance 2011*, OECD Publishing, Paris, http://dx.doi.org/10.1787/gov_glance-2011-en.

Figure 6.3. Availability of data on public procurement on the central open data portal across OECD countries and partner economies



Source: Based on information provided by 20 OECD countries and 2 partner economies (Colombia and Lithuania) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 74. Please select the data that are provided on public procurement in the central/federal open data portal.

Additionally, a key challenge still appears to be the enabling of open contracting data interoperability and standardisation at all levels of government, and across countries. Advances in this regard would be extremely important as they could support collective actions and collaboration at national and international levels. Streamlined and automated data sharing and processing practices could help achieve advances in the construction of data-driven public sectors capable of transforming how they function through data and technology and impact public sector good governance as a result. This is also relevant in the context of the activities of Supreme Audit Institutions (see Box 6.4).

Box 6.4. Supreme audit institutions and open data

Supreme audit institutions (SAIs) could benefit from the use of open data (including government data) to better monitor compliance with regulations, detect and prevent possible fraud in public sector organisations.

In fact, the use of open data and innovative data analytics tools could constitute a strategic asset for SAIs to conduct data-driven audits in order to supervise public sector organisation performance and efficiency. Drawing upon data analytics, SAIs could implement data-enabled predictive models to measure the potential future outcomes of public sector organisations.

Thus, in using OGD to improve the quality of audit controls, SAIs can enhance their mission of promoting government accountability and government openness.

SAIs can also act as agents to promote the quality, interoperability, availability and

accessibility of government data across the public sector thus data governance as a whole. In fact, SAIs could conduct audits regarding public sector organisations' use of government data, their data collection and storing systems, and the accessibility, reliability and discoverability of that data.

Thus, SAIs, in addition to their own use of data (open or not), can also constitute agents to promote the OGD agenda of governments, by ensuring its quality and public sector organisations' application of OGD standards and guidelines at large.

Source: OECD (2016), *Open Government Data Review of Mexico: Data Reuse for Public Sector Impact and Innovation*, OECD Digital Government Studies, OECD Publishing, Paris, https://doi.org/10.1787/9789264259270-en with information from OECD (2017f), *Mexico's National Auditing System: Strengthening Accountable Governance*, OECD Public Governance Reviews, OECD Publishing, Paris, https://doi.org/10.1787/9789264264748-en.

For instance, results from the 2016 OECD Public Procurement Survey indicate that in OECD countries, e-procurement systems are increasingly becoming integrated with other public sector information and data management systems, including with business registries (in eight countries) and and tax registries (in seven countries), budgeting systems (in six countries), and social security databases (in six countries) (OECD, 2017d). While in some cases these data cannot be made available for public access (e.g. confidentiality, risks of collusion), practices aimed to promote data integration and mashing stress the relevance of ensuring the required interoperability and standardisation for enhanced data exchange across different platforms. This can greatly help reduce silo-based approaches in the management of key data registers and databases (e-government approach) and thus increase efficiency and openness through enhanced collaboration (digital government approach).

In relation to the interoperability and standardisation of open contracting data, few OECD countries have adopted the Open Contracting Data Standard (OCDS) as an effort to enable deeper analysis of contracting data, as well as encourage its distribution and reuse drawing upon data and metadata standardisation.[7]

The Open Contracting Data Standard (see Box 6.5) offers a series of data standards for all stages of the contracting process, including public procurement planning, tendering, awarding, and implementation.

Box 6.5. The Open Contracting Data Standard

Public contracting is a trillion-dollar global marketplace run on public money to deliver goods, works and services to citizens. Every third dollar spent by governments is on public contracts - some USD 9.5 trillion and 15% of global GDP every year.

Openness, accountability and innovation are central to creating and maintaining trust in this huge market. Inefficiency, waste and fraud are significant risks. Research, global business surveys, and country reforms show that better data and oversight are good for public integrity, value for money and competition.

Open contracting can drive systemic change by publishing open data and build user engagement and feedback along the entire chain of public contracting from planning to tender to the award and implementation of public contracts. At the

core is the Open Contracting Data Standard, a globally recognised, user-friendly, best practice schema to describe what, when and how to release data and associated documents at each phase of contracting. Using standardised data speeds up adoption lowers barriers and allows easy customisation of a growing suite of free guidance, portals, and tools.

In short, open contracting can deliver value for money, save governments time and money; build a fairer business environment; improve public integrity by deterring fraud and corruption; and track and improve service delivery.

In **Ukraine**, thousands of new suppliers are doing business with the government following the creation of greater transparency and an open source e-procurement system based on open contracting. In **Colombia**, half of the contractors who won government bids under its new, more open procurement system in 2015 had never participated in public contracting before. **France** and the **United Kingdom** are implementing open contracting to improve the business environment for small- and medium-sized enterprises (SMEs) and to promote innovation in service delivery. In total, more than 30 countries from around the world, from Argentina to Zambia, are now pursuing open contracting reforms.

The Open Contracting Partnership is a silo-busting collaboration across government, business, civil society and technologists working to catalyse open contracting around the world.

Source: Information provided by the Open Contracting Partnership.

Among OECD countries, Colombia, France, Mexico and the United Kingdom are the only countries that have adopted the OCDS.[8]

- **Colombia** adopted the Open Contracting Data Standard in November 2015 and has published data for each stage of the contracting process since then.[9] This enables citizens to access public contracting data, download the data in open format (e.g. CSV) and reuse the data using application programming interfaces (APIs)[10] with obvious impacts on public sector transparency and accountability.
- In **France,** the central government has been collaborating with different authorities at the subnational level of government (such as the Brittany region or the Occitanie region) to better implement the Open Contracting Data Standard across the whole country and to experiment with the widespread adoption of the OCDS across the French public sector. Working with the regions, the French government has been able to pinpoint challenges regarding the implementation of the OCDS and their implications for the central level as well as achieving efficiencies through collaboration (Tales, 2018).
- In **Mexico,** the use of OCDS is being adopted throughout the federal government to ensure the interoperability of all government procurement data, and facilitate the monitoring of government procurement processes. The OCDS, for example, has been used in the context of the construction of the new airport in Mexico City to facilitate the monitoring of public sector expenditures, and thus decrease risks of corruption in the procurement process. Furthermore, in January 2017, a regulation was issued to adapt the Mexican Federal Procurement System to the OCDS, thus increasing interoperability of government procurement data across the public sector, and setting a basis to enable interoperability with other systems such as the interoperability with other national systems, e.g. the National

Transparency Platform and the Platform of the National Anti-Corruption System (OECD, 2018c) This has, in turn, led to the creation of a federal open data contracting platform for open government procurement data[11] (OECD, 2018a).

- In the **United Kingdom,** the OCDS was adopted in November 2016 and applies to all central procurement data of the Crown Commercial Service. All procurement data from central government, non-departmental public bodies, local authorities and National Health Service bodies all follow the Open Contracting Data standard format.[12]

The above-mentioned countries, plus **Ukraine**, created the Contracting 5 Initiative (C5) to commit to, and ensure the implementation of the OCDS at the national level and promote its adoption by other countries to foster openness, innovation, integrity and better business and civic engagement in government contracting and procurement. During an inaugural meeting at the Open Government Partnership Summit held in Paris in December 2016, the C5 countries issued a Declaration.[13] The membership of the C5 is expected to grow in the near future with the potential adhesion of other countries, and increased participation from governments worldwide is expected to support cross-border collaboration in the use of open data as part of their anti-corruption efforts.

Open budget data

The field of open budget data (OBD) is also a policy domain that is getting increasing attention across OECD governments with the participation and collaboration of the broader global community of budget and fiscal transparency institutions – in particular the OECD, the International Monetary Fund, the World Bank Group, the International Budget Partnership, the International Budget Partnership and the Public Expenditure and Financial Accountability Programme – all of which form part of the Global Initiative of Fiscal Transparency Network (GIFT).[14]

In this context, the GIFT's efforts to draw upon the value of new technologies and open data as tools to increase fiscal transparency have included collaboration between Open Knowledge and the GIFT to develop a technical platform (known as the Open Fiscal Data Package, OFDP) (see Box 6.6) to publish budget data, drawing upon the World Bank's BOOST tool. In September 2016, **Mexico** became the first government to publish its budget in open data format, drawing on GIFT's support (OECD, 2017e).

Box 6.6. The GIFT's Open Fiscal Data Package

The GIFT's Open Fiscal Data Package (OFDP) was created to promote the creation of a central platform gathering government data on public finance from all countries. The package is an open technical specification that offers standards for the publication of government budget data and government spending data as open data. This is to ensure that all data to be published on the "OpenSpending" platform (the platform created by Open Knowledge International that aims to create a world-wide public finance database) are interoperable.

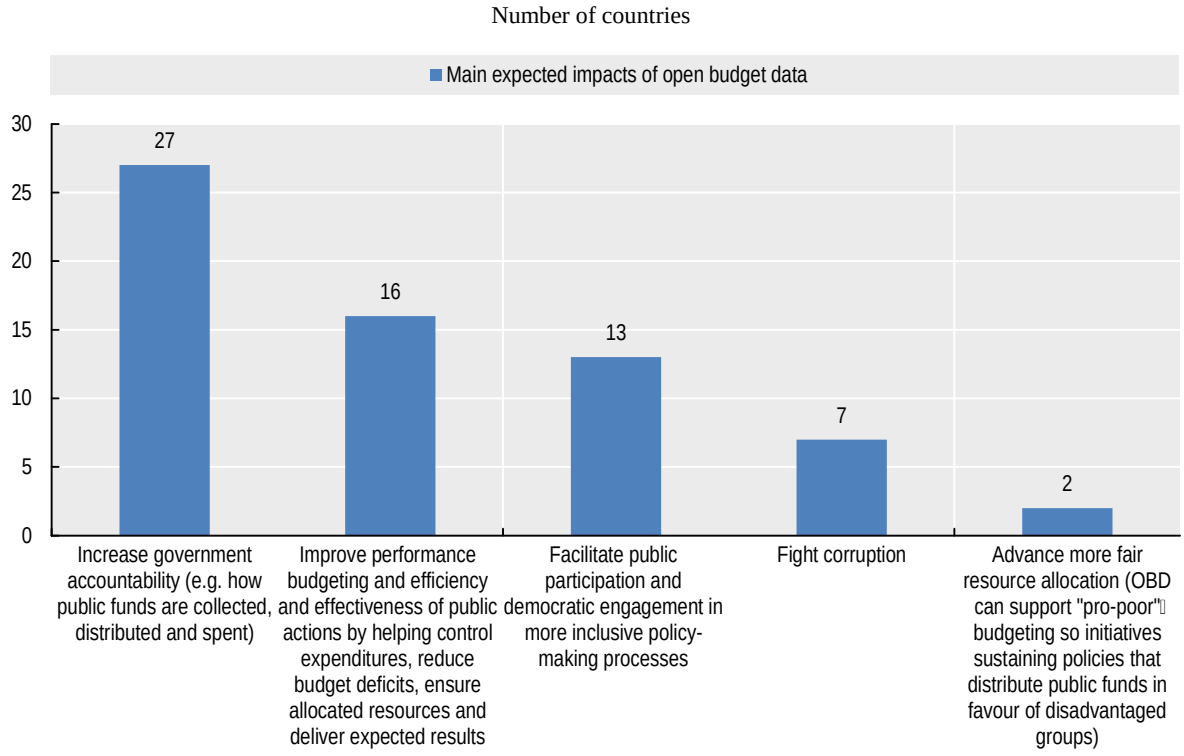
The OFDP, therefore, aims to standardise the form to be applied for government fiscal data and the content of the data to be released. In so doing, the OFDP ensures the quality of the data provided, and thus promotes its analysis and reuse.

Source: Global Initiative for Fiscal Transparency (n.d.), "Open Fiscal Data Package", webpage, www.fiscaltransparency.net/ofdp/ (accessed 17 July 2018).

In line with the above, the OECD has recently collaborated with the GIFT Network to develop additional guidance for budget transparency. These guidelines, published as part of the 2017 *OECD Budget Transparency Toolkit*,[15] focus on ensuring the quality of open budget data in line with the characteristics described in Chapter 3.

Among OECD countries and partner economies, 27 out of the 34 countries that responded to the OECD Survey on Open Government Data 3.0 assert that one of the main expected impacts of releasing open budget data is to increase government accountability, for example on how public funds are collected, distributed and spent (see Figure 6.4). While these results are not surprising, as they follow a principle of public sector transparency, the more innovative elements and subsequent impacts in the use of open budget data remain generally undermined in most countries.

Figure 6.4. The main expected impacts of open budget data across OECD countries and partner economies



Source: Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 72. What are the main expected impacts of releasing open budget data?

For example, the potential of open budget data to increase public participation and democratic engagement through more inclusive policy-making processes is not in most countries a major expected impact of open budget data. Results confirm that most countries omit the potential contribution of open budget data on participatory democracy. Only 13 countries out of 34 (less than 40% of those participating in the OECD Survey on Open Government Data 3.0) consider that the release of open budget data will facilitate and increase public participation and democratic engagement through more inclusive policy-making processes. This reflects a reactive and supply-driven approach to open data practices (i.e. e-government approach) rather than a proactive mindset looking into

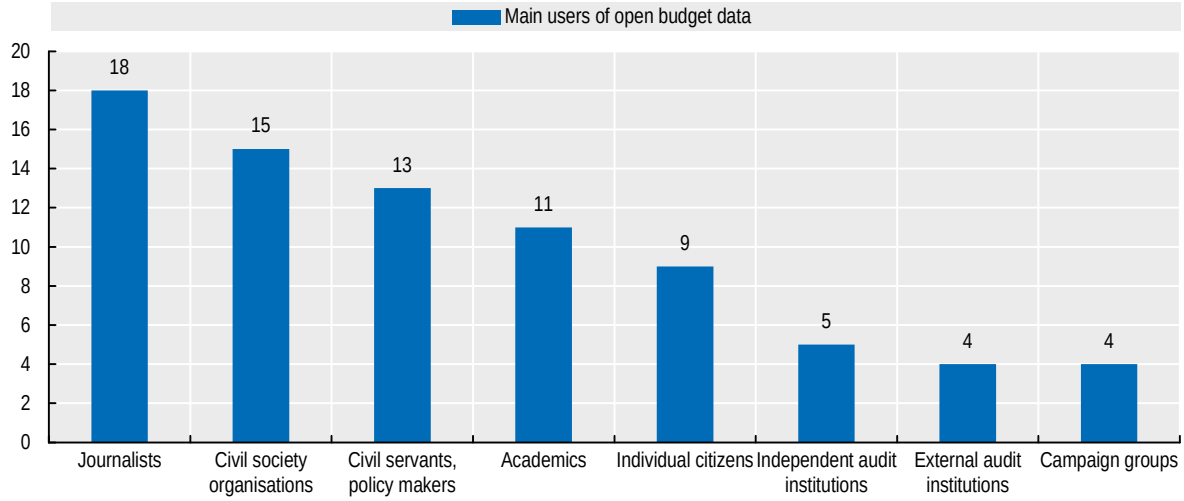
opportunities provided by open data to engage the public (i.e. digital government approach).

Among the 13 countries recognising the value of open budget data for participatory democracy, 12 argue that open budget data will facilitate public participation and democratic engagement by enabling greater citizen awareness on public finances. Further, 11 countries also consider that public participation will be facilitated because open budget data will enable a more informed public debate on public expenditures and fiscal sustainability. Some countries (Canada, Czech Republic, Estonia, Finland, Greece, Israel, Norway and Peru) also consider that open budget data will improve the opportunity of civil society organisations to use data to improve analysis, advocacy and policy proposals, hence public participation and democratic engagement.[16]

Yet, for open budget data to enable collaborative policy results, a more proactive approach needs to be developed to reach out to, and engage with, the ecosystem. Governments should not be passive actors after the release of open budget data, but should actively work to spur the reuse of open budget data once published. This is in order to meet the desired impact governments would like to deliver, for example in terms of government accountability, performance and public engagement.

There are opportunities and challenges present in this respect. In terms of open budget data reuse, journalists are identified by countries as the potential main users of open budget data (see Figure 6.5). This trend is positive when compared with the general approach taken by governments with regard to the engagement of journalists in the broader context of open government data policies, where this user group places at the lowest level in terms of priority (see Chapter 4).

Figure 6.5. Main expected users of open budget data users across OECD countries and partner economies



Source: Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 70. Below you will find categories of data users. From those categories, please select the ones that reuse open budget data the most.

Results from the OECD Open Government Data Survey 3.0 reveal that challenges also remain in terms of the adoption and implementation of open budget data practices. Governments should especially make active efforts in the way open budget data is presented if it is to encourage public participation in government budgetary decisions and budget monitoring.

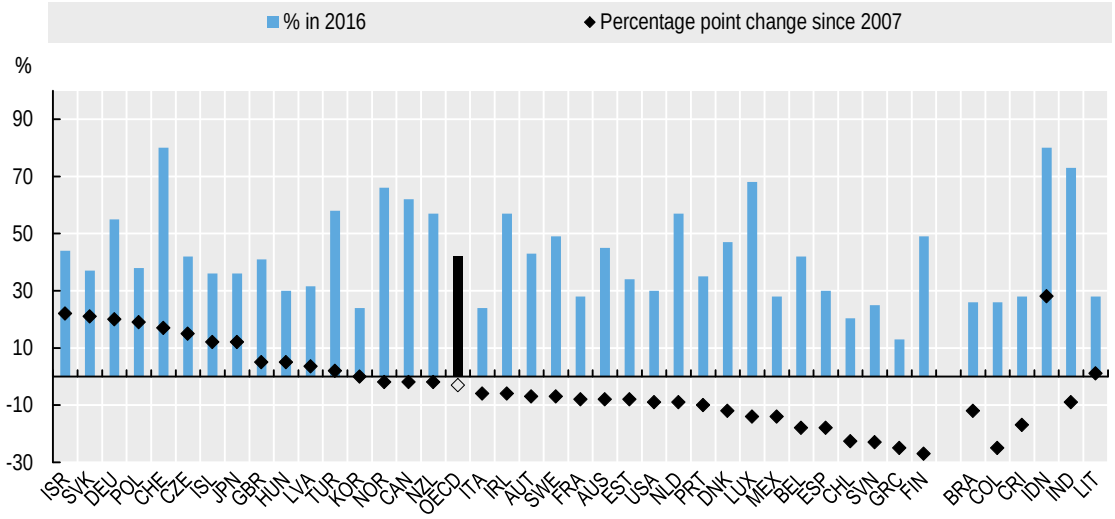
Data visualisation and the geolocation functionalities for public projects and investments are examples of user-friendly and interactive tools that can help encourage open budget data understanding, analysis and reuse. In fact, evidence indicates that 14 countries out of the 35 that replied to the OECD Survey provide data visualisation for government budget data on the central/federal open government data portal:[17]

- In **Australia**, the portal showcases data visualisation of government budget data in an interactive way. The use of budget data allowing users to search government expenses in an interactive way is presented in the section with examples of reuse of government data.[18]
- In **France**, in the section presenting the reuses of open government data, there is a data visualisation on government spending of taxes. Taxpayers can see how their money is being spent in the different areas of government, such as justice, health, culture or education.[19]
- In **Austria**, data visualisation on the spending of federal public sector organisations can be accessed through the section on the portal showcasing the different types of reuse of government data.[20]
- In **Germany**, the central open data portal offers direct access to the website of the Federal Ministry of Finance, where data visualisations are available on federal government revenues and on federal government expenditures. For example, users can visualise the share of expenditure per public sector organisations on the total federal government expenditure, and then go into further details as to the distribution of those expenditures.[21]
- In **Canada**, spending information can be visualised and analysed by users on the GC InfoBase, which is the official Canadian website allowing for the visualisation of government expenditure through interactive charts. In fact, the aim of the website is to make government budget data accessible for everyone, through innovative data visualisation tools that enable the analysis and presentation of complex data. [22] In the filter section of the datasets analysed, users can, therefore, visualise different facets of government spending, either for the federal government at large, or for specific federal public sector organisations, depending on the nature of their intended research.[23]

Open data for anti-corruption

Decreasing levels of public trust in governments support the business case for using digital technologies and data as tools for greater public sector integrity to enhance public trust. Among OECD countries, data from the Gallup World Poll indicate that the levels of public trust in government decreased by an average of 2% between 2007 and 2015 (OECD, 2017g), and decreased an additional percentage point (thus 3% total) on average for the period between 2007 and 2016 (see Figure 6.6).

