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The value of open data for the Government

Iniciativa aporta

GOBIERNO DE ESPAÑA

MINISTERIO DE HACIENDA Y FUNCIÓN PÚBLICA

MINISTERIO DE ENERGÍA, TURISMO Y AGENDA DIGITAL

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1. INTRODUCTION

The public sector is not only a large provider of open data, but also one of the biggest users and beneficiaries of opening up government data. Because of open data, governments can optimise their resources, reduce costs, get closer to citizens and, ultimately, provide a better service to citizens.
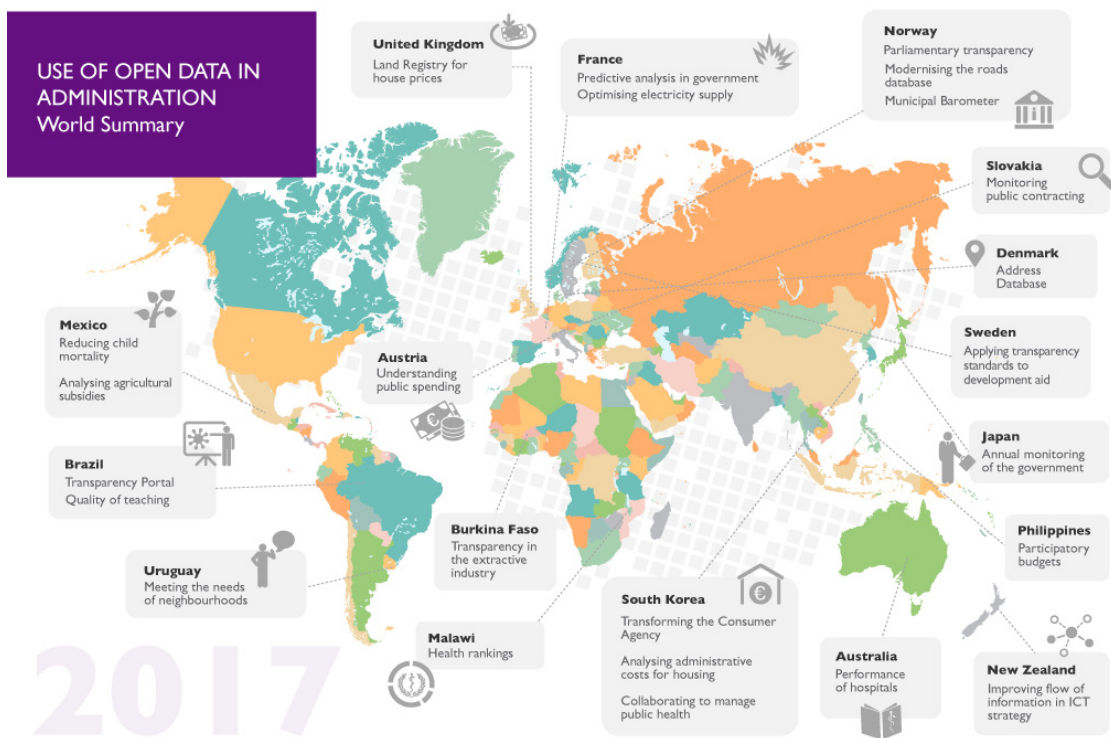
Using various real examples and case studies, this report will look at the different benefits that governments can gain from the publication of data. These examples will show us that today public administration is benefiting from open data that they themselves manage.

It is also expected that the results from the [first Aporta Challenge](#) will also help to complete this compilation and offer us new and interesting examples on how open data provides, and has already provided, value to public administration.

2. OPEN DATA TO OPTIMISE EFFICIENCY AND EFFECTIVENESS

Achieving a more flexible and efficient public administration is key to its proper functioning. Open data can provide **substantial improvements in government efficiency and effectiveness** in different ways. In this section we will see some examples on how open data can lead to such improvements.

2.1. Improved planning of available resources

The publication of open data **enables the analysis of public resources and consequently their optimisation**, as well as being able to maximise their use and potential benefits.

2.1.1. Open Database for Recovery

Since the huge earthquake in 2011 in Japan, the government offered different assistance programmes to help those affected to recover from all the damages sustained. All the details on these assistance programmes have been published as open data.

> " The Japanese government set up a database in order to attend to and prioritise victims of the 2011 earthquake. "

Due to this data being published it was possible to create a centralised assistance portal, produced from the collaboration of various companies who collected all the **information** in a more integrated and structured way, and also more user friendly.

With this new structured database, the government agency in charge of reconstructing the devastated areas could establish an official database which they could use **to evaluate the damages and prioritise and attend to** their needs more efficiently. This also meant a more fluid collaboration between the different agencies involved.