Figure 6.6. Confidence in national government in 2016 and its change since 2007 across OECD countries and other economies



Note: 1. Data on the confidence in national government for Canada, Iceland and the United States in 2016 are based on a sample of around 500 citizens. 2. Data refer to the percentage who answered "yes" to the question, "Do you have confidence in national government?" (data arranged in descending order according to percentage point change between 2007 and 2016). 3. Data for Austria, Finland, Ireland, Norway, Portugal, the Slovak Republic, Slovenia and Switzerland are for 2006 rather than 2007. Data for Iceland and Luxembourg are for 2008 rather than 2007. 4. Information on data for Israel: http://dx.doi.org/10.1787/888932315602.
Source: OECD (2017d), *Government at a Glance 2017*, OECD Publishing, Paris, https://doi.org/10.1787/gov_glance-2017-en. With data from the World Gallup Poll.

Anti-corruption efforts can cover a broad range of activities addressing public sector challenges but also involving private sector actors. Within the public sector, anti-corruption initiatives range from open public procurement (see the section, Open contracting data, above), and the transparency of lobbying activities, private donations to public actors or governments grants to the public (see Box 6.7), public officials' salaries and declaration of assets, and companies' beneficial ownership registers.

At its core, the publication as open data of information related to anti-corruption efforts is greatly driven by national contexts and by the national anti-corruption agenda. For instance, as shown in Chapter 5, the United Kingdom is the only OECD country publishing beneficial ownership information as open data. These efforts are in line, first, with the goals of the UK G8 Presidency in 2013,[24] the UK 2014 Anti-corruption Plan, and, more recently, the UK Anti-Corruption Strategy 2017-2022.

Box 6.7. The 360 Giving Standard

360Giving was set up to enhance charitable grant making in the United Kingdom, bringing greater visibility to the sector through the sharing of information in a simple way. Currently, UK public bodies, trusts and foundations are not obliged to disclose their grants data by law (unlike other countries, e.g. the United States). 360Giving is an opt-in initiative where organisations publish their data in a voluntary manner and are encouraged to use it for better decision making.

The initiative's aims are to:

- reduce siloes between grant makers and beneficiaries by bringing like-minded organisations and individuals together to share ideas on new approaches to their decision making and learning
- embed 360Giving within the UK grant-making infrastructure, so that openly sharing and using grants data becomes the norm within the sector
- ensure that more informed decision making and learning is happening among different groups and in different contexts, resulting in changed approaches throughout the sector.

The main activities of the initiative are the creation and maintenance of an open data standard (standard.threesixtygiving.org), supporting bodies with publishing their data and building their capacity to use data as part of their work.

As of September 2018, 86 organisations are publishing their grants data in the 360Giving Standard. This includes a wide range of funders such as charitable trusts and foundations, central and local government departments, community foundations and corporate funders. At the time of writing, 85% of the data is up to date. The data is being used in many forms, such as a tool for supporting decision making, helping to match grant seekers to the best potential funders (www.beehivegiving.org/) and to support collaboration among local funder forums in the United Kingdom.

Source: Information provided by the 360 Giving initiative to the OECD.

Three countries (Canada, France and the United Kingdom) are publishing lobbying meetings as open data; and four countries (France, Korea, Spain and the United Kingdom) are publishing declaration of interest information as open data. In **Chile**, the Chilean Transparency Council has also been implementing initiatives focusing on the publication as OGD of data on lobbying meetings and on declaration of interest in order to fight corruption (see Box 6.8).

The *OECD Compendium on the Use of Open Data for Anti-Corruption* also found evidence of practices taking place among selected G20 and OECD countries, including **Argentina's** and **Brazil's** Executive Decrees from 2016 instructing the publication of public sector information as open data in an effort to tackle corruption challenges in the public sector. Examples include the publication of information on the corporate structure and ownership of companies collected by the National Register of Legal Entities in Brazil, and salaries and asset disclosure of senior-level authorities at the Executive Branch in Argentina. In **Germany**, the Ministry of the Interior published as open data the information included in the 2015 Report on Sponsorship Activities, including detailed

data on sponsorship contributions above EUR 5 000 (published in CSV and JSON formats).

Box 6.8. Chilean Transparency Council (Consejo para la Transparencia de Chile): Practice in matters pertaining to open data

The Infoprobidad and InfoLobby sites are among some of the most important initiatives that the Chilean Transparency Council has developed in terms of open data policy.

In order to prevent and sanction conflicts of interest by government authorities and public officials, the Infoprobidad site (www.infoprobidad.cl) facilitates the publication of interests and assets of the most important national public authorities. In fact, the highest authorities in the country, such as the President of the Republic, ministers and regional governors, are mandated to publish their declarations.

Currently, 28 171 declarations have been published (as of 20 July 2018), from a total of 15 852 authorities, about which any citizen can inquire regarding their declarations, downloading them either individually or in bulk, cross-referencing them with other databases.

The website, InfoLobby (www.infolobby.cl) consolidates in a single portal all audience or meeting records, of trips and gifts given to main country authorities, associated with 676 state entities. A systematised list of all lobbyists and interests managers acting as such in Chile is added to this information. The portal currently registers almost a million entries, among audiences, trips, donations, lobbyists and interest managers.

Results of open data practices

Different results have been achieved through opening up this data. Fundamentally, social control has been enabled by means of reusing information by the press and civil society. In addition, specific studies have been promoted through the analysis of information, public interest in these issues thanks to backed reports in published open data, among others. Inquiries by citizens to inform audiences, trips, donations, lobbyists, lobbying companies, and declaration of interests and assets of Chilean state authorities have also been made.

Source: Information provided by the Chilean Transparency Council.

In **Slovenia**, the application Erar, which uses OGD, offers information to users on all the business transactions of public sector organisations. It also provides insights into e-invoicing, data connected to business limitation, gifts public servants have received, as well as a display of foreign bank accounts of business entities. Erar, therefore, aims to make the business environment totally transparent so as to monitor how money flows from the public to private sector. This proactive approach towards transparency of public finances leads to the strengthening of public integrity, transparency of public finances and accountability of public service and has positive effects on decreasing the risks of systemic corruption.[25]

At the supra-national level, actors such as the International Open Data Charter (IODC) are also helping adherent national and local governments (including 10 OECD countries)

to move towards the publication of open data for anti-corruption purposes. With this in mind, the IODC developed the "Open Up Guide on Using Open Data to Combat Corruption" (see Box 6.9), which identifies priority datasets, open standards and use cases that can help actors from all sectors to prevent, fight and identify corruption at all levels (IODC, 2018).

Box 6.9. Open Data Charter's "Open Up Guide for Using Open Data to Combat Corruption"

The Open Data Charter's Open Up Guides are a curated resource that provides insights and guidance on how to make data available and can be used to address specific policy challenges. They identify key datasets, common standards and practices that charter supporters can implement and are designed to support strategic action and data interoperability. The guides are peer-reviewed and are developed through collaboration that engages both data publishers and data users.

In May 2017, the Open Data Charter published the "Open Up Guide: Using Open Data to Combat Corruption". The guide included guidance for governments on releasing data to help prevent, detect, investigate and prosecute corruption. At the heart of the guide is a list of the top 30 types of datasets[1] that can be used for anti-corruption purposes, along with the features that each dataset needs to have in order to be effective. Development of the guide began at the Open Government Partnership 2015 Summit and was shaped through workshops in London, Washington and Lagos.

In late 2017, the Charter team collaborated with the government of Mexico, Transparencia-Mexicana and Cívica Digital, to test how the anti-corruption guide can be used to combat corruption in Mexico. The project involved implementing the guide through assessing the datasets that the government already releases, and interviewing government officials that generate, use or publish data. The project has developed a better understanding of the state of relevant open data in Mexico and produced a set of recommendations for how to improve data publication. Mexico has now, through its National Anti-corruption System, officially adopted the guide as one of its key strategies for the coming years.

Insights from this project feed into the Charter's broader programme of using open data to tackle specific thematic policy problems. This includes updating this guide, and further developing other guides in the fields of agriculture, nutrition and climate action. For more information, see https://opendatacharter.net/.

Note: 1. See https://airtable.com/shrHY9KFJ5bircwvx/tblOY2aw1hYUuJze9.
Source: Information provided by the International Open Data Charter.

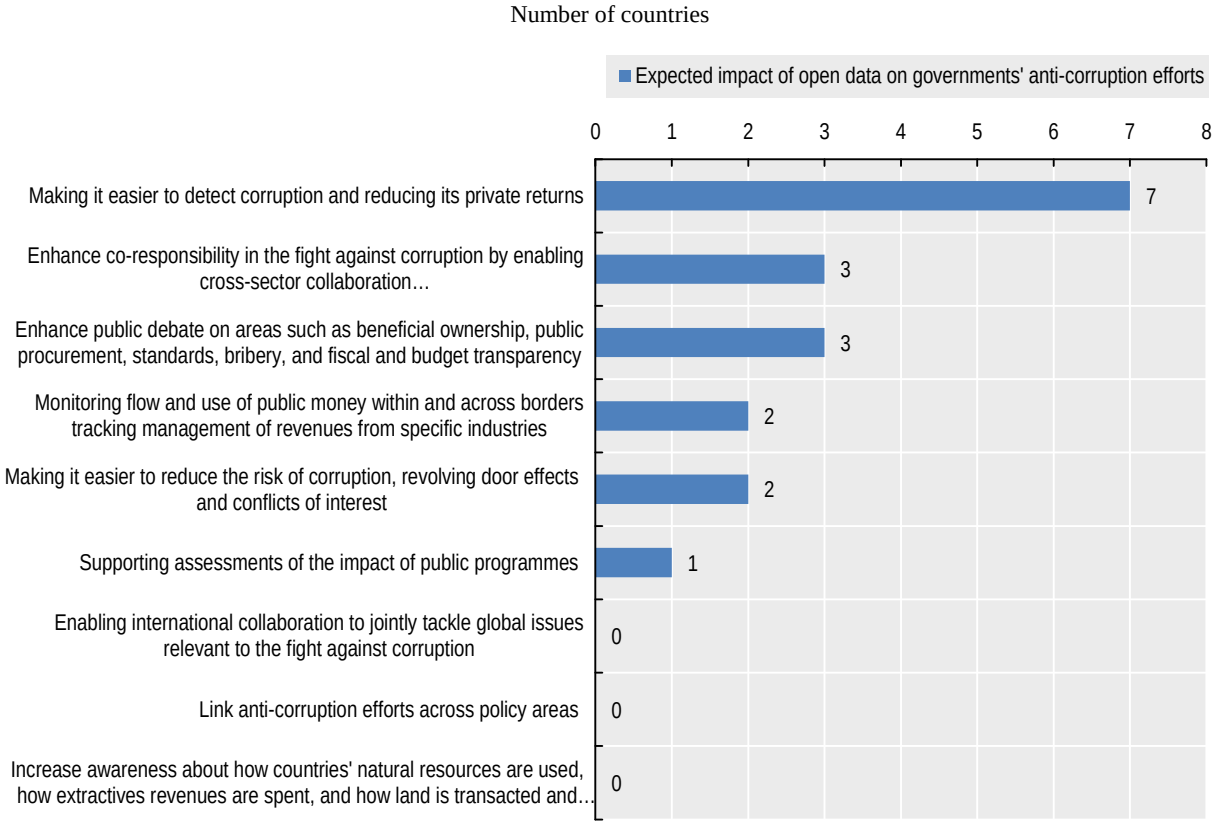
Among OECD countries and partner economies, results from the OECD Survey on Open Government Data 3.0 show that the fight against corruption is one of the areas where open government data is expected to have the highest impact is in the Czech Republic, France, Italy, Lithuania, Mexico, Slovak Republic, Slovenia and the United Kingdom.[26]

Yet, among those countries, only the Czech Republic, Mexico and Slovenia consider that open government data will enhance shared responsibility in the fight against corruption by enabling cross-sector collaboration among governments, citizens, civil society and

private sector organisations in the design of policies to prevent corruption and increase government integrity (see Figure 6.7).[27] This approach is crucial to moving from an approach on data publication to one where these data are used as a platform for multi-stakeholder collaboration and increased public sector integrity.

The evidence above shows that there is still room for improvement in terms of raising awareness in regard to the co-creative power that open government data can have in the fight against corruption. Additionally, only three countries (France, Mexico and the United Kingdom) consider that open government data should enhance public debate against corruption on areas such as beneficial ownership, public procurement, standards, bribery, and fiscal and budget transparency.[28]

Figure 6.7. Expected impact of open government data on government anti-corruption efforts across OECD countries and partner economies



Note: Data are available for eight countries. These are the countries that selected "Fight against corruption" in the options available for Question 58: Based on the open data initiatives that have been put in place, in which sectors does your government expect creating the biggest impact drawing upon the reuse of OGD? That is, Czech Republic, France, Italy, Mexico, Slovak Republic, Slovenia, United Kingdom and Lithuania.
Source: Based on information provided by seven OECD countries and one partner economy (Lithuania) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 58a. As you selected "fight against corruption", what is the main expected impact from open data on your governments' overall anti-corruption efforts?

Notes

1. For more information, see https://opendatacharter.net/.
2. For more information, see www.open-contracting.org/.
3. For more information, see www.internationalbudget.org/.
4. For more information, see www.threesixtygiving.org/.
5. Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 73. On the central/federal OGD one-stop-shop portal, do you provide data on public procurement either directly, indirectly or both?
6. Based on information provided by 20 OECD countries and 2 partner economies (Colombia and Lithuania) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 74. Please select the data that are provided on public procurement in the central/federal open data portal.
7. More information is available at www.open-contracting.org/data-standard/ and http://standard.open-contracting.org/latest/en/.
8. Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 76. Has your government adopted the Open Contracting Data Standard (OCDS)?
9. For more information, see: www.colombiacompra.gov.co/transparencia/gestion-documental/datos-abiertos.
10. Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 76b. Provide further details on the adoption of the OCDS (date of adoption, main initiatives, etc.). Information is from additional information Colombia provided to this question.
11. More information is available at www.gob.mx/contratacionesabiertas/home#!/.
12. Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 76b. Provide further details on the adoption of the OCDS (date of adoption, main initiatives, etc.). Information is from additional information the United Kingdom provided to this question.
13. For more information, see https://en.2016.ogpsummit.org/paris-declaration/.
14. For more information, see www.fiscaltransparency.net/.
15. For more information, see www.oecd.org/gov/budgeting/Budgeting-Transparency-Toolkit.pdf.
16. Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 72. What are the main expected impacts of releasing open budget data?
17. Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 75a. On the central/federal portal, are data

visualisations provided, either directly or indirectly, for government budget data (e.g. expenditures, revenues, etc.)?

18. Based on additional information Australia provided to Question 75a, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at http://data.gov.au/showcase/the-open-budget.

19. Based on additional information France provided to Question 75a, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at www.data.gouv.fr/fr/reuses/openbudget-fr-le-budget-un-outil-de-la-democratie.

20. Based on additional information Austria provided to Question 75a, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at www.data.gv.at/anwendungen/.

21. Based on additional information Germany provided to Question 75a, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at www.bundeshaushalt-info.de/#.

22. More information is available at www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html#about.

23. Based on additional information Canada provided to Question 75a, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html#start.

24. For more information, see www.gov.uk/government/publications/uk-g8-presidency-report-2013.

25. Based on information Slovenia provided to the OECD on 12 August 2018.

26. Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 58. Based on the open data initiatives that have been put in place, in which sectors does your government expect to create the biggest impact drawing upon the reuse of OGD?

27. Based on country responses to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 58a. As you selected “fight against corruption”, what is the main expected impact from open data on your governments’ overall anti-corruption efforts? Based on information provided by seven OECD countries and one partner economy (Lithuania). These are the countries that selected “Fight against corruption” in the options available for Question 58. Based on the open data initiatives that have been put in place, in which sectors does your government expect creating the biggest impact drawing upon the reuse of OGD? That is, Czech Republic, France, Italy, Mexico, Slovak Republic, Slovenia, United Kingdom and Lithuania.

28. Based on country responses to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 58a. As you selected “fight against corruption”, what is the main expected impact from open data on your governments’ overall anti-corruption efforts? Based on information provided by seven OECD countries and one partner economy (Lithuania). These are the countries that selected “Fight against corruption” in the options available for Question 58. Based on the open data initiatives that have been put in place, in which sectors does your government expect creating the biggest impact drawing upon the reuse of OGD? That is, Czech Republic, France, Italy, Mexico, Slovak Republic, Slovenia, United Kingdom and Lithuania.

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Chapter 7. Proactive government: Promoting open data reuse for value co-creation

This chapter presents OECD countries and partner economies' efforts aimed to spur the reuse of open government data by actors external to the public sector, focusing in particular on the initiatives that support reuse among businesses and civil society for value co-creation. Efforts to sustain data reuse in earlier policy stages – for example, prior to data publication (e.g. training events for public officials and awareness events for external actors) - are discussed in Chapters 2 and 4.

Lithuania was not an OECD Member at the time of preparation of this publication. Accordingly, Lithuania does not appear in the list of OECD Members and is not included in the zone aggregates.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Introduction

Governments have a key role to play with regard to data publication, but the focus is increasingly shifting from a mere data-supply and publisher perspective towards the understanding of a more collaborative and proactive nature of the actions governments should take with regard to open data.

Governments have taken considerable action to date to create open government data portals that have, in turn, become "one-stop shops" to facilitate data enhanced access (see Chapter 5), and, in a more advanced state, multi-stakeholder collaboration platforms. This required incredible efforts in the back-end to locate, clean and open up good quality datasets and make access easier for the public.

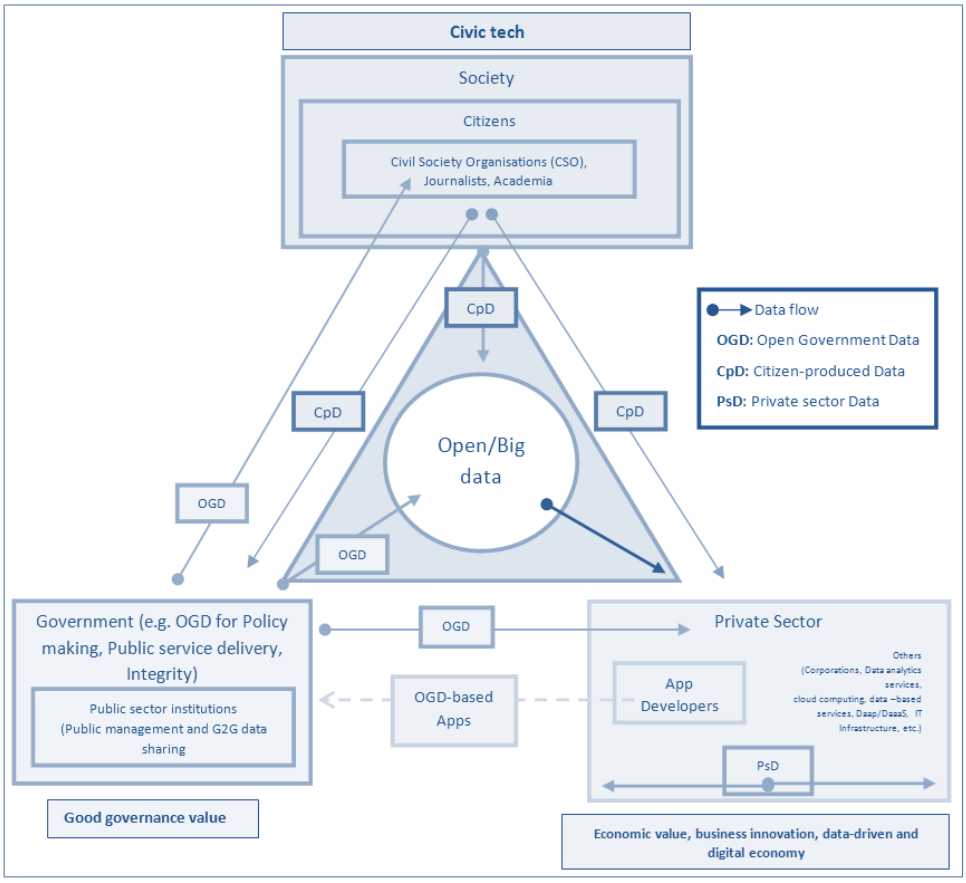
Emphasis and efforts were also highly focused on opening up government data and, eventually, developing the required policy instruments for this purpose (e.g. through publication guides and standards) rather than focusing on setting up data governance frameworks (see Chapters 3 and 5) to support advancements across the whole of government and set the foundations for data-driven public sectors.

Moving from a focus on data publication to a collaborative, problem-solving and purposeful approach is a necessary step towards the achievement of value co-creation. This has proved to be a challenging task for some OECD countries and partner economies. While some countries have acted to use data as a platform in order to favour public value co-creation (see Chapter 5), in others multi-stakeholder engagement is low if not absent, as it is the case in many countries where transparency-driven models for open government data (OGD) policies still prevail (see Chapter 4).

The open data ecosystem is made of diverse communities of actors. Governments collect, curate, process and reuse data, and, in a later stage, share it with the broader ecosystem (see Figure 7.1). In initial stages of open data policy, efforts to engage stakeholders may focus primarily on identifying data demand to prioritise data publication, increase users' awareness and build capacities among them for data reuse (see Chapter 4). However, efforts to engage communities in greater data reuse should be implemented throughout the whole policy-making and implementation cycle, moving beyond early engagement towards the implementation of initiatives focusing on increasing data reuse with a problem-solving approach.

The OECD Open Useful and Reusable data (OURdata) Index (see Background: The OECD Open Useful and Reusable data [OURdata] Index) measures these efforts, particularly as part of Pillar 3 (see Box 7.1), which focuses on measuring governments' activities to spur data reuse through data promotion initiatives and partnerships (Sub-pillar 3.1), data literacy programmes in government (Sub-pillar 3.2) and the presentation on the portal of initiatives reusing OGD to encourage reuse (Sub-pillar 3.3).

Figure 7.1. An overview of the open and big data ecosystem, its actors and roles



Source: Author, adapted from Rivera Perez, J.A. (2015), *Beyond Open Data Disclosure: Fostering the Impact of Open Government Data Towards More Efficient Public Institutions*, London School of Economics and Political Science, Department of Management, London.

Box 7.1. How the 2017 OURdata Index measures government efforts to promote data reuse within and outside the public sector

Efforts to promote data reuse among businesses are measured as part of Pillar 3 of the 2017 OURdata Index, Government support for data reuse.

- Sub-pillar 3.1 *Data promotion initiatives and partnerships* assesses the number of times hackathons and/or co-creation events were organised or funded by the government.

Efforts to support projects from civil society organisations aiming to solve public policy issues with the use of OGD are measured as part of Pillar 3 of the 2017 OURdata Index, Government support for data reuse.

- Sub-pillar 3.1 *Data promotion initiatives and partnerships* assesses if governments have supported projects from civil society organisations that aim to solve public policy challenges through the use of OGD.

Partnerships with business incubators and/or civil society organisations are measured as part of Pillar 3 of the 2017 OURdata Index, Government support for data reuse.

- Sub-pillar 3.1 *Data promotion initiatives and partnerships* measures the availability of partnerships from the government with either business incubators or civil society organisations to promote data reuse.

Guidelines to promote OGD reuse within the public sector are measured as part of Pillar 3 of the 2017 OURdata Index, Government support for data reuse.

- Sub-pillar 3.2 *Data literacy programmes in government* assesses the availability of guidelines for public servants on how best to reuse OGD in policy development processes.

The promotion of initiatives focusing on OGD reuse on the portal to promote greater reuse is measured as part of Pillar 3 of the 2017 OURdata Index, Government support for data reuse.

- Sub-pillar 3.3 *Monitoring impact* measures the availability of initiatives reusing OGD on the portal and the types of reuse presented (e.g. OGD-based applications, OGD-based data visualisation, OGD-based press articles, etc.).

The relevance of understanding user communities

The legitimacy of, and trust in, the public sector can be enhanced through more inclusive policies in which the needs of all groups in society, including minorities, are taken into account. The value of engaging with external actors in the ecosystem needs to be echoed and amplified at all levels within government. Value is not derived by one actor alone; value is derived through collaboration and co-creation by different actors.

A good grasp of how external actors of the broad ecosystem – as potential data re-users – work, understand and interact with data is the first step governments need to take when they seek to establish strategic partnerships. In some instances, engaging with

communities that appear more reticent to come forward or engage with the public sector, or appear to have a weaker understanding of the potential of open data, may require alternative methods of engagement (e.g. funding and financial awards). Additionally, engaging different communities may imply also addressing different levels and types of privacy-related concerns.

Building government – community common ground and knowledge in terms of each other's role and relationship with data is a helpful initial step. For instance, in **Canada** (see Box 7.2) First Nations people have trademarked the term OCAP, which determines their approach regarding data collection, protection and reuse. This means that engaging with First Nations in Canada requires first a full understanding of the concept of OCAP and its definition, which would help, secondly, to reciprocate understanding towards a more mature open data policy environment. It is governments' responsibility to be user-driven and understand the needs, motivation and drivers of the users.

The Canadian case provides a valuable example of the complexities and specificities of open government data practices within different communities, particularly when efforts are more focused on delivering benefits to specific user groups.

Box 7.2. OCAP in Canada

The First Nations principles of OCAP® are a set of standards that establish how First Nations data should be collected, protected, used, or shared. They are the *de facto* standard for how to conduct research with First Nations.

Standing for ownership, control, access and possession, OCAP® asserts that First Nations have control over data collection processes in their communities and that they own and control how this information can be used.

OCAP was established in 1998 in Canada during a meeting of the National Steering Committee (NSC) of the First Nations and Inuit Regional Longitudinal Health Survey, a precursor of the First Nations Regional Health Survey (FNRHS, or RHS). Originally, OCAP began as "OCA" with the members of the NSC affixing a "P" soon after to acknowledge the importance of First Nations' people possessing their own data. Possession is key to OCAP, as it asserts and underlies ownership, control, and access.

There is no law or concept in Western society that recognises community rights and interests in their information, which is in large part why OCAP was created. OCAP ensures that First Nations own their information and respects the fact that they are stewards of their information, much in the same way that they are stewards over their own lands. It also reflects First Nation commitments to use and share information in a way that maximises the benefit to a community, while minimising harm.

As the *Canadian Report of the Royal Commission on Aboriginal Peoples* (1999) pointed out, First Nations people have historically had a problematic relationship with researchers, academics, and other data collectors:

> *"In the past, Aboriginal people have not been consulted about what information should be collected, who should gather that information, who should maintain it, and who should have access to it. The information gathered may or may not have been relevant to the questions, priorities and concerns of Aboriginal peoples. Because data gathering has frequently been imposed by outside*

authorities, it has met with resistance in many quarters."

First Nations have often complained that they have been the focus of too much research (i.e. "researched to death"), that research projects are too often conducted by non-First Nations people, that research results are not returned to communities, and that the research does not benefit First Nations people or communities. Prominent examples of this can be found in the Barrow Alcohol Study of alcoholism in Alaska in the 1970s, the Nuu-chah-nulth First Nation "Bad Blood" research of the 1980s, and the diabetes study of the Havasupai Tribe in Arizona during the 1990s.

Protecting communities from these social, economic, legal and other harms was a major motivation for the creation of the First Nations principles of OCAP. In addition to protecting communities, the implementation of OCAP by First Nations is also a positive force for asserting information sovereignty and self-determination in all aspects of First Nations governance and community resurgence.

Note: OCAP® is a registered trademark of the First Nations Information Governance Centre (FNIGC).
Source: FNIGC (First Nations Information Governance Centre) (2018), "The First Nations Principles of OCAP®", webpage, http://fnigc.ca/ocapr.html (accessed 23 August 2018).

Establishing partnerships with data users

Generally speaking, evidence from the OECD Open Government Data Survey 3.0 indicates that practices across OECD countries and partner economies differ in terms of roles and approaches adopted by governments to establish partnerships with external actors and to organise initiatives that promote data reuse. These models range from centralised initiatives adopted by the public sector organisation co-ordinating open government data (see Chapter 1) to more vertical and decentralised models where the responsibilities are shared across public sector organisations.

In most countries, the two levels of actions coexist as it is both the central/federal authority co-ordinating open government data and individual line ministries that are in charge of organising initiatives that promote data reuse. Of the 32 countries that responded to the OECD Survey,[1] 18 follow this dual approach, with both the body in charge of open government data and individual line ministries organising events to promote data reuse.

In 8 of the 32 OECD countries and partner economies (Belgium, Estonia, Latvia, Slovak Republic, Slovenia, Spain, Sweden and Switzerland), the central/federal authority co-ordinating the open government data policy has the prerogative of organising initiatives that promote data reuse, whereas in 6 countries (Austria, Chile, Denmark, Germany, Netherlands and the United Kingdom), it is individual line ministries' own responsibility to organise initiatives that promote data reuse.[2]

It is important to understand that events organised by line ministries allow for specificity. A line ministry will generally organise an event promoting data reuse of government data it releases linked to a specific purpose and target specific problems and policy challenges. On the other hand, an event organised by the central/federal body in charge of open government data will tend to be more generic in its focus and targeted communities and goals. Discussions will refer for instance to open government data reuse in general terms, rather than on specific activities or collaboration. This also creates opportunities for cross-sector thinking and solutions rather than the top-down problem definition that is likely to occur when organised by sector experts in ministries.

Both approaches are essential to promote data reuse. General events on open government data are important to attract as much open data users as possible and promote a general knowledge and awareness regarding open data existence and potential for reuse. More targeted events are equally essential to promote specific types of data reuse and target relevant communities of open data users to deliver value in specific policy fields and around specific policy problems.

Engagement by user group

OECD countries and partner economies have taken actions to build capabilities and spur the readiness of businesses and civil society organisations to embark on open data efforts (see Chapter 4). However, further actions to formalise and institutionalise collaboration between governments and key actors from the ecosystem would be helpful to promote data reuse.

Evidence from the OECD Open Government Data Survey 3.0 indicates that generally speaking, governments have established partnerships with civil society organisations to encourage government data reuse rather than with businesses. Results show that between January 2015 and July 2017, 21OECD countries have developed partnerships with civil society organisations and 15 have done so with business incubators to support the reuse of open data by companies and start-ups (see Table 7.1).

Civil society

In **France**, Etalab (the French Taskforce for Open Data, which is part of the Prime Minister Services) has established a number of partnerships with civil society organisations to support greater reuse of open government data. For example, it formalised a partnership with the Fondation Internet Nouvelle Génération, which is an association that helps firms and government institutions anticipate changes stemming from the digital transformation, including challenges related to government data reuse.[3]

In the **Netherlands**, a partnership was established with the Open State Foundation - an organisation that works on the release of public sector information as open data so as to promote government transparency. The organisation actually aims to encourage open government data reuse through the organisation of hackathons, such as the Accountability Hackathon.[4]

In **Spain**, the Public-Private Partnership Forum on the Reuse of Public Sector Information (Forum CPP-RISP) was established by the government in partnership with Open Knowledge Spain and the World Wide Web Consortium. The Forum CPP-RISP aims to encourage the reuse of OGD (and public information generally) to create high-value services for citizens and companies in Spain, so as to foster economic development through more employment and activity.[5]

In **Greece**, in 2016, the government signed an agreement with the Open Technologies Alliance to promote openness actions in the field of education. The purpose of the agreement is to promote the implementation of open digital technologies that can support the reuse of OGD in the field of education and research. In addition, the agreement aims to also encourage greater awareness of OGD, through workshops, conferences, etc.[6]

Table 7.1. Development of partnership(s) with business incubators and civil society organisations across OECD countries and partner economies

	Partnership(s) with business incubators to support the reuse of open data by companies and start-ups	Partnership(s) with civil society organisations to support greater reuse of open government data
Australia	●	●
Austria	●	●
Belgium	●	●
Canada	●	●
Chile	○	○
Czech Republic	○	○
Denmark	○	○
Estonia	○	○
Finland	●	●
France	●	●
Germany	●	●
Greece	○	●
Ireland	○	○
Israel	●	●
Italy	○	○
Japan	●	●
Korea	●	●
Latvia	○	●
Mexico	●	●
Netherlands	●	●
New Zealand	○	●
Norway	●	●
Poland	○	○
Portugal	○	○
Slovak Republic	○	●
Slovenia	○	●
Spain	●	●
Sweden	○	○
Switzerland	○	○
Turkey	○	○
United Kingdom	●	●
United States	○	●
OECD total		
Yes ●	15	21
No ○	17	11
Colombia	●	○
Lithuania	○	○
Peru	○	●

Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 47 and Question 53. The questions were: Since January 2015, has the central/federal government developed partnership(s) with business incubators to support the reuse of open data by companies and start-ups? *and* Since January 2015, has the central/federal government developed partnership(s) with civil society organisations to support greater reuse of open government data?

In the **United States**, the government has established different partnerships with civil society organisations that work in the field of open data in order to organise roundtables, hackathons or conferences. Partnerships have for example been created with the Centre for Open Data Enterprise, the Sunlight Foundation or the Data Foundation, such as for the organisation of the White House Open Data Innovation Summit in 2016.[7]

In many countries, partnerships with civil society organisations to support greater government data reuse have occurred in the scope of the Open Government Partnership (OGP).[8] This has been the case, for example, in **Finland** and the **United Kingdom**.[9] In the United Kingdom, civil society organisations were invited to review the 2016-2018 Open Government Partnership Action Plan that includes efforts to support open government data publication and reuse.[10]

Businesses

In line with **Spain's** commitment to economic value creation**,** partnerships with business incubators such as the state-owned enterprise, the National Innovation Company (Empresa Nacional de Innovation), offer support to small- and medium-sized enterprises (SMEs) as well as entrepreneurs dealing with digital technologies and data reuse, so that they are incentivised.[11]

The **Colombian** project, "Emprende con datos", supports entrepreneurs that use open government data to solve public policy issues. The project offers support to entrepreneurs through mentoring and advice to develop sustainable business models and applications that will address public policy issues. The 2018 "Emprende con datos" event presented different projects of entrepreneurs that have reused OGD to address public policy issues related to health, education, agriculture, mobility, security, territorial planning and sustainable development.[12]

The government of **Canada** supports the Open Data Exchange, which is a body that assists firms in accessing and reusing open data for commercial purposes through government funding. This network brings together data users and suppliers, provides training courses and guidelines, as well as financial support to firms using open data.[13] For example, the ODX Ventures programme offers financial support to firms in Ontario that reuse open data.[14]

In **Australia**, the Department of the Prime Minister has established a partnership with Pollenizer (a business incubator) to create "DataStart" - a nation-wide campaign that aims to assist start-ups that reuse OGD. Through competition, different start-ups present their business ideas based on OGD reuse to a panel of judges from government, investment organisations and industries. The winning start-up receives assistance and financial support to create and release its OGD-based product.[15]

In **Israel**, EcoMotion aims to support the growth of start-ups in the field of smart transportation, promoting in particular more innovation in that area. It offers an innovation toolkit to public and private sector organisations to foster the creation of innovative products and services in transportation. Start-ups that reuse OGD in their business models are supported and accompanied to develop and establish themselves.[16]

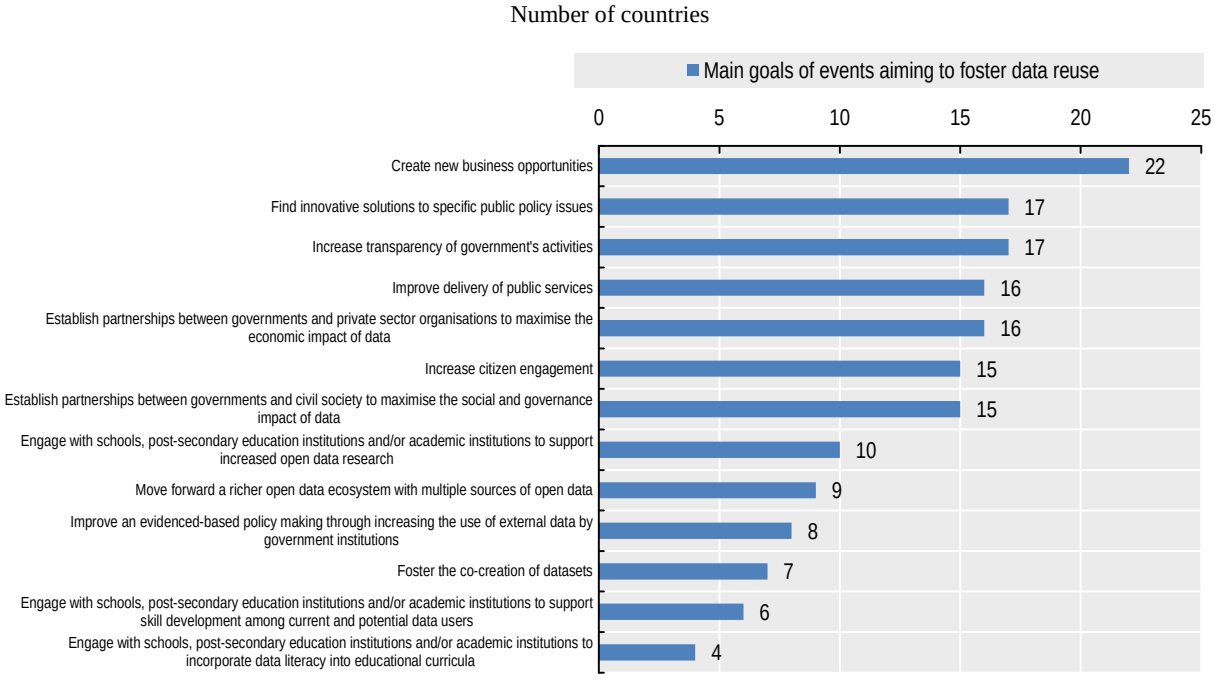
Academia and the research community

Results from the OECD Survey on Open Government Data 3.0 confirm that generally speaking, the academic field has not been included among key strategic stakeholders and has been ignored to a large extent in terms of communication and outreach see

Chapter 4). This is important, given their role as users of data, either for research purposes or as allies to help address societal and economic matters, as well as policy issues, and to spur more informed, evidence-based policy making.