2.1.2. Transparency in the extractive industry in Burkina Faso

In Burkina Faso we have a good example of how **open data** in the mining sector led to a change in legislation on applicable taxes. Despite the abundancy of natural resources in the country, residents in areas with greater mining exploitation are systematically among the poorest with significant shortages in terms of public services. The **information** provided by the Extractive Industries Transparency Initiative (EITI) also clearly shows the large disparity that exists between the huge profits reported by mining companies and the low living standards of local communities.

By law, mining companies that operate in the country are obligated to give 0.5% of their profits to local communities. In the **database** published by EITI civil society formally requested an increase in the applicable taxes to 1% in order to finance improvements needed in the areas of education, health, access to water and sanitation. Due to support from members of Parliament a modification to the law was finally approved in 2015 which included new taxes of 1% and the creation of a joint fund to tackle the main challenges in the communities.

2.2. Collaboration between departmental areas

Different government agencies and departments have an almost continuous need to access **data** coming from other areas and to therefore be able to use it. Opening up **data** is a direct way to quickly provide **interdepartmental flows of information** which will clearly enable collaboration.

2.2.1. Improving flow of information in ICT strategy in New Zealand

One of the main aims for the ICT strategy for the government of New Zealand is to improve **flows of information** through different public agencies to give an added value to services. As a result of this strategy, currently up to two thirds of government agencies **reuse information** from other agencies, with numerous examples of using **open data** from government agencies themselves:

- The Ministry of Transport uses **data from the Statistics Agency**, the Meteorological Service, the Customs Service and the Ministry of Employment and Innovation to model and develop their policies.

- **Environmental data** provided by local governments are used by the Ministry of the Environment in creating their regular reports.

- Local governments also regularly use data on terrain elevation, offered by the **land information agency** (LINZ), to plan water bodies, land drainage and assess risks of flooding.

- The annual report on the state of the nation uses a large number of sources from **government data**, among which are the statistics agency and **police data**.

2.2.2. Collaborating to manage public health in South Korea

The National Health Insurance Corporation has an early warning service to control public health. The aim of this warning service is to detect trends on possible illnesses, epidemics and other medical alerts. For this, the service is based on analysing a combination of **data** from various government sources.

Examples of data analysed by the National Health Insurance Corporation in Korea to control public health

National healthcare database managed by the Corporation

Meteorological information offered by the National Meteorology Service

Data on food poisonings from the Ministry of Food and Medicines Safety

Environmental data from the Ministry of Environment

Chart 1

The warning service also complements all this **government information** with other **data** from private sources, in particular leading social networks. Due to the combination of all these **sources of information**, the government is able to manage any possible medical alert more efficiently, outlining the affected areas, producing personalised plans of action according to each detected risk, evaluating the effectiveness of the treatments in place and continuous monitoring of the current social climate in each case.

2.3. Auditing for the proper use of resources

In order to evaluate how public services are operating and to monitor the proper use of resources, firstly **suitable data** is needed for an initial diagnostics in order to then evaluate the results.

2.3.1. Quality of teaching in Brazil

QEdu is a portal that shows **information on the quality of teaching** in public schools in Brazil using various sets of **data from the Ministry of Education**.

> Due to QEdu monitoring academic performance and due to the intuitive way that the data is presented, this information is now easily accessible to students, teachers, managers, journalists, researchers and politicians.

This platform also actively contributes to the accountability of the education system. For example, due to the **data** shown part of society has questioned the current recruitment system of head teachers. **Data provided by QEdu** has also supported other analysis on the educational system such as the study "Excelência com Equidade" which focuses on the performance of students with socio-economic problems in state schools.

2.3.2. Performance of hospitals in Australia

The platform MyHospitals, directly managed by the government of Australia, periodically publishes **data** on the performance of over 1,000 hospitals in the country, both public and private.

In total, they analyse <u>48 indicators</u> that range from waiting times for being seen in an emergency or access to certain surgeries to the percentages of hospital infections. The **information needed to evaluate the different indicators** comes from routine administrative procedures that hospitals should follow according to current legislation, therefore, the availability of **data** is always guaranteed.

The system also has an <u>interactive tool</u> which allows you to compare hospitals, or simply to see the evolution of a hospital over time. Also, the experience of the project has helped to produce a <u>*framework* for accountability and to evaluate the accountability of hospitals</u> which helps to monitor the system in the future.

2.4. Identifying areas of improvement

Due to more open and available **data** it is possible to identify which areas can be easily improved, in order to optimise the functioning of governments and for a better use of public resources.