For instance, OECD countries and partner economies do not aim to engage with schools, post-secondary education institutions or academic institutions as potential problem-solvers who might reuse government data. Only 10 out of the respondent 34 countries have engaged these actors towards greater open data research (see Figure 7.2). This user group is also not a priority in terms of capacity building as per the data presented in Chapter 4.

Figure 7.2. Main goals of events aiming to foster data reuse across OECD countries and partner economies



Source: Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 62. What are the main goals of events aimed at fostering effective and innovative data reuse?

In light of this evidence, governments would need to change this mindset, considering the important role academia and researchers can play as users of OGD, in particular in relation to open science and research (see Box 7.3). Therefore there is a need to further include and make explicit the connection of research data as part of broader government efforts, such as for open government, digital government, and open data policies (OECD, 2015).

In this light, open government data emerges as valuable input that can contribute to enriching the availability of, and access to, research data. This is in line with the principles of OECD instruments promoting good practices in terms of government openness, data sharing and data-driven public sectors such as the OECD Recommendation on Digital Government Strategies (OECD, 2014), and the OECD Recommendation of the Council concerning Access to Research Data from Public Funding (OECD, 2006).

Box 7.3. Open science and education

From a science perspective, open data is important for two main reasons:

- The data itself can be of enormous value for research, particularly in the social sciences and humanities, as well as health and environmental sciences.
- The legal and ethical frameworks that apply to OGD can often be directly applied to research data (in fact some research data qualifies as government data).

Work on indicators and monitoring and impact assessment of OGD can also provide insights into equivalent issues relating to open science data.

A series of challenges has been identified for implementing OGD, relating to policy, technical, economic, organisational, cultural and legal aspects. For instance, disclosure policies may limit data transparency, and copyright issues may result from a lack of clarity with regard to data ownership. Agreed common data standards are lacking, which creates barriers to data access and utilisation. Feasible business cases are needed, taking into account the costs of data collection, processing and provision. A culture of OGD needs to be nurtured in both the government and across the entire OGD ecosystem of users, including researchers.

There are lessons to be learned at the policy level from OGD experiences that have implications for open data for science. New policies to maximise the potential value of OGD for scientific research, e.g. in relation to complex societal challenges, may also be required.

Source: Dai, Q., E. Shin and C. Smith (2018), "Open and inclusive collaboration in science: A framework", *OECD Science, Technology and Industry Working Papers*, No. 2018/07, OECD Publishing, Paris, https://doi.org/10.1787/2dbff737-en.

Also, academic institutions are relevant in terms of digital skills capacity building in the long term. Finland, Ireland, Japan and Korea are the only countries reporting organising events engaging schools, post-secondary and academic institutions with the intent of promoting data reuse, and who stress the need of incorporating data literacy into educational curricula.[17]

Moving forward in this direction and involving all relevant actors (e.g. ministries of education, libraries, universities) is needed not only in terms of data skills but in terms of digital inclusion and literacy.

Partnering with local governments

The value of local actors is of paramount relevance for promoting open data reuse and advancing the implementation of open data policies. The OECD's close collaboration with key OECD countries and partner economies such as Argentina (OECD, forthcoming a), Mexico (OECD, 2016, 2018a), Norway (OECD, 2017a) and Sweden (OECD, 2018b) has found evidence that open data ecosystems are often more vibrant at the city and/or municipal level. Local authorities have more means and opportunities to identify and engage communities of data re-users. Local authorities are generally closer to citizens, offer more direct services to citizens and work in areas that have an immediate impact on citizens. They are therefore more likely to be used to developing services that are of

interest to citizens. In **France**, as in **Argentina**, the open data movement begun at the local level and exerted bottom-up pressure, leading the central government to strengthen its efforts to meet the advancements taking place at the local level.

In most countries, the central/federal open government data strategy/policy requests central/national governments to engage local government bodies to encourage open government data publication or reuse at subnational levels. Results of the OECD Survey on Open Government Data 3.0 indicate that 74% of countries include open data initiatives at the regional or local level in their open government data policies or strategies.[18]

Yet, in the context of the central open data policy, bringing local governments on board may turn out to be challenging in countries where decentralised and/or federal administrative systems of government limit central influence, as opposed to more centralised countries with unitarian models of government. Thus, countries will show different multi-level governance models, which will have an impact on the possibilities of the central government to extend the objectives of OGD policies to the local level and align local OGD initiatives with central policy goals.

In general terms, OECD countries and partner economies often follow a partnership and collaborative approach with local governments. In most countries, central/federal ministries regularly partner with subnational levels of government on open government data initiatives. In 27 countries out of the 35 that responded to the OECD Survey,[19] the central/federal ministries have indeed established partnerships with subnational levels of government for open government data initiatives.

In some countries, collaboration with subnational levels of government has focused generally on open government data publication. In others, collaboration with subnational levels have been established to encourage open government data reuse; this has been done essentially through hackathons events.[20]

In **Israel,** for example, the central institution in charge of open government data (i.e. the Government Information and Communication Technology (ICT) Authority, within the Office of the Prime Minister), in partnership with the municipality of Tel Aviv-Jaffa, organised a number of hackathons.[21] In **Ireland**, a government hackathon in 2017 was organised by both the national government and a number of bodies from local governments.[22]

In **Australia** and **New Zealand,** the Open Data Community Forum of the Cross-Jurisdictional Open Data Working Group of the Australian New Zealand Land Information Council (www.anzlic.gov.au/anzlic-council) is a good example of national and local OGD initiatives also working collaboratively across borders. One of the strategic focus areas of the group under the technology ecosystem is to establish affordable and scalable cloud-based solutions for the delivery of federated spatial data.[23]

In **Mexico**, the central government created the Open Mexico Network http://mxabierto.org, as a multi-stakeholder mechanism to promote best practices, build capacities and enable the publication of open data from the local level on the central OGD portal. The network aims to establish an open data community with local governments, building on the basis of collaboration and technical-methodological support.[24]

In **Finland**, the Six City Strategy (6aika) brought together the six largest cities to tackle common urban challenges. Open data is at the core of this initiative. These six cities are committed, for instance, to opening up government data in order to foster the digital economy (e.g. through the creation of OGD-based products by local companies). In this

light, a collaboration between the central and local government has been established with the objective to develop local open data portals and enable greater data interoperability.

In **Ireland**, local authorities co-operate with the national Open Data Initiative by linking their data to the national portal and encouraging the use of open data among their own stakeholders. A government hackathon took place in February 2017 as a result of the collaboration of a number of bodies from the national and local government.[25]

Similarly, as previously mentioned in relation to other types of partnerships, in some countries requirements regarding open data initiatives at the subnational level of government lie in the scope of the Open Government Partnership Action Plan.[26]

In **Greece,** for example, in its Third National Action Plan, a number of regions, such as the Western Macedonia Region or the Region of Central Greece, have some commitments to fulfil, which involve mainly open government data publication.[27] In the **United Kingdom** as well, states have their own commitments in the Action Plan that need to be accomplished.[28]

In **Canada,** as part of Canada's Third Biennial Plan to the Open Government Partnership, the government has committed to "expand collaboration with provincial, territorial, and municipal partners on further standardising and harmonising the delivery of open government data across jurisdictions."[29]

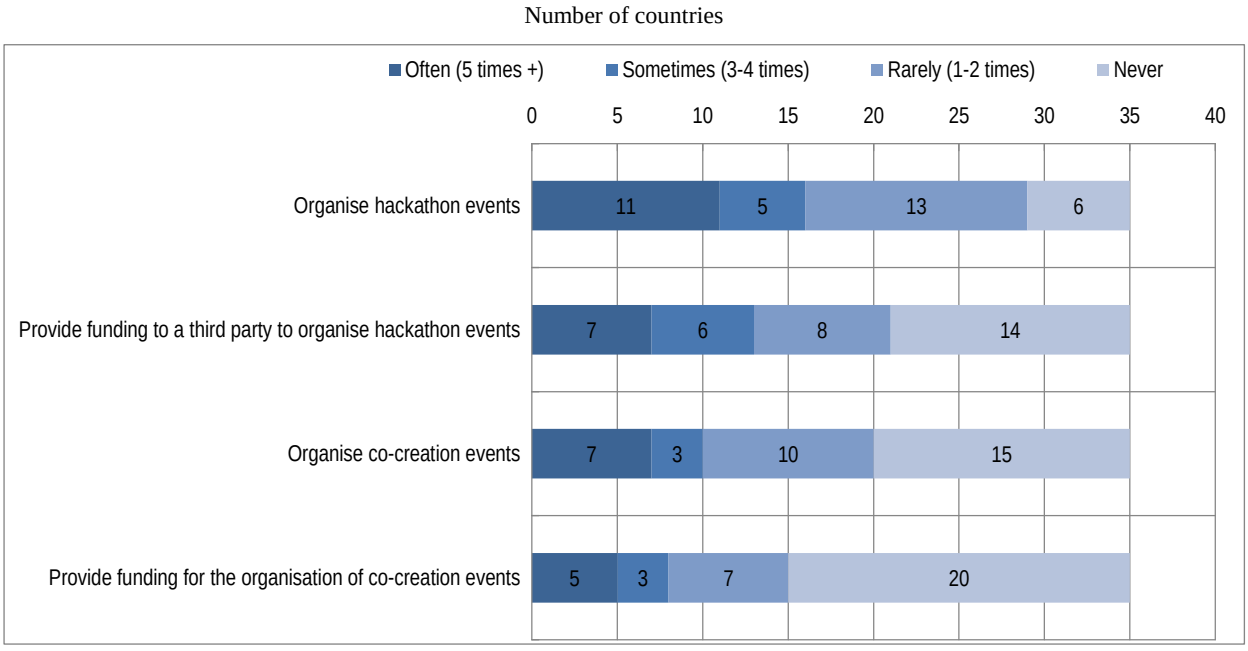
Designing events with a problem-solving mindset to stimulate data reuse

Governments are thrust into a somewhat innovative space when championing OGD to showcase opportunities for government data use and reuse. In their role as champions governments can be an important inspiration to spur the use and reuse of open data. Therefore, clarity concerning the goals of data reuse initiatives is an essential precondition to capitalise on the value of data reuse exercises.

As publication with purpose is growing as an overall approach for meaningful data release and enabling data as a platform (see Chapters 4, 5 and 6), it is important that events promoting data are also organised following the same rationale and driven by a problem-solving style.

Generally speaking, results from the OECD Open Government Data Survey 3.0 indicate that between January 2015 and December 2016, 13 countries out of 35 organised hackathons events one to two times to encourage open government data reuse (see Figure 7.3) and 16 organised these events five or more times in the same period.

Figure 7.3. Frequency of initiatives implemented by central/federal ministries/agencies to promote open government data reuse among businesses in OECD countries and partner economies



Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 44. In practice, since January 2015 how often have representatives from central/federal ministries/agencies been involved in the following events/activities aimed at promoting the reuse of open government data among businesses?

In examples of governments' championed "hackathons", the former does not simply provide the data to work with. Oftentimes governments also provide fruitful collaboration among those gathered, either by participating in the development of the solutions or creating the adequate space for different actors to collaborate. The idea is to bring together a plethora of actors with different backgrounds: government civil servants, the private sector, non-government organisations (NGOs), academics, civil society, journalists and interested citizens. All parties will bring to the table a certain amount of knowledge and data of their own, in addition to the data provided by the government.

Hackathons indeed stand as one of the most used practices by governments to promote the reuse of open government data and act as platforms. However, these events are sometimes conceived with a do-what-you-can approach with the available data instead of a design thinking approach (see Box 7.4).

The flourishing of hackathon events at all levels of governments, though a positive indication of the vibrant growth of efforts aimed to stimulate communities' engagement and focus on value creation, has also raised concerns in relation to the need to orient these initiatives to specific expected goals. For example, the lack of a structured engagement can lead to limited final impact or results. Instead, purpose-related hackathon initiatives can be pivotal, not only to concrete value creation, but also to the establishment of long-term relations and shared engagement for the delivery of impact through OGD reuse, e.g. identifying a problem to be solved and bringing on board all relevant actors to find out

and crowdsource knowledge to explore how it could be solved and how data can contribute to the solution.

Box 7.4. Design thinking and open data: Mixing technology and problem-solving mindsets

Design thinking concentrates on addressing the needs of the consumers of a specific product or service and the infrastructure that enables the consumption of the product. The focus in a design thinking rationale is on the action, prototyping and a problem-solving approach, whilst including consumers or users all throughout the process.

In the field of policies, adopting a design thinking approach refers to the identification of a problem and the subsequent focus on finding a solution, including those experiencing the problem and for whom the solution is designed.

Open government data, therefore, stands as an important tool to both help public sector organisations identify a specific problem of a particular group, but can also be used as a means to solve the issue. Furthermore, it facilitates the collaboration process the government needs to implement with users to find a solution.

Following this approach, governments should, therefore, release OGD if it can help to contribute to a design thinking approach, either helping to pinpoint a policy problem or contributing to its solution. OGD cannot be understood as an isolated instrument, requiring policies and strategies focusing just on its release.

In fact, OGD should be considered as part of a public policy-making process, rather than as an isolated policy. That is, governments need to understand that OGD is not an end in itself, but rather a means to an end, as it can contribute to different policy fields. It must be understood as a tool that can help a process advance towards effective delivery.

Source: Brown, T. and J. Wyatt (2010), "Design thinking for social innovation", *Stanford Social Innovation Review*, Winter 2010, www.ssireview.org/articles/entry/design_thinking_for_social_innovation; OECD (2017b), *Systems Approaches to Public Sector Challenges: Working with Change*, OECD Publishing, Paris, https://doi.org/10.1787/9789264279865-en.

Some countries have stopped, interestingly enough, organising hackathons, as results were not evident. Learning from these experiences, countries like **Colombia** and **Sweden** (see OECD, 2018c, 2018b) have strengthened their focus of similar initiatives around the sustainability of outputs in the long run, rather than stopping at the media effect of one-time awarding events, in order to promote continuity.

Hack4Sweden, the Swedish initiative aimed to engage different government agencies in the establishment of partnerships for OGD reuse is an excellent example of a government initiative aimed to spread the sense of ownership and responsibility for the OGD policy and agenda beyond the co-ordinating entity (see Box 7.5). However, it is also relevant to highlight the Swedish experience in terms of their efforts to move towards more mature, better designed problem-solving hackathon efforts.

Box 7.5. Hack4Sweden: An example of government agencies taking the lead on OGD-led innovation

Hack4Sweden has the mission to build a community for open data creation to enable sustainable innovation across society. The goal is to stimulate and support government agencies in their ongoing work aimed at making more government data available.

In 2018, as part of the process of increasing the digitalisation of the public sector, the Swedish government focused on open data and data-driven innovation. The idea is that the public sector, academic sector, enterprise and creative organisations from civil society need to interact and collaborate to produce value. The initiative rests on the recognition that the reuse of open data can contribute to increased growth, participation and efficiency. Open and data-driven innovation provide an essential opportunity for increasing numbers of people to contribute to the digital welfare of tomorrow's society and together produce social benefits. The Swedish government further argues that where there is social benefit, the public sector should be an active partner. Access to authorities' data, if provided as open data, can lead to a variety of benefits for both society and economy. This includes giving citizens, businesses and civil society the opportunity for increased and more democratic involvement in the authorities' activities, for example in policy design and implementation, but also for transparency in government decisions.

One of the Swedish government's objectives is to advance the use of open data to support innovation and participation, and the Hack4Sweden initiative is considered a key enabler of this virtuous collaboration between the public sector and the broad ecosystem. It aims to regularly engage public authorities throughout the years in actively seeking to enable effective reuse of open data to facilitate the emergence of a data market and to help strengthen people's empowerment and to jointly build digital services. Hackathons to promote competitions in the reuse of data to deliver public value are one of the activities foreseen to promote the role of the government as a platform. This is why the management of the initiative Hack4Sweden is assigned to different public sector organisations in different years.

Source: OECD (2018b), "Key findings", *Digital Government Review of Sweden: Enabling Government as a Platform Through a Data-driven Public Sector*, OECD Publishing, Paris, www.oecd.org/gov/digital-government/key-findings-digital-government-review-of-sweden-2018.htm.

Focus on data-driven business opportunities

Data from the OECD Open Government Data Survey 3.0 show that in 22 out of 34 respondent countries, the main objective of events aiming to promote data reuse is to create new business opportunities. Indeed, in most countries, hackathon events are one of the most frequently used initiatives by governments to promote the creation of new business opportunities through the reuse of government data there examples are vast:

- In **Austria** for example, the Data Market Austria Project organises most of its events with the aim of creating new business opportunities through the reuse of government data. In fact, the idea of this project is to promote a data-services ecosystem by nurturing an environment that encourages data-driven innovation.[30]
- In **Poland**, the Ministry of Digitization organised a hackathon with the purpose to present ways to create new business opportunities through the reuse of open

government data using central and local government data To further support the winning team, the government offered financial funding for it to implement its idea and an internship in the Center for Informatics Technology (COI), which provides training, assistance in project management and communication specialists.[31]

- In **Estonia**, Garage48 Open and Big Data is a hackathon event that offers the opportunity to reuse government data for either public or private purposes.[32]
- In **Korea**, the Open Data Start-up Competition is a contest that promotes the creation of new business opportunities through the use of open government data. In fact, different start-ups using OGD are encouraged to participate, and winners are provided government funding and assistance for the further development of their start-up.[33]
- In the **Czech Republic**, in 2016, the government organised a hackathon to support innovation and entrepreneurship across the Czech Republic, Hungary, Poland and the Slovak Republic. Participants were required to create a mobile application on the Internet of Things, using open government data. The winners of the contest would then receive government funds to be shared in order to secure the development of their applications.[34]
- In **France**, data producers are proactive in the organisation of hackathons/open data camps in order to stimulate data re-user ecosystems. Etalab (the French Taskforce for Open Data) offers its support with the organisation of the events, in direct contact with organisers (which are most often ministries or public offices).
- The **Mexican** initiative, Labora (launched in 2016), is an example of a crucial government effort to create a hub and strengthen the Mexican business ecosystem by providing support to data-driven start-ups with a focus on the data-driven economy. The second stage of Labora (known as Labora 2.0) was launched in 2017 and is expected to multiply the outcomes resulting from the sector-specific generation, publication and reuse of open data for business activity (OECD, 2018a).

Focus on good governance and benefits for citizens

Another main goal of events promoting government data reuse is to find innovative solutions to specific policy challenges:

- In the **United Kingdom**, the Geovation challenge calls on UK start-ups to help address issues related to food security, transportation, energy, using in particular OGD on location. Using government geographic data, participants are encouraged to find ideas that will improve health and well-being, support local economic growth, enhance the natural environment or enable sustainable living.[35]
- In **Japan**, the Stat Dash Grand Prix 2016 called for the creation of innovative solutions to enhance the use of the government statistics webpage, in order to promote the usage of government statistical data in the field of socio-economics.[36]
- In **France**, in 2015, an open data camp was organised in the French National Assembly to promote the use of parliamentary data to find innovative solutions to different policy issues. For example, participants were encouraged to consider new uses of the data of the National Assembly to promote citizen participation.[37]
- In the **Netherlands**, in 2015 the Open Data Estafette Smart Logistics and Ports focused on finding innovative solutions to foster the accessibility, sustainability and safety of ports. The winners of the contest built an initiative using OGD,

enabling skippers to better determine their departure time so as to sail more efficiently and use less fuel.[38]

- The **Swedish** initiative Hack4Sweden, described above, has been helpful to promote open government data reuse to solve societal challenges. One of the winners of the recent edition used open government data and artificial intelligence technologies to create an innovative job-matching application, where job seekers are presented with job offers that best match their personality. This evolution of the relevance of Hack4Sweden to connect data reuse with value creation is the result of the government's critical assessment of previous editions that had not delivered relevant examples of stakeholder engagement, as they had failed to connect policy issues with data-driven solutions engaging the ecosystem (OECD, 2018b).
- In **Korea**, the government organised an open government data contest in the domain of food safety. Participants, in particular entrepreneurs, were encouraged to reuse government data in agriculture to develop ideas promoting food safety.[39]
- In **Chile**, in 2015, "VisualizaDA!", a co-creation event, organised by the government, called for artists and developers living in Chile to reuse OGD to create data visualisations. In fact, the purpose of the event was to showcase the different possibilities of OGD reuse in terms of data visualisation.[40]

Other countries have implemented events to improve the delivery of public services and public sector performance (see Chapter 2):

- In **Belgium**, the Open Data Workshop organised in 2016 aimed to encourage public sector organisations to reuse OGD in order to improve the delivery of their public services. Different representatives of regional governments made presentations on OGD in their respective regions, and the different benefits of open data were discussed, including better public service delivery.[41]
- In **Ireland**, the "HackYourWayDay", in 2017, focused on improving citizens' search and interaction with government public services through the use of OGD and geodata. One of the winning teams created an application allowing users to choose a place to live, depending on the different needs of the user, including public services.[42]
- In **Greece**, in 2016, the "IT 4 GOV", a hackathon organised by the government, promoted the creation of innovative applications using new technologies to enhance administrative reforms. Participants in the hackathon were encouraged to create applications that would improve public service delivery. Winners were guaranteed assistance from the government to further develop their application.[43]
- In the **Slovak Republic**, the "DanubeHack" is a government initiative that aims to promote the reuse of OGD, and in particular geographic data, for the creation of applications contributing to public sector efficiency, open information or the environment. Participants are also encouraged to suggest other areas in which OGD reuse could contribute to value creation. To better guide participants and their search of geographic OGD, a list of government datasets and their locations are provided by the organisers. In 2016, one of the winning teams presented an application allowing owners of orchards and vineyards to input the location of pruned branches in order to help biomass producers locate and collect them. Furthermore, in 2017, in addition to the hackathon, the government added the Open Data Academy as part of the event, which aimed to present the opportunities and benefits of reusing geographic OGD and its different implications.[44]

- In the **Netherlands** for example, the Accountability Hackathon focuses on the creation of applications and tools that increase government accountability in terms of performance and budgeting. In 2017, the winner of the hackathon developed an application allowing citizens to compare the expenses and performances of municipalities.[45] These efforts are key to promote the benefits of open budget data, for instance (see Chapter 6).
- In **France**, in collaboration with Etalab, the Court of Audit organised a data session in 2016, calling upon developers, designers, data journalists and students to reuse its data released as open data, in order to create new OGD-based applications. Government financial data, in particular, were made available for participants to reuse and develop data visualisations or applications. The event was organised to encourage further innovation and new forms of collaboration of the Court of Audit with civil society.[46]
- In Israel, the government through the Civil Service Bureau or the Ministry of Justice has been working in partnership with civil society organisations to improve the accessibility and fairness of government hiring practices or to provide information on NGOs to better inform citizens that support them.

In addition to the above-mentioned initiatives, some countries have developed guidance for public servants on how best to leverage open government data in policy development processes. Austria, Colombia, Czech Republic, Finland, France, Japan, Korea and the United Kingdom provide overarching guidelines applicable to all ministries and agencies on how to best use open government data to inform policy-making processes.[47]

In **Japan,** the guideline titled "Let's Begin Open Data" assists public sector organisations on how best to leverage open government data in policy development processes, providing in particular use case examples in the public sector of OGD.[48] In **Korea,** the guide "What Big, Why Big, How Big?" offers guidelines on OGD and big data, and in particular on their reuse within the policy-making process.[49] Finally, in **Finland,** the recent research report on the use of open government data (*The Utilisation of Data Increases Innovation and Growth*) offers proposals that are important for public servants to understand the use of open government data in policy development processes.[50]

Publicly funded, third-party organised events

Regarding the provision of funding to a third party to organise hackathon events, Australia, Denmark, Finland, Japan, Korea, Mexico and the United Kingdom report the regular provision of funding (five times or more from January 2015 to December 2016) for the organisation of these events:

- The **Irish** Open Data Engagement Fund is a government fund that supports the publication and reuse of open government data. It sponsors projects by any organisation, including civil society organisations, aimed at reusing open government data to deliver concrete benefits and that are feasible in practice.[51]
- In **Australia**, a number of public sector organisations financially contribute to GovHack, an open data hackathon held on an annual basis. For example, the Australian Taxation Office, or the Australian Department of Finance are sponsors of this hackathon.[52]
- In **Denmark**, a number of hackathons have been organised in collaboration with other organisations, such as the Alexandra Instituttet, supported by the government through funding.[53]

- In **Finland**, some public sector organisations provided financial support to the 2015 Open Finland Challenge, organised by Open Knowledge Finland. For example, the National Institute for Health and Welfare was one of the official sponsors.[54]
- Similarly, in **Japan,** through the General Incorporated Association "Vitalizing Local Economy Organization by Open Data & Big Data" (VLED), several hackathons have been funded by the central government.[55]
- In **Korea,** the government has provided financial support to a number of different hackathons organised from 2015 to late 2016. For example, the government provided support to the Global Datathon, a contest aiming to address climate issues, using OGD.[56]
- In **Mexico,** the federal government financially supported a number of hackathons such as the Xalapa Hackathon Interactive Museum, a local initiative aiming to promote the use of OGD to address local problems in Xalapa.[57]
- In the **United Kingdom**, Digital Catapult, a leading digital technology innovation centre, organised the Environmental Data Exchange Hack Weekend in 2015, for which the government provided financial support.[58]

The wealth of initiatives – and in particular hackathon events – organised or co-organised by governments to increase collaboration in data reuse to co-create value and services are an excellent concrete example of one of the main characteristics of a digital government, i.e. to be able to act as "government as a platform" (OECD, forthcoming b). What we have observed, as the evidence above shows, is that as open data policies and ecosystems mature across countries, so does the nature of hackathons.

The data community in action: User-led events and external initiatives

It is important to note that governments have not been the only group initiating and engaging actors outside the public sector to reuse OGD, but external stakeholders, such as civil society organisations, have themselves been organising events and solutions focusing on the reuse of open government data. The support for OGD reuse can therefore not be defined as only a top-down behaviour coming from governments, but it is also, and increasingly becoming, a bottom-up initiative:

- In the **United States**, Code for America constitutes a good example of initiatives led by non-government actors supporting the reuse of OGD to promote government collaboration with citizens in order to implement more user-driven services and solutions (i.e. a government that serves its community better). In fact, Code for America focuses on the use of digital technologies to incorporate users' needs and create platforms for collaboration to design and deliver policies and services that are more suited to everyone, as well as specific groups. OGD release and reuse are encouraged by Code for America to encourage public dialogue, foster productive participation on different key issues and enable communities to assist governments in working better. To achieve that aim, different guidelines are offered to governments and events such as the National Day of Civic Hacking to promote awareness on OGD reuse and its benefits.[59]
- The **Open Data for Development** (OD4D) is another example of a non-governmental organisation that encourages the reuse of OGD by leaders and innovators in government, civil society, the media and businesses. One of the initiatives it implemented to encourage data reuse among local communities is the School of Data Fellows. The school aims to train and support journalists, civil

society organisations and individuals to use data effectively within their respective communities and countries. It provides data and leadership training, as well as coaching to help participants organise different sorts of events and build up their communities.[60]

In addition, a number of private bodies are becoming substitutes to governments in terms of initiators and promoters of open government data reuse. In fact, more and more private bodies providing cloud computing services to host open government data are promoting data reuse and providing the tools for it on specific online platforms. Such bodies are therefore bypassing governments as the main co-ordinators to OGD reuse, and are creating ecosystems of open data users. The Amazon Web Services (AWS) is a typical example of a private platform hosting OGD and promoting its reuse, with data analytics products such as Amazon EC2, AWS Lambda or Amazon EMR. AWS is thus an alternative platform to central/federal open government data portals and indicates how private cloud computing providers can play the role of governments in promoting OGD reuse.[61]

The City on a Cloud Innovation Challenge is a good example of AWS's efforts to engage data users, either from within or outside the public sector, and create its own ecosystem. The Challenges calls for local and regional governments, private and public schools, non-profit organisations and districts to compete to provide an innovative solution to a government challenge using AWS services, in particular, to do so.[62]

These recent and growing initiatives indicate that OGD and the promotion of its reuse is not the sole prerogative of governments, but rather confirm that governments' need to become platforms that promote collaboration with data is essential for joint problem solving. OGD, therefore, stands as a clear sign that governments need to become platforms for collaboration, working with non-governmental actors to address common challenges, and leaving private actors to substitute for government responsibilities if it can be more effective, but securing alignment with governments' overall strategic objectives, and protection of public interest, e.g. ensuring privacy and security protection.

Notes

1. Based on information provided by 29 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 61a. Who is in charge of organising initiatives that promote data reuse?
2. Based on information provided by 29 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 61a. Who is in charge of organising initiatives that promote data reuse?
3. Based on additional information France provided to Question 53, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at http://fing.org/?About-Fing&lang=fr.
4. Based on additional information the Netherlands provided to Question 53, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://openstate.eu/nl/over-ons/.
5. Based on additional information Spain provided to Question 53, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at

http://forocpp.es/foro-cpp-risp/ and http://datos.gob.es/es/noticia/reunion-de-trabajo-y-nuevas-incorporaciones-al-foro-cpp-risp.

6. Based on additional information Greece provided to Question 53, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://ellak.gr/2016/06/plesio-sinergasias-gia-to-schediasmo-anaptixi-ke-ipostirixi-draseon-anichtotitas-me-to-ipourgio-pedias-gredu-opensource/.

7. Based on additional information the United States provided to Question 53, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.data.gov/event/white-house-open-data-innovation-summit/.

8. Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 53. Since January 2015, has the central/federal government developed partnership(s) with civil society organisations to support greater reuse of open government data?

9. Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 53. Since January 2015, has the central/federal government developed partnership(s) with civil society organisations to support greater reuse of open government data?

10. Based on additional information the United Kingdom provided to Question 53, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.opengovernment.org.uk/2017/02/15/2016-18-open-government-action-plan-implementation-meeting-1-feb-2017-meeting-note/ and www.opengovpartnership.org/countries/united-kingdom.

11. Based on additional information Spain provided to Question 47, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.agendadigital.gob.es/agenda-digital/noticias/Documents/Presentaci%C3%B3n%20ENISA.pdf and www.enisa.es/es/conocenos/info/quienes-somos.

12. Based on additional information Colombia provided to Question 47, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at http://emprendecondatos.gov.co/.

13. Based on additional information Canada provided to Question 47, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://codx.ca/about-us/.

14. More information is available at https://codx.ca/odx-ventures/.

15. Based on additional information Australia provided to Question 47, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.pmc.gov.au/news-centre/data/datastart and https://datastart.com.au/.

16. Based on additional information Israel provided to Question 47, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.ecomotion.org.il/.

17. Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 62. What are the main goals of events aimed at fostering effective and innovative data reuse?

18. Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 5b. Does the scope of the central OGD policy/strategy include the development of open data initiatives at the regional/state or local level?

19. Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 63. Do central/federal ministries/agencies regularly partner with subnational levels of government (local, regional) on open government data initiatives?

20. Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 63. Do central/federal ministries/agencies regularly partner with subnational levels of government (local, regional) on open government data initiatives?

21. Based on additional information Israel provided to Question 63, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

22. Based on additional information Ireland provided to Question 63, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

23. Based on additional information Australia provided to Question 63, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

24. Based on additional information Mexico provided to Question 63, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

25. Based on additional information Ireland provided to Question 63, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

26. Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 63. Do central/federal ministries/agencies regularly partner with subnational levels of government (local, regional) on open government data initiatives?

27. Based on additional information Greece provided to Question 63, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

28. Based on additional information the United Kingdom provided to Question 63, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

29. Based on additional information Canada provided to Question 63, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

30. Based on additional information Austria provided to Question 62, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at http://datamarket.at/.

31. Based on additional information Poland provided to Question 62, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.hackathon.gov.pl/ and www.coi.gov.pl/en.html.

32. Based on additional information Estonia provided to Question 62, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at http://garage48.org/events/openbigdata.

33. Based on additional information Korea provided to Question 62, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://goo.gl/XS2tWb.

34. Based on additional information the Czech Republic provided to Question 44, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.ctu.cz/tiskova-zprava-2016-v4-hackathon-zavadime-internet-veci-do-bezneho-zivota.

35. Based on additional information the United Kingdom provided to Question 44, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://geovation.uk/challenge/.

36. Based on additional information Japan provided to Question 62, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.e-stat.go.jp/api/event/statdash2016/.

37. Based on additional information France provided to Question 62, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.etalab.gouv.fr/datacampan-un-open-data-camp-a-lassemblee-nationale.

38. Based on additional information Netherlands provided to Question 62, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.connekt.nl/nieuws/open-data-estafette-smart-logistics-ports/.

39. Based on additional information Korea provided to Question 44, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at http://kfdn.co.kr/28880.

40. Based on additional information Chile provided to Question 44, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.cultura.gob.cl/convocatorias/invitan-a-creadores-a-participar-de-visualizada/.

41. Based on additional information Belgium provided to Question 62, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at http://data.gov.be/fr/open-data-workshop-12-janvier-2016.

42. Based on additional information Ireland provided to Question 62, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://data.gov.ie/content/announcing-hackyourwayday-winners.

43. Based on additional information Greece provided to Question 62, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.minadmin.gov.gr/?page_id=12958.

44. Based on additional information the Slovak Republic provided to Question 44, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at http://danubehack.eu/.

45. Based on additional information the Netherlands provided to Question 44a, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://accountabilityhack.nl/.

46. Based on additional information France provided to Question 44, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.etalab.gouv.fr/datasession-des-28-et-29-mai-la-cour-des-comptes-approfondit-sa-demarche-dopen-data-et-dopen-gov.

47. Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 60. At the central/federal level of government, are there guidelines available for public servants on how best to leverage open government data in policy development processes?

48. Based on additional information Japan provided to Question 60, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

49. Based on additional information Korea provided to Question 60, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at https://goo.gl/djw3Wo.

50. Based on additional information Finland provided to Question 60, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at http://valtioneuvosto.fi/artikkeli/-/asset_publisher/10616/raportti-datan-hyodyntaminen-lisaa-innovaatioita-ja-kasvua.

51. Based on additional information Ireland provided to Question 55, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.per.gov.ie/en/minister-of-state-murphy-launches-open-data-engagement-fund/.

52. Based on additional information Australia provided to Question 44, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at www.govhack.org/competition/sponsors/.

53. Based on additional information Denmark provided to Question 44, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

54. Based on additional information Finland provided to Question 44, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at http://openfinlandchallenge.fi/.

55. Based on additional information Japan provided to Question 44, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.vled.or.jp/en/event/.

56. Based on additional information Korea provided to Question 44, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at http://datathon.kbig.kr/.

57. Based on additional information Mexico provided to Question 44, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at http://datos.gob.mx/blog/xalapa-primer-municipio-en-datosgobmx?category=noticias&tag=gobiernos-locales.

58. Based on additional information the United Kingdom provided to Question 44, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at www.digicatapult.org.uk/.

59. More information is available at www.codeforamerica.org/.

60. More information is available at https://schoolofdata.org/ and https://schoolofdata.org/fellowship-programme/.

61. More information is available at https://aws.amazon.com/it/opendata/.

62. More information is available at https://aws.amazon.com/stateandlocal/cityonacloud/.

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Annex 7.A. Annex tables

Table 7.A.2. Availability and types of initiatives reusing OGD that are promoted on central/federal open government data portals in OECD countries and partner economies

	Promotion of initiatives reusing government data	Data visualisation reusing public data	Applications reusing public data	Press articles reusing public data	APIs reusing public data	Blog articles reusing public data	Academic papers reusing public data
Australia	●	●	●	●	●	●	○
Austria	●	●	●	●	●	○	●
Belgium	○	-	-	-	-	-	-
Canada	●	●	●	○	●	●	○
Chile	○	-	-	-	-	-	-
Czech Republic	○	-	-	-	-	-	-
Denmark	○	-	-	-	-	-	-
Estonia	●	●	●	○	○	○	○
Finland	●	○	○	●	○	○	○
France	●	●	●	●	●	●	●
Germany	●	-	-	-	-	-	-
Greece	○	-	-	-	-	-	-
Ireland	●	●	●	○	○	●	○
Israel	○	-	-	-	-	-	-
Italy	●	○	○	○	○	●	○
Japan	●	●	○	○	●	○	○
Korea	●	●	●	●	●	●	●
Latvia	●	●	●	●	●	●	●
Mexico	●	●	●	○	●	●	○
Netherlands	○	-	-	-	-	-	-
New Zealand	●	●	●	○	●	●	○
Norway	●	●	●	○	○	○	○
Poland	●	●	●	○	●	○	○
Portugal	●	●	●	●	○	○	○
Slovak Republic	●	○	●	○	○	○	○
Slovenia	●	●	●	●	●	○	○
Spain	●	○	●	●	●	●	●
Sweden	○	-	-	-	-	-	-
Switzerland	●	●	●	○	●	●	●
Turkey	○	-	-	-	-	-	-
United Kingdom	●	●	●	○	●	●	○
United States	●	●	●	○	●	○	○
OECD total							
Yes ●	23	18	19	9	15	12	6
No ○	9	4	3	13	7	10	16

	Promotion of initiatives reusing government data	Data visualisation reusing public data	Applications reusing public data	Press articles reusing public data	APIs reusing public data	Blog articles reusing public data	Academic papers reusing public data
Colombia	●	●	●	●	●	●	●
Lithuania	○	-	-	-	-	-	-

Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 78 and Question 80. The questions were: On the central/federal government data portal, do you promote initiatives that reuse government data? *and* Which type of reuse of public data are presented on the OGD one-stop-shop portal?