2.4.1. Optimising electricity supply in France

In France, the **team of data scientists managed by the government's Chief Data Officer** in collaboration with the state public procurement service have produced a <u>study on the consumption of electricity in public buildings</u> with the aim of improving the range of energy suppliers in public procurements, following the liberalisation of the market for large electricity consumers.

Electricity is an unusual resource as in general it cannot be stored and supply and demand has to be constantly balanced, which makes the calculations for predicting consumption quite complex.

To make a detailed analysis on energy needs, **historical data** on consumption was used from a sample of 90 public buildings. This analysis allowed general consumption patterns to be defined which could be applied to the new supply. **Data** used in the analysis is also available as open data.

2.4.2. Analysing administrative costs for housing in South Korea

> " This analysis of costs included a total of 47 administrative costs such as heating, electricty consumption, running water rates and general administrative costs. "

The Ministry of Land, Infrastructures and Transport in South Korea, in collaboration with the provincial government of Gyeonggi-do, produced a study on the supporting administrative costs for state apartment blocks which could not be analysed in detail solely by the national or local government.

They used *Big Data* technology to analyse the costs of different blocks located in the areas of Gwangmyeong, Suwon and Anyang. As a result of the analysis, a model was made showing the costs that identified cases where the supporting costs were not within reasonable limits and ultimately exposed some cases of corruption among the intermediaries involved.

2.5. Interoperability of data and processes

Good practices promoted by the principals that rule open data - due to the use of formats that are standard, open, machine-readable and compatible - mean that we can easily combine **data to achieve our aims**.

2.5.1. Annual monitoring of the government of Japan

The Government Business Review (GBR) is the annual monitoring mechanism that is used to evaluate the accountability of the Government of Japan.

Due to the mechanism implemented by the GBR, all the **related information** with the specific costs of any project is published in a standard format that is machine readable, which is key in making the evaluation viable for this **quantity of data**.

THE GBR IS DESIGNED AROUND A CYCLE

Planning ▶▶ Execution ▶▶ Monitoring ▶▶ Action

Chart 2

This way, the GBR has managed to increase the level of **transparency** and accountability in the country to a significantly higher level, as the revision of public accounts is done by external experts for each area of activity that is monitored. Also, often the monitoring results are made public every year through an official accountability report, whose conclusions are repeated on the news television channels and other online channels.

2.5.2. Global database of companies: Open Corporates

Open Corporates was created as a solution to the huge problem of interoperability. Facing growing global demand for greater **transparency** in how companies and businesses operate throughout the world had various fundamental problems.
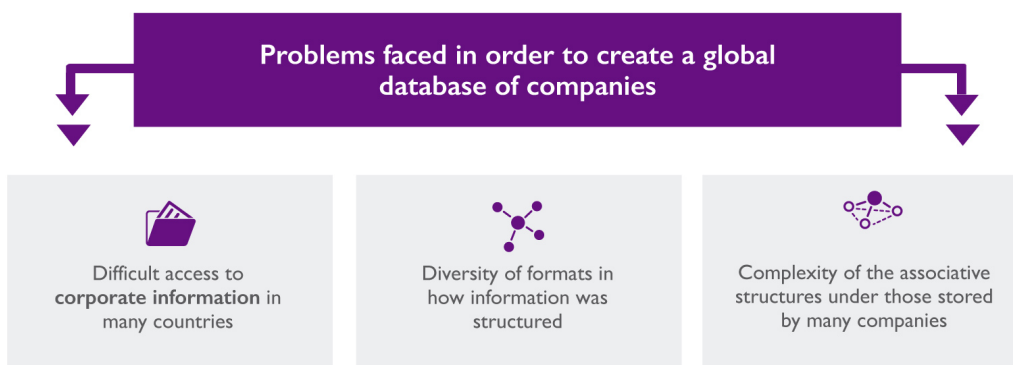
Chart 3

To enable access to all that **information** and their comparison, Open Corporates created a macro **database** with information on over 115 million companies using **public data sources** of up to 105 different jurisdictions in the biggest **public and open access database** that exists of this kind.

Because of Open Corporates, all this data is now available for all governments and individuals who need it, and without having to worry about the different sources, permissions, formats or anything other than the information itself. Also, and as a value added service, the platform also offers other advanced tools to enable access to the information.

2.6. Adopting standards for sharing and storing data

Designing our **data architecture**, which from the outset is designed to be shared in the future, will quickly become an added advantage when improving efficiency and to help maintain and develop our **databases**.

2.6.1. Modernising the roads database in Norway

The agency responsible for the administration of the public roads networks in Norway decided to undertake an ambitious project to modernise the whole national network database.

Due to the government circular on the **implementation of open data**, the government chose to fully adopt the concept in this new development and modelled