Chapter 8. Keeping the promise: Monitoring policy implementation and assessing impact

This chapter presents the efforts that OECD countries and partner economies have taken to monitor and measure the implementation, performance and impact of open data policies. It also explores data privacy audits, and links the relevance of innovation skills such as storytelling to policy communication and dissemination efforts.

Lithuania was not an OECD Member at the time of preparation of this publication. Accordingly, Lithuania does not appear in the list of OECD Members and is not included in the zone aggregates.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Introduction

As open data efforts have gained traction around the world, the need to strengthen the capacity to assess and measure the progress and impact of open data policies is at the core of governments' discussion. From a government perspective, it is critical to sustain investments to open up government data with a sound business case (i.e. clearly defined value propositions), presenting the potential benefits of embarking on open data efforts. It is also critical to be able to count on *ex post* policy assessment tools to evaluate the actual realisation of such benefits.

Measuring the performance of open government data (OGD) strategies requires "mapping" causality in order to link government data with direct and measurable impacts (Rivera Perez, 2015). This requires tracking efforts throughout the whole data value chain from data collection and processing to its publication and reuse (Ubaldi, 2013). From this perspective, the data value chain acts as a guiding post for each essential stage of the data lifecycle, i.e. from need identification, to use, for impact and change (Open Data Watch, n.d.).

The development of assessment tools, measurements and metrics are key elements of effective data governance models as they help to measure policy performance and support actions to adapt data policies when required. Yet, a strong focus on data publication as a policy outcome can lead to a qualitative policy measurement approach where the number of datasets available for public access becomes the golden measure in terms of policy outcomes. This can be quite misleading, incentivising more efforts on data release, rather than on data reuse, which is a prerequisite for value creation (OECD, 2017a).

There are several challenges that can add to the complexity of measurement efforts in the content of open data policies. For instance, in relation to measuring impact in terms of social and good governance value? How can the true impact of open data on public sector integrity be measured in order to move beyond the general discourse on the relevance of opening up government processes and decisions for anti-corruption efforts? What is the real benefit of open data in terms of public service delivery?

Other challenges relate to responsibilities and roles. Who should be responsible for measuring policy results? Are national or international benchmarks more powerful tools to support policy making? More importantly, how do measurement efforts influence the policy cycle and effectively used for more informed open data policies? How can we best capture the value of international policy instruments such as the OECD Open Useful and Reusable data (OURdata) Index, the Open Data Barometer,[1] the Open Knowledge's Global Open Data Index,[2] the Open Data Watch's Open Data Inventory (ODIN)[3] and the European Data Portal, an initiative led by the European Commission, which aims to measure open data maturity of EU countries. How can they be maximised as policy-making tools rather than reducing them to mere international rankings?

This chapter presents the efforts made by OECD countries and partner economies to monitor and evaluate policy results. These efforts are in line the OECD Open Useful and Reusable data (OURdata) Index (see Background: The OECD Open Useful and Reusable data [OURdata] Index), which assesses governments' measurement efforts in Pillars 1 and 3 (see Box 8.1).

Box 8.1. How the 2017 OURdata Index measures the measurement efforts of governments on OGD

Efforts to use the implementation of OGD requirements as performance indicators of public sector organisations are measured as part of Pillar 1 of the 2017 OURdata Index, Data availability.

- Sub-pillar 1.1 *Content of the open by default policy* assesses the extent to which the implementation of OGD requirements is considered as part of performance indicators of public sector organisations.

The availability of assessments to ensure OGD respect national norms and standards in terms of security, privacy, confidentiality and intellectual property is measured as part of Pillar 1 of the 2017 OURdata Index, Data availability.

- Sub-pillar 1.1 *Content of the open by default policy* assesses if the government has undertaken between January 2012 and December 2016 assessments for the whole central/federal government to ensure that OGD respect national norms and standards in terms of: 1) security; 2) privacy; 3) confidentiality; and 4) intellectual property.

The availability of assessments to evaluate if all relevant legislation and regulations in terms of security, privacy, confidentiality and intellectual property on OGD is measured as part of Pillar 1 of the 2017 OURdata Index, Data availability.

- Sub-pillar 1.1 *Content of the open by default policy* assesses if the government has undertaken between January 2012 and December 2016 assessments for the whole central/federal government to evaluate whether all relevant legalisations and regulations on OGD in terms of: 1) security; 2) privacy; 3) confidentiality; and 4) intellectual property are in place.

The availability of assessments to understand the main barriers to the reuse of OGD among businesses and/or civil society organisations is measured as part of Pillar 3 of the 2017 OURdata Index, Government support for data reuse.

- Sub-pillar 3.1 *Data promotion initiatives and partnerships* assesses if the government has monitored the main barriers to the reuse of OGD among businesses and civil society organisations through assessments, such as reports.

Government efforts to conduct or finance research on the economic or social impact of OGD are measured as part of Pillar 3 of the 2017 OURdata Index, Government support for data reuse.

- Sub-pillar 3.3 *Monitoring impact* measures if governments from January 2015 to December 2016 have conducted or financed research on the economic and/or social impact of OGD.

Government efforts to measure the impact of OGD on public sector performance are measured as part of Pillar 3 of the 2017 OURdata Index, Government support for data reuse.

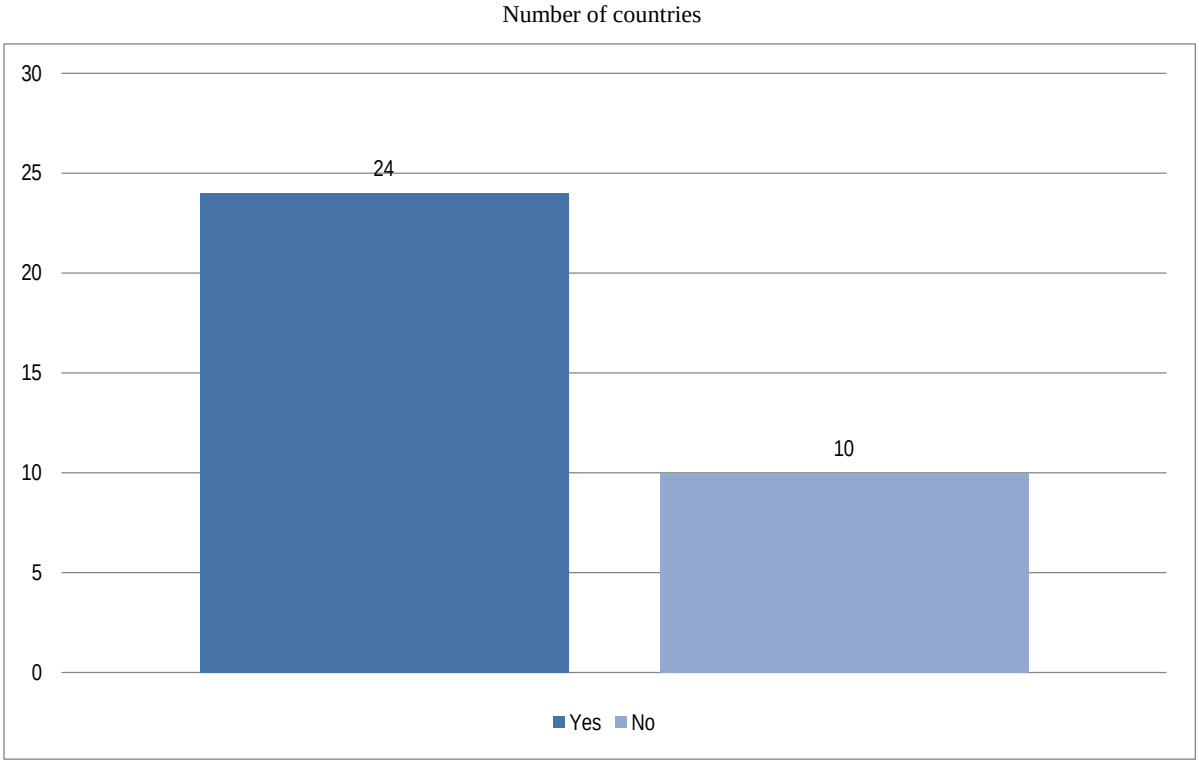
- Sub-pillar 3.3 *Monitoring impact* measures if government measure the impact of OGD on public sector performance.

Developing metrics and performance indicators

It is essential for governments to establish measurement tools to assess the achievement of the objectives established in open government data strategies. Once available, these measurements need to be disseminated and used across the public sector to evaluate the realisation of expected results, and if needed, adapt policies accordingly. In line with an open by default approach, results of the measurements should be available for public access to support governments' accountability in regard to open data policy.

It is not surprising that monitoring advances in the publication of data by public sector organisations stands as a common alternative when it comes to mainly used metrics for open government data progress. In 24 out of 34 countries that responded to the OECD Survey on Open Government Data 3.0, there are key performance indicators (KPIs) used to monitor the achievement of the objectives set in the open government data strategy. In most of these countries, KPIs focus essentially on tracking the number of government datasets available on the central/federal open government data portal as well as their formats, and the number or percentage of government institutions releasing open data (see Figure 8.1).[4]

Figure 8.1. Availability of key performance indicators used to monitor the implementation of OGD policy across OECD countries and partner economies



Source: Based on information provided by 31 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 2, Question 66. Are there any specific key performance indicators used to monitor the achievement of the objectives set in the OGD strategy?

One of the most relevant examples among OECD countries and partner economies is the **United States**' Open Data Dashboard – an open source project that holds US public

agencies accountable to data users in terms of project implementation and data publication (see Box 8.2).

Box 8.2. The US Open Data Dashboard

The US Open Data Dashboard is a government tool that helps monitor public sector organisations' progress in implementing the US Open Data Policy (i.e. the Project Open Data). Based on different indicators, public sector organisations are assessed on their performance and assigned a particular score depending on the current status of implementation:

- **Enterprise data inventory** (EDI): This indicator measures different elements regarding data catalogues of public sector organisations. For example, the indicator assesses:
  - if public sector organisations provide an updated version of their EDI (i.e. data catalogue) to the Office of Management and Budget's information system (OMB Max)
  - the total number of all datasets listed in the EDI, categorised as either public, non-public or restricted
  - the total number of datasets that are or that can be made publicly available to all
  - the total number of datasets in the EDI in comparison to the public data listing (government data released as OGD)
  - the percentage increase of datasets added to the EDI.
- **Public data listing**: This indicator focuses more on the government data released as OGD of public sector organisations. It measures for example:
  - the number of functioning versus broken links on the federal OGD portal
  - the number of downloadable publicly listed datasets
  - if the federal OGD portal has successfully harvested the public data listing of public sector organisations
  - if public sector organisations have published a page for their open data activities.
- **Public engagement**: This indicator assesses the efforts of public sector organisations to engage open data users. It considers:
  - if public sector organisations have provided information, through the Digital Strategy, on how they plan to engage the public regarding their open data initiatives, through for example social media, events etc.
  - if public sector organisations do indeed prioritise for release government data that has been requested either through freedom of information mechanisms, or other formal request mechanisms
  - if public sector organisations have indeed implemented concrete actions or initiatives based on its communication with the public (e.g. if a data request or an idea suggested by the public has been implemented in concrete terms through a new data release or data quality improvements for example)
  - the main feedback mechanism the public sector organisation uses to communicate with the public.
- **Privacy and security**: This indicator evaluates elements regarding the privacy and security of the data of public sector organisations by measuring the state of the publication process of public sector organisations' government data.

- **Human capital**: This indicator focuses on the availability of information for public sector organisations' main contact points for open data initiatives and activities. That is, it measures if public sector organisations publish information on their primary points of contacts for open data.

The Open Data Dashboard is then based on quarterly milestones to assess public sector organisations' performance for each indicator at different stages in time. In addition, automated metrics are also added in the measurement of performance. They focus on analysing different characteristics regarding the machine-readable files of public sector organisations, such as if JSON files and their associated metadata are valid.

All these elements enable both governmental actors and non-governmental actors to assess the performance of different public sector organisations, allowing also for comparisons among them.

Source: US Federal Government (n.d.), "Project Open Data Dashboard", https://labs.data.gov/dashboard/docs (accessed 24 July 2018).

Other countries have taken similar approaches. In **Canada**, the top indicator used to measure open data progresses is the number of new datasets added on the open.canada.ca portal.[5] Other relevant KPIs used include: 1) the percentage of departments releasing open data; 2) the percentage of satisfaction with open government resources being released; 3) the proportion of datasets being downloaded; and 4) the frequency of use of open data and information resources.[6] The government has also established the Open Government Tracker, which provides updates on Canada's progress in implementing its open government commitments (in line with the Open Government Partnership action plan) and therefore on its performance regarding OGD requirements.[7]

Australia,[8] the Czech Republic,[9], the Slovak Republic,[10] Slovenia,[11] Mexico, Ireland, New Zealand[12] and Sweden are also examples of countries providing statistics on the publication of open government data.[13] In **Norway**, the Digitalisation Agency (Difi) administers a survey across public agencies, which include specific criteria[14] on open data (e.g. published in an open, machine-readable format, licence, dataset registered on data.norge.no). In **Slovenia**, KPIs used to focus on the number of visitors and on the number of datasets published on the central OGD portal. [15] In the **Czech Republic**, the government uses both the number of government datasets released as open data and the number of requested datasets to monitor achievements in line with the objectives set in the central OGD strategy.[16]

In **France**, Etalab (the French Taskforce for Open Data; see Chapter 1) created a dashboard[17] on the central open data portal, data.gouv.fr, where users can access the latest statistics on the number of datasets published in the portal and reuse cases. Etalab's key performance indicators (as fixed yearly by the budget law) are the numbers of datasets, reuse cases and the number of users on the national open data platform.[18]

The above-mentioned evidence shows that in most countries, key performance indicators regarding open government data still focus on data publication. Some countries do nevertheless consider the other stages of the data value chain, and notably, have made efforts to track data reuse.

In **Spain**, the central government developed a dashboard[19] where users can access, visualise, interact and download data related to the data reuse, downloads, data qualities (e.g. formats) and number of datasets by category.

In the **United Kingdom**, all public sector organisations are required to publish as OGD a number of specific datasets, which the government monitors to ensure their compliance. That is, in the United Kingdom, KPIs focus on specific datasets, concentrating therefore on the quality of release rather than on the general quantity released. These specific datasets are:[20]

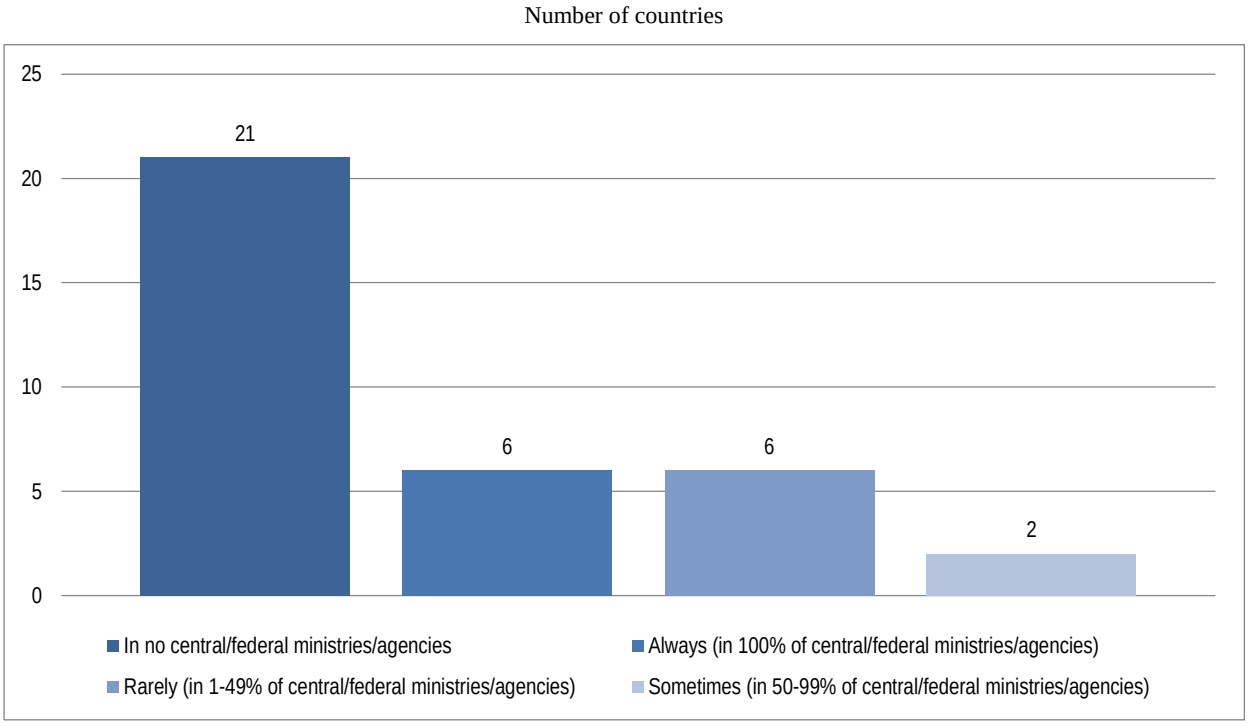
- Spend data (over GBP 25 000 threshold)
- Government procurement card data
- Organigram exceptions to moratoria on spending
- Workforce and workplace management data
- Real-time contract finder
- Real-time energy use
- Ministers' gifts and hospitality, external meetings
- Special advisers' gifts and hospitality
- Permanent secretaries meetings
- Food Standards Agency.

In **Finland**, the government monitors the reuse of government data in private sector companies through the Community Innovation Survey. The survey assesses the level of reuse of government data by the private sector to develop new products or improve existing ones.[21] The government of **Korea** also monitors the number of open data applications developed either by the private sector or the public sector.[22]

In **Colombia**, the Administrative Department of Public Service (DAFP) offers the Single Survey of Progress Report to Management (FURAG) on a yearly basis. The survey (which measures public sector organisations' progress in terms of their respective areas of work) includes progress indicators to the opening, use and exploitation of open data.[23]

At the institutional level, evidence from the OECD Open Government Data Survey 3.0 indicates that despite the initiatives implemented to track open data efforts at the central level, the adoption of metrics to measure policy implementation is not widely spread across the central/federal administration (see Figure 8.2).

Figure 8.2. Extent to which the implementation of open government data requirements are considered as performance indicators of public sector organisations across OECD countries and partner economies



Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 62. To what extent is the implementation of open government data requirements (e.g. regarding the timeliness of data sharing, use of open formats) considered as part of performance indicators of organisations?

International policy measurements

Parallel efforts to measure policy implementation have also taken place at the international level. These efforts add to the OECD's efforts to benchmark the design and implementation of open data policies through the OECD OURdata Index (see Background: The OECD Open Useful and Reusable data [OURdata] Index). Organisations such as the Open Data Barometer, Open Knowledge and Open Data Watch measure open data efforts across countries:

- The **Open Data Barometer** (ODB) measures how governments are releasing and using OGD for accountability, innovation and social impact. Countries in the ODB are ranked according to: 1) their readiness for open data initiatives; 2) their implementation of open data programmes; and 3) the impact of OGD on businesses, politics and civil societies.[24]
- The **Open Knowledge** developed the Global Open Data Index (GODI) which focuses on the state of open government data publication of governments from a civic perspective. That is, open data stakeholders track the progress of governments in terms of their OGD release. The GODI concentrates on the level of openness of government data according to different characteristics.

Government data is considered open if anyone can access it, use it, modify it and share it for free, whether for commercial or non-commercial purposes.[25]

- The **Open Data Watch** created the Open Data Inventory (ODIN) as a means to measure the coverage and openness of government datasets that are needed to monitor and manage social, economic and environmental development across countries. Measures for the coverage of government datasets are based on the availability of key indicators, the levels of disaggregation of the data and its geographic coverage. Measures for openness focus on the format of the data (machine-readable, non-proprietary), its metadata, its download options and its associated license. The ODIN focuses on the availability of data on health, education, government finance, trade or energy use and pollution, etc.[26]

Additionally, the International Open Data Charter published the Measurement Guide in 2018 (see Box 8.3) in an effort to provide an overview of how the above-mentioned international benchmarking instruments, as well as the OECD OURdata Index, measure the principles of the International Open Data Charter.[27]

Box 8.3. The International Open Data Charter's Measurement Guide

Purpose of the Measurement Guide

The International Open Data Charter is comprised of a normative set of principles for governments on all levels to implement open data. Contrary to other initiatives like the Open Government Partnership, the International Open Data Charter does not have its own process to track the progress of the adoption process.

At the same time, multiple measurements have cropped up over the past years, assessing not only open data readiness and implementation of open government data publication by government administrations, but also the impact of open data, including a focus on specific agencies such as national statistics offices. A comparative overview of measurements, their methodological overlaps and similarities, and measurement gaps was missing that could make these tools more transparent and usable. Furthermore, it was unclear how suitable measurement tools are to track the progress of the Charter adoption progress.

The Charter's Measurement and Accountability Working Group (including the participation of organisations such as Open Knowledge and the OECD) developed the Measurement Guide[1] as a collaborative effort to analyse a range of existing measurement tools for open data policies and strategies. The Measurement Guide is the first comprehensive review of some of the largest open data measurement tools worldwide and measures the adoption of the International Open Data Charter.

This is relevant for those who want to understand what measurement tools exist, their purpose, and how they relate to specific principles of the Charter. Policy makers and civil servants can learn what measurement tools are available to monitor open data activities, and civil society and journalists can understand the existing measurement tools and use this knowledge to monitor government.

Successes of the Measurement Guide

The largest contributing success of the Measurement Guide is that it provides an analysis of how each Charter principle is measured, including a comparison of indicators currently

used to measure each Charter principle and its respective commitments.

This analysis is based on open government data indicators used by the five largest measurement tools – the Web Foundation's Open Data Barometer, Open Knowledge International's GlobalOpen Data Index, Open Data Watch's Open Data Inventory, the OECD's OURdata Index, and the European Open Data Maturity Assessment.

Comprehensive indicator tables highlight how each Charter principle commitment can be measured. The tables are especially helpful when used to compare how different indices approach the same commitment, and where gaps exist.

Challenges for open data measurement

The Measurement Guide also highlights the challenges of open data measurements. Measurement Guide findings reveal that more than 180 different indicators exist to metrify governments' performance. Sometimes these indicators overlap, or are entirely similar; in other cases, indicators apply different units of analysis or have different criteria when a piece of evidence is eligible for an indicator. This may mean that measurements apply different definitions of data quality, or that they have different criteria for what constitutes robust evidence of open data's impact.

Future work could be done to further: 1) define what indicators are suitable to measure what aspects of open data and to create guidance for users; and 2) understand the underlying methods of indicators, including an exploration of how units of analysis and assessment criteria are similar or diverge from one another.

1. See https://open-data-charter.gitbook.io/odcmeasurement-guide/.
Source: Content provided to the OECD by Danny Lämmerhirt (Open Knowledge International) and Ana Brandusescu (Web Foundation).

Assessing policy implementation and barriers

While the above-mentioned efforts are relevant to track progress in data publication, few countries have succeeded in assessing the implementation of the open data policy with a broader approach. The examples described in this section provide some interesting examples. Among these, the case of **France** is worth mentioning.

The French Chief Data Officer co-ordinates, under the Prime Minister, the activities of the entire public administration with regard to the inventory, governance, production, sharing, processing and use of data, including open government data (French Chief Data Officer, 2016). As a result of this, the Chief Data Officer delivers yearly reports to the Prime Minister, presenting the overall assessments and results of the data policy in France and the next milestones for the following year (see Box 8.4).

Box 8.4. France's 2016-2017 Chief Data Officer report to the Prime Minister: Data as a strategic infrastructure

In the 2016-2017 report to France's Prime Minister, the Chief Data Officer (CDO) stressed the importance of creating and enhancing data as a strategic infrastructure so as to promote development. The report indicates that governments need to understand that data stands as an infrastructure in its own right, just as much as roads or telecommunication (i.e. physical infrastructures).

Governments need to establish a data infrastructure in order to promote the most efficient possible reuse of data. However, the report highlights that this also requires the participation and collaboration of all actors in the data ecosystem, if the reuse of data is to be maximised.

Following a survey from Etalab provided to open data users, the report emphasises the importance of providing data that is regularly updated, with open standards, discoverable, complete, accurate and constantly available. Additionally, open data users required mechanisms allowing for greater openness in the production and updating process of the government data, and for discussions with its producers.

The report underlines the need to prioritise quality if it is to build an effective and trustworthy data infrastructure, with high levels of reuse (see Chapter 3).

In addition, the CDO presents in the report different case studies of countries attempting to establish a data infrastructure. While presenting and comparing the National Information Infrastructure in the United Kingdom, the Based Data Programme in Denmark, or the X-Road initiative in Estonia, with the current situation in France, the report stresses the importance of a strong and constant political commitment to build a data infrastructure. It also points out the importance of financial, legal and contractual levers to build that infrastructure, as well as a well-established overarching governance model.

Regarding its discussions on data as an infrastructure, the report concludes with a general definition of the different elements constituting it, and on the next steps to be taken. It argues that a data infrastructure includes, for example, data of high quality, mechanisms allowing for the participation of open data users and for the monitoring of government datasets released as open data. Furthermore, it calls for a greater release of OGD if there are no legal impediments to its publication, the development of mechanisms to ensure data privacy, and for greater support of the ecosystem of open data users.

Source: Administrateur Général des données de la Direction interministérielle du numérique et du système d'information et de communication de l'État (2018), "La donnée comme infrastructure essentielle", Rapport au Premier Ministre sur la donnée dans les administrations 2016-2017, www.etalab.gouv.fr/wp-content/uploads/2018/04/RapportAGD_2016-2017_web.pdf.

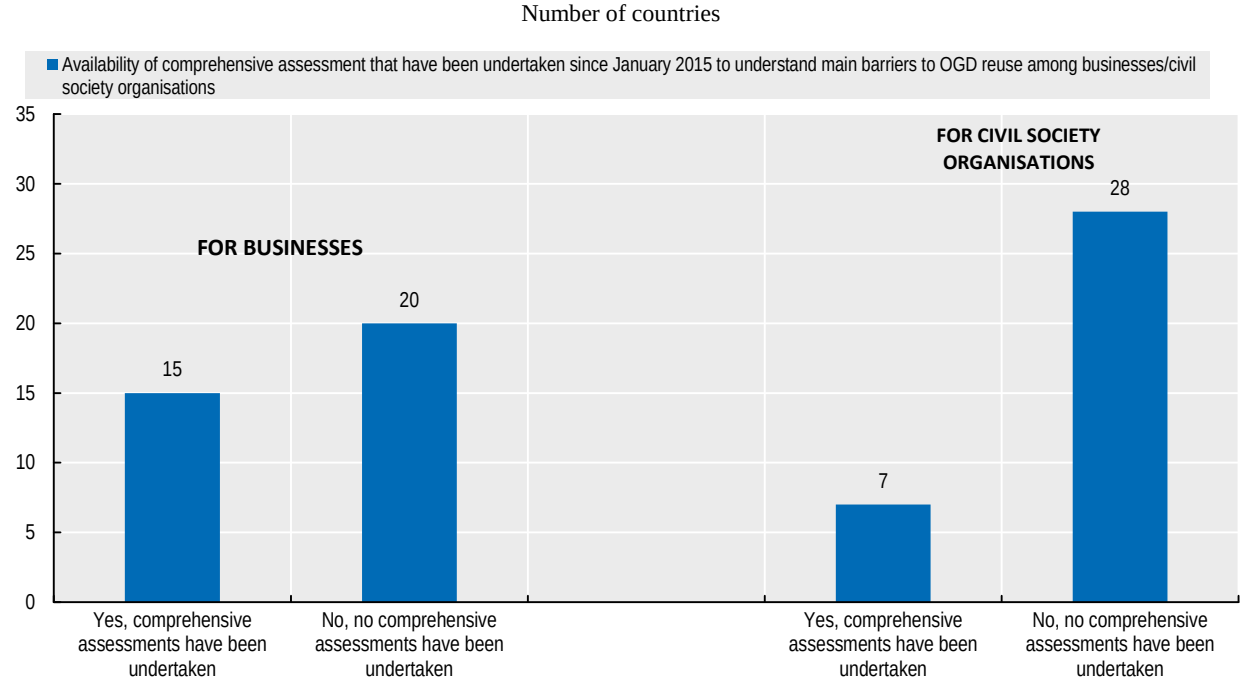
In **Greece,** the annual report on the implementation of the open data policy published in April 2017 in line with the provisions of Article 12 of Law 4305/2014, was submitted to the President of the Hellenic Parliament and discussed in a joint session of the competent parliamentary committees. It focuses on assessing the legislative and operational framework of open data policy in Greece, its qualitative and quantitative dimensions, the overall policy challenges, and it provides a strategic action plan for open data

developments. The 2018 report has also been submitted to the President of the Hellenic Parliament and is now pending discussion in the competent parliamentary committees.[28]

In 2015, **New Zealand's** Open Government Data Chief Executive' Governance Group published a progress report assessing the implementation of the 2011 Cabinet's Declaration on Open and Transparent Government, which included specific actions to be implemented by public sector organisations in terms of open government data. The report provides insights on user engagement and case studies showing the impact of the publication and reuse of open government data (Government of New Zealand, 2015). A similar approach was also taken by **Australia**, where the Productivity Commission released an inquiry report in 2017 assessing the benefits and costs of options for improving data availability and use (Australian Government, 2017).

In terms of policy barriers for users, most countries have no comprehensive assessment tools to better understand the main existing obstacles hindering the reuse of open government data by the whole ecosystem. In fact, this type of assessment is not conducted for businesses in 20 countries out of the 35 that responded on the OECD Survey on Open Government Data 3.0, and for civil society organisation in 28 countries out of the 35 (see Figure 8.3).

Figure 8.3. Availability of a comprehensive assessment to better understand the main barriers to OGD reuse among businesses/civil society organisations across OECD countries and partner economies



Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 46 and Question 52. The questions were: Since January 2015, have any comprehensive assessments (e.g. through the form of a report) been undertaken to better understand the main barriers to the reuse of open government data among businesses? *and* Since January 2015, have any comprehensive assessments (e.g. through the form of a report) been undertaken to better understand the main barriers to the reuse of open government data among civil society organisations?

Australia, Colombia, Japan, Korea, Mexico, Netherlands and Poland are the only countries (7 countries out of 35) that carried out an assessment to better understand the main barriers to the reuse of government data among civil society organisations.[29]

In the **Netherlands**, for example, the Court of Audit in collaboration with the Ministry of Interior and other ministries, issued in 2016 the *Trend Report on Open Data 2016*. This report provides a general assessment of open data in the Netherlands, including an analysis of the barriers to the publication and reuse of OGD. One of the barriers the report highlights is the issue of the discoverability of open government data, as some government departments do not publish their data on the central open government data portal, but rather on institutional portals.[30]

In **Poland,** prior to the drafting of the central open government data policy (Open Public Data Programme), a survey was made by the government to assess the needs as well as the main barriers to the reuse of government data.[31] Similarly, in **Japan** research on open data initiatives for local government also included a survey on the main barriers for the reuse of open government data. This survey was also offered to civil society organisations to understand the barriers to their reuse of government data: with one major barrier being the lack of skills to understand and work with open data.[32]

Regarding assessments to understand the main barriers to reuse by businesses, in **Spain**, research on the infomediary sector identifies some barriers to reuse for the private sector, such as a lack of data interoperability across different regions, a lack of administrative flexibility to adjust to the needs of the private sector in terms of choice of datasets to release as well as the need for further investment in technology to better process OGD in order for these to be more useful.[33] In **Italy,** the government participated in the Open Data 200 project, which is a research project on Italian firms that reuse open government data to create new products and generate social value. In the scope of this project, a survey was offered to a number of firms, which aimed to also assess the barriers to the reuse of open data.[34]

From disseminating results to storytelling

Disseminating and communicating results stands as a good practice to increase awareness and further promote data reuse, which can reinforce the business case for open data policies and support their long-term sustainability. For instance, showcasing initiatives on the central/federal open government data portal can promote data reuse, the development of new projects using those data, and encourage the consumption of the products stemming from open government data reuse.

This has mostly been the case in most OECD countries, with 22 out of the 35 countries that responded to the OECD Survey reporting that they promote initiatives reusing government data on their central/federal open government data portal. In this light, the focus has been mainly on presenting either data visualisations or applications reusing government data. For instance, 19 countries out of 35 have created dedicated sections to showcase applications reusing government data.

Few countries (9 countries out of 35) showcase examples of blog articles featuring reuse of open government data or presenting cases of data reuse. In **France**, for example, a blog article reusing open government data discussed the altitude levels of cities and regions in France.[35] Such discussions can be interesting to urban planning policies in terms of infrastructure developments or industries, as altitude levels are an important consideration for such decisions. In **Korea**, a blog presenting different examples of government data

reuse is accessible through the central open government data portal.[36] In **Mexico**, following a similar rationale as in Korea, the federal OGD portal hosts a blog that presents the different open data initiatives and reuses in different fields, such as education, health, culture and tourism.[37] In **Australia**, data on planned road closures published by the City of Gold Coast was used for a blog article that created data visualisations to facilitate users' search of public facilities in the city.[38]

Yet, the explosion of social media and mobile digital platforms has changed not only how individuals consume information for personal decisions, but also how citizens communicate and interact with each other, with more direct links between content producer and content consumer and new forms of social interaction (see Chapter 4). While platforms such as Twitter are widely used for communication and exchange purposes, other platforms such as Instagram, YouTube and Snapchat have shown the value of videos as a valuable dissemination tool to produce relevant content based on OGD, promote data reuse practices, and engage with the ecosystem.

In addition, whereas the opportunities of the above-mentioned platforms are not to be missed, it is equally relevant to combine these tools with the appropriate communication skills across the ecosystem – and particularly across the public sector (see also Chapter 2) - as storytelling in order to support user engagement (OECD, 2017b), attract new users and build a community around open government data towards greater data reuse and public value co-creation (see Box 8.5).

Auditing compliance with regulations on personal and sensitive data protection

Although the publication and reuse of open government data are paramount to enable public value co-creation, governments' openness should neither undermine its responsibilities in terms of government and/or personal data protection. A discussed in Chapter 3, countries have developed guidelines and standards to support, and enforce when needed, the anonymisation of data prior to its publication.

There is growing consciousness among governments in regard to their role as custodians of citizens' data. As a result, governments are working to ensure that the release of government data as open data does not create breaches of some essential norms and legislation that stand as a foundation to government integrity, trust and ethics.

The release of government data can generate more difficulties than benefits, therefore having a direct impact on public trust, when it fails to comply with such norms and legislation. Past and recent events in OECD countries such as Mexico[39] and Norway[40] have shown that breaches of personal data protection and related mishandling can create a permanent risk in terms of decreased public trust. This has increased awareness among governments on the need to implement the right data protection controls.

Box 8.5. OECD skills for public sector innovation: Storytelling

The OECD's beta skills model for public sector innovation has been based around six "core" skills areas. Not all public servants will need to make use of or apply these skills in their day-to-day job. However, for a modern 21st century public service, all officials should have at least some level of awareness of these six areas in order to support increased levels of innovation in the public sector: iteration, data literacy, user-centricity, curiosity, storytelling, and insurgency.

Among these, "storytelling" is about communicating in an ever-changing world; telling the "story" of change helps build support and engage people by talking about the past, present and possible futures.

Figure 8.4. Storytelling as a core skill for public sector innovation

Storytelling is about communicating in an ever changing world, telling the "story" of change helps build support and engage people by talking about the past, present and possible futures

		BASIC AWARENESS	EMERGING CAPABILITY	REGULAR PRACTITIONER
USING NARRATIVES	Stories are a natural way in which people share information and pass on knowledge.	Understanding that stories communicate facts, opinions and situations by relaying experiences, making it easier for audiences to comprehend key messages.	Identifying key actors and stakeholder (your 'characters') and constructing a story outlines their experiences and motivations. Ensure your story not just covers what has happened and is happening, but also what will happen to key characters in the future.	Stories are not static artefacts, they must be progressed as situations develop. Stories should adapted for each audience, and accommodate alternative viewpoints. When talking about the future, stories can help explore uncertainties and possibilities.
TELLING USER STORIES	Stories can be a powerful and effective way of expressing user needs and priorities	User stories are a way of communicating the way a user or groups of users experience a policy or service, they enable officials to empathise with the user and understand their needs.	Developing a story that follows the journey of typical user, identifying what they find easy and difficult to do. Using the perspectives and experiences of service users and citizens to outline and explain the rationale for changes	Telling the stories of actual users enhances the authenticity of the overall message, by contributing their "real" voice and views. Combining stories from a number of users to give a holistic picture, identifying common challenges and particular needs.
WORKING WITH MULTIPLE MEDIA AND METHODS	Different people absorb information in different ways, using a variety of methods helps spread your message as far as possible.	Understanding that metaphors and imagery are powerful devices in stories that can help explain complex ideas or situations.	Testing and refining drafts of your story with others to identify the best way to communicate key messages. Incorporating visual elements (images, charts, graphics, videos, animations) into your story to provide context or salience.	Using interactive tools/methods to create a "story book" that allows audiences to navigate through the story and focus on parts that are the most relevant for them. Enabling audiences and users to contribute their own content or stories.
TEACHING LESSONS	Public sector innovation is driven by exchanging knowledge and practice. Stories can be a useful device for sharing your experiences.	Sharing experiences is an important element of public sector innovation, by sharing your experiences you help ensure people don't have to learn the same lessons over and over.	Conducting retrospectives at important stages of project to identify lessons that can be learnt from the experience so far. Conducting "show and tell" sessions with colleagues to share information and experiences about a particular project.	Using a range of methods to broadcast your stories and lessons – e.g. blogs/social media, seminars and conferences. Acting as a mentor or coach to other public servants, using lessons from your experience to help them in their practice.

Source: Observatory of Public Sector Innovation (2017), "Core Skills for Public Sector Innovation", OECD, Paris, www.oecd.org/media/oecdorg/satellitesites/opsi/contents/files/OECD_OPSI-core_skills_for_public_sector_innovation-201704.pdf.

In most OECD countries and partner economies, there seems to be space for improvement in the area of assessing if government data made publicly available respects national legislation, regulations, norms and standards in terms of security, privacy, confidentiality and/or intellectual property. However, some countries have taken preventive action to assess the state of data protection within the framework of open data policies:

- In the **United States,** the Open Data Dashboard tracks how agencies are implementing the Open Data Policy (see the section on Assessing policy implementation and barriers, above) and assesses if privacy and security norms are respected (see Box 8.2).[41]
- In **Slovenia**, the Information Commissioner's annual report considers the compliance of open government data in terms of security and privacy norms and standards.[42]
- In **France**, prior to the 2016 French Law for a Digital Republic, the Senate issued in 2014 an assessment of the current and relevant legislation for OGD, in terms of privacy and intellectual property, to better assess if the legal environment was conducive to the release of government data.[43] In addition, the data protection authority, CNIL, through the "Open CNIL" event assessed current efforts to protect the privacy of government data released as open data. A summary report was made of the event, which assesses the different discussions and conclusions.[44]
- In **Finland**, the Steering Group for Information and Cybersecurity in the Central Government (VAHTI) publishes reports, based on surveys, to assess information security in the government, including if OGD respects national norms and standards in terms of security. In 2016, for example, the "VAHTI Information Security Barometer for Personnel and Management" issued such a report and provided final recommendations on the need for greater levels of training in areas such as data protection or the processing of personal data to be provided to public servants to safeguard information security.[45]
- The 2017 Productivity Commission's report in **Australia** assessed the benefits and costs of options for improving availability and use of data (see the section on Assessing policy implementation and barriers, above) and assessed if all relevant legislation on open government data are currently in place with regard to security, privacy, confidentiality and intellectual property.[46]

Data anonymisation is another important element governments should monitor to maintain high public trust levels. In most countries, results indicate that such assessments have not been undertaken. In fact, in 28 countries out of the 35 that responded to the OECD Survey on Open Government Data 3.0, no *ex post* assessments for the whole central/federal government were made to ensure that all government data were anonymised before publication as open data. Australia, France, Korea, Mexico, New Zealand, Slovenia and Spain were the only countries that made such assessments from January 2012 to January 2017.[47]

In **Mexico**, the Center for Research and Innovation in Information and Communication Technologies (INFOTEC) evaluates if all government data released as open data are indeed anonymous. However, this assessment is not available on line.[48]

From metrics to public value: Assessing policy impact

Measuring the impact of open data policies has proven challenging for most countries. It is not surprising that most measurement efforts have focused either on developing metrics on data publication (see the section on Developing metrics and performance indicators, above) or on developing *ex ante* measurement to estimate the potential benefits of open data (see Box 8.6).

Box 8.6. A brief academic background on OGD policy impact measurement

There is a vast array of literature available addressing topics such as policy guidelines and data quality, but formal academic research on methods to measure policy impact and performance is still limited.

Economic value

The monetisation of open government data results from the creation of new data-based business models such as data analytics services or the number of jobs created as a result of entrepreneurial activity; and the use of data as a valuable input in value chains of non-data centred companies (i.e. better business planning, more informed decision making, etc.).

As stated by Koski (2015), most economic impacts of OGD disclosure have been evaluated *ex ante* and "literature lacks *ex post* analysis focusing on the materialised economic impacts".

Pollock (2010), for instance, proposes a revenue-based economic model to measure "welfare gains from opening up public sector information".[1] Pollock's model considers economic benefits from the development of new OGD-based products and services, complementary products (such as software), and other "indirect benefits, such as the reduction in transaction costs to users and re-users of the information".

Houghton (2011) proposes a cost-benefit approach that calculates the economic impact of OGD disclosure across Australian agencies. The model considers costs and savings for agencies and users, together with those "wider benefits arising from increased returns to annual expenditure on data production".

Social and good governance benefits

Social impact measurement methods offering a clear differentiation between outputs and outcomes are provided in work by Keseru and Chan, 2015 and Barnet, Dembo and Verhulst, 2013.

On the one hand, Keseru and Chan propose an analytical framework based on an Outcome Mapping Framework to assess behavioural and activity changes across individuals and organisations within the implementation scope of OGD strategies. As stated by the authors, this approach is "less effective" when aiming to demonstrate causality between OGD disclosure and impact. However, Barnet Dembo and Verhulst complement Keseru and Chan's approach, arguing that the implementation of Randomised Control Trials *ex ante* could be useful to "rigorously establishing impact of relatively mature open government initiatives" (in other words, to tackle the OGD-impact causality gap) and measure impacts such as greater governance and citizen engagement.

Meng (2014), on the other hand, use John Stuart Mill's Method of Difference and a mix of other tools such as regression analysis to assess social impact across Latin American countries with similar historical backgrounds - but which have shown different results regarding social value creation. Meng limits the concept of social impact to the benefits OGD disclosure has for the increased "participation of marginalised groups in public issues and access to government services".

Houghton (2011) includes "agency savings" on his cost-benefit model, stating that, "making information [OGD] freely available is likely to have substantial impacts on agency dissemination costs." For Pollock as well (2010), "there [are] potential efficiency gains in the public sector from access to better, timelier information." However, Pollock places public sector efficiency gains as related to other "indirect benefits such as the reduction in transaction costs to users and re-users of the information".

A closer effort to evaluate the impact on public sector efficiency is observed in the "public-value-oriented performance evaluation" approach of Chu and Chang (in Ionas, 2014). Their approach defines "efficiency" as one of five key public values produced by opening up public sector information. Chu and Chang's definition of efficiency does not contemplate public service delivery and access but aspects such as cost savings and improvement of procedures inside public institutions (inward values).

Chu and Chang also identify savings on public expenditure and human resources, "simplification of information application", and "integration of interior procedures" as indicators to measure the efficiency value of opening up public sector information.

1. In Pollock (2010), the concept of public sector information is used as a synonym for open government data.
Source: Author. Originally published in Rivera Perez, J. (2015), *Beyond Open Data Disclosure: Fostering The Impact Of Open Government Data Towards More Efficient Public Institutions*, London School of Economics and Political Science, Department of Management, London.

For instance, in **Australia**, a report titled "Open Government Data and Why it Matters" discussed both the economic and social benefits that could be generated from the publication and reuse of open government data, e.g. open government data as a tool to create improved government services, more engaged citizens and more efficient business practices.[49]

Earlier efforts to assess the potential economic benefits of open government data can be observed in the **United Kingdom**, where in 2013 the UK Department of Business, Innovation and Skills commissioned a report to measure the potential economic impact of the publication of open data by the Ordnance Survey (OS) – the national mapping agency for Great Britain (OECD, 2016). The report expected that the OS OpenData initiative would deliver a net GBP 13 million – a GBP 28.5 million increase in GDP in (Carpenter and Watts, 2013).

In **France,** in the 2016-2017 report of the French Chief Data Officer (see the section above on Assessing policy implementation and barriers), elements on the economic impact of open government data were reported.[50] In **Sweden**, research has been specifically made to assess the economic impact of government geodata released as open data.[51]

In **Canada**, in 2015, the *Canadian Geomatics Environmental Scan and Value Study* focused on the economic impact open geospatial data generated. In fact, it highlighted that through the reuse of open geospatial data, a total of CAD 695 million had been added

to Canada's gross domestic product (GDP). It argued that open geospatial data would generate greater levels of economic benefits as it is used in parallel with other government data regarding health, security or the environment. Additionally, the report demonstrates the important changes open geospatial data has brought: it has led to new business models, additional economic actors that were not present before and a change in the nature of the demand, where the focus is more on value-added products and services, such as application-based geospatial data.[52]

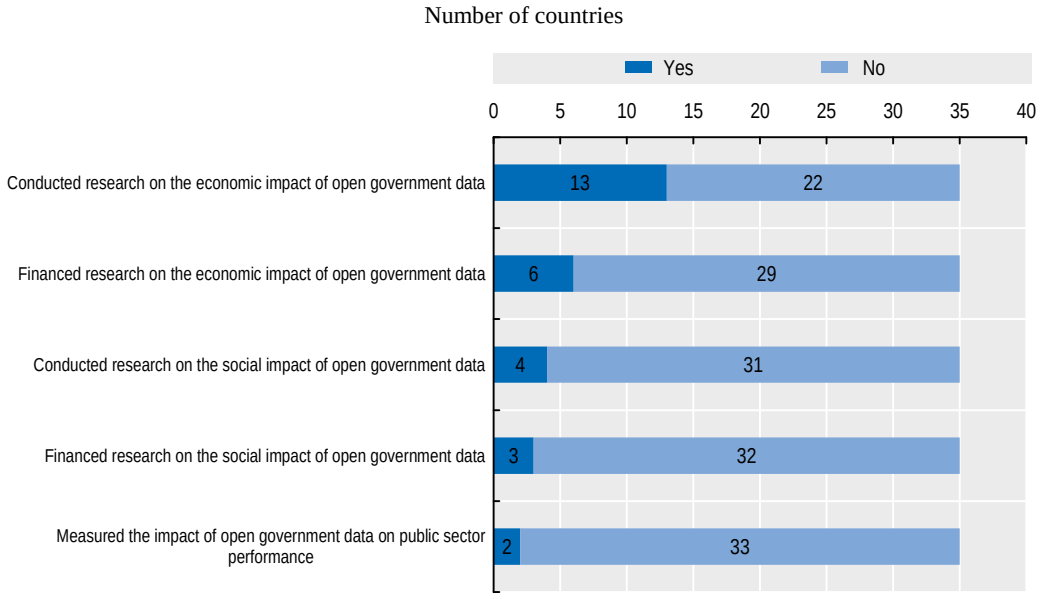
In **Finland**, the *Impact of Open Data - A Preliminary Study* offers an assessment of the potential economic impact of OGD. In fact, through a literature review of different economic theories and evidence on the impact of OGD, the report aims to pinpoint the different areas for which OGD should generate economic benefits. It argues, for example, that OGD should promote greater levels of competitiveness and innovation, increase citizen consumption, promote further employment and productivity. The report, therefore, stands as a literature review offering a theoretical description of the impact of OGD but also aims to guide the Finnish government on how to best measure these impacts, offering notably, a framework with the appropriate measurement indicators.[53]

In **Mexico,** although results are confidential, the Coordination of National Strategy has been performing some internal analyses to pinpoint the economic impact that high-value government datasets have generated.[54] In **Spain**, the National Observatory of Telecommunications and the Information Society (ONTSI) publishes on a yearly basis a report on the impact on economic activity resulting from the publication of open government data.[55] The 2016 report calculated that by 2015 the publication of open government data had generated an economic impact of between EUR 600 million and EUR 750 million (ONTSI, n.d.).

In **Japan,** the government, in collaboration with the Mitsubishi Research Institute, has been conducting a series of research projects on the impact of open government data on businesses. The research summarises different examples of firms using open government data and the subsequent value created, so as to inform the private sector of the potential benefits open data can generate.[56] In Japan as well, the Center for Global Communications (GLOCOM), of the International University of Japan also collaborates with the main government body in charge of open government data to assess the progress of open data in other countries.[57]

Regarding research on the social impact of open government data, 31 of the 35 countries that responded to the OECD Survey on Open Government Data 3.0 did not conduct any such research. Further, 32 countries did not finance such research (see Figure 8.5). Australia, Korea, Mexico and the Netherlands are the only countries that conducted research on the social impact of open government data.[58]

Figure 8.5. Research on the economic and social impact of open government data conducted by OECD countries and partner economies



Source: Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 48, Question 54 and Question 65. The questions were: Since January 2015, has the central/federal government: - Conducted research on the economic impact of open government data - Financed research on the economic impact of open government data *and* Since January 2015, has the central/federal government: - Carried out research project to evaluate the social impact of open data - Financed research project on the social impact of open data *and* Do you measure the impact of open government data on public sector performance?

Regarding the measurement of the impact of open government data on public sector performance, in **Korea**, the Government 3.0 Performance Evaluation considers open data performance and the effect it has had on government efficiency.[59]

Even though measuring impact remains a considerable challenge across the globe, due in part to the limited availability of relevant data and metrics, further efforts to strengthen the capacity to measure real benefits should continue collectively and individually. The availability of clear and sound evidence on impact, or the absence of it, is indeed the best way to improve actions and implementation if needed and to secure continuous political and public support.

Notes

1. For more information, see https://opendatabarometer.org/.
2. For more information, see https://index.okfn.org/.
3. For more information, see http://odin.opendatawatch.com/report/worldMap.
4. Based on additional information countries provided to Question 66, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

5. Based on country responses to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 62. To what extent is the implementation of open government data requirements (e.g. regarding timeliness of data sharing, use of open formats) considered as part of performance indicators of organisations?

6. For more information, see https://open.canada.ca/en/content/open-government-analytics#department.

7. Based on information the Canadian Delegation provided to the OECD on 10 August 2018.

8. Based on additional information Australia provided to Question 66, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). For more information, see https://data.gov.au/stats#total-datasets.

9. Based on additional information the Czech Republic provided to Question 66, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

10. For more information, see https://data.gov.sk/en/dataset.

11. Based on additional information Slovenia provided to Question 66, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

12. For more information, see https://catalogue.data.govt.nz/dataset?_ga=2.173806947.1559841141.1531749567-862969441.1528881112.

13. Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 8. Since January 2015, have you published on line an overarching report on the state of data availability for the whole central/federal level of government?

14. For more information, see https://kvalitet.difi.no/artikkel/2015/11/47-nettstedeier-har-gjort-apne-data-tilgjengeli.

15. Based on additional information Slovenia provided to Question 66, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

16. Based on additional information the Czech Republic provided to Question 66, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

17. For more information, see www.data.gouv.fr/en/dashboard/.

18. Based on country responses to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 62. To what extent is the implementation of open government data requirements (e.g. regarding timeliness of data sharing, use of open formats) considered as part of performance indicators of organisations?

19. For more information, see http://datos.gob.es/es/dashboard.

20. Based on additional information the United Kingdom provided to Question 62, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

21. Based on additional information Finland provided to Question 66, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at http://tilastokeskus.fi/til/inn/2014/inn_2014_2016-06-02_tau_019_en.html.

22. Based on additional information Korea provided to Question 66, Section 2 of the OECD Survey on Open Government Data 3.0 (2017).

23. For more information, see http://estrategia.gobiernoenlinea.gov.co/623/w3-propertyvalue-14713.html.

24. For more information, see https://opendatabarometer.org/barometer/.

25. For more information, see https://index.okfn.org/about/ and https://index.okfn.org/methodology/.

26. For more information, see http://odin.opendatawatch.com/.

27. For more information, see https://opendatacharter.net/.

28. Based on information Greece provided to the OECD on 14 August 2018.

29. Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 52. Since January 2015, have any comprehensive assessments (e.g. through the form of a report) been undertaken to better understand the main barriers to the reuse of open government data among civil society organisations?

30. Based on additional information the Netherlands provided to Question 52, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://data.overheid.nl/sites/default/files/Trendrapport%20open%20data%202016.pdf.

31. Based on additional information Poland provided to Question 52, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

32. Based on additional information Japan provided to Question 52, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.kantei.go.jp/jp/singi/it2/senmon_bunka/data_ryutsuseibi/opendata_wg_dai2/siryou1_1.pdf.

33. Based on additional information Spain provided to Question 46, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.ontsi.red.es/ontsi/?q=es/content/estudio-de-caracterizaci%C3%B3n-del-sector-infomediario-2016.

34. Based on additional information Italy provided to Question 46, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.opendata200.it/limesurvey/index.php/522493# and http://eventipa.formez.it/sites/default/files/allegati_eventi/de_chiara_2017_03_08.pdf.

35. Based on additional information France provided to Question 80, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.data.gouv.fr/fr/reuses/platitude/ and https://mtmx.github.io/blog/carto_alti/.

36. Based on additional information Korea provided to Question 80, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://blog.naver.com/nia_korea.

37. Based on additional information Mexico provided to Question 80, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://datos.gob.mx/blog.

38. Based on additional information Australia provided to Question 80, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://data.gov.au/showcase/city-of-gold-coast-mash-up.

39. For more information, see www.debate.com.mx/mexico/Roban-padron-electoral-de-INE-y-lo-publican-en-Amazon-20160422-0086.html.

40. For more information, see www.nsm.stat.no/aktuelt/datainnbrudd-helse-sor-ost/.

41. Based on additional information the United States provided to Question 17, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://labs.data.gov/dashboard/docs#privacy_and_security.

42. Based on additional information Slovenia provided to Question 17, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.ip-rs.si/fileadmin/user_upload/Pdf/porocila/Letno_porocilo_2015_web.pdf.

43. Based on additional information France provided to Question 19, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.senat.fr/rap/r13-589-1/r13-589-1.html.

44. Based on additional information France provided to Question 22, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.cnil.fr/sites/default/files/typo/document/CR_Workshop_Open_Data_9_juillet_2013.pdf.

45. Based on additional information Finland provided to Question 17, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at http://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/79060/VAHTI3_henkiloston_ja_johdon_tietoturvabarometri.pdf?sequence=1turvatasokartoitukset.

46. Based on additional information Australia provided to Question 19, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.pc.gov.au/inquiries/current/data-access/draft.

47. Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017), Section 1, Question 22. Since January 2012, has/have any assessment(s) (e.g. through the form of a report) been undertaken for the whole central/federal government to ensure that all government data are made anonymous before publication?

48. Based on additional information Mexico provided to Question 22, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

49. Based on additional information Australia provided to Question 54, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at www.communications.gov.au/publications/open-government-data-and-why-it-matters.

50. Based on additional information France provided to Question 48, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at https://agd.data.gouv.fr/wp-content/uploads/2016/07/2016_06_20-rapport-AGD-EN-v4.pdf.

51. Based on additional information Sweden provided to Question 48, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

52. Based on additional information Canada provided to Question 48, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at http://ftp.maps.canada.ca/pub/nrcan_rncan/publications/ess_sst/296/296426/cgdi_ip_41e.pdf.

53. Based on additional information Finland provided to Question 48, Section 1 of the OECD Survey on Open Government Data 3.0 (2017). More information is also available at https://vnk.fi/julkaisu?pubid=5202.

54. Based on additional information Mexico provided to Question 48, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

55. For more information, see http://datos.gob.es/es/noticia/iv-edicion-del-estudio-de-caracterizacion-del-sector-infomediario-2016.

56. Based on additional information Japan provided to Question 67b, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at www.vled.or.jp/results/opendata_business_usecases.docx.

57. Based on additional information Japan provided to Question 67b, Section 2 of the OECD Survey on Open Government Data 3.0 (2017). More information is available at www.glocom.ac.jp/.

58. Based on information provided by 32 OECD countries and 3 partner and other economies (Colombia, Lithuania and Peru) in response to the OECD Survey on Open Government Data 3.0 (2017): Section 1, Question 54. Since January 2015, has the central/federal government: - Carried out research project to evaluate the social impact of open data - Financed research project on the social impact of open data.

59. Based on additional information Korea provided to Question 65, Section 1 of the OECD Survey on Open Government Data 3.0 (2017).

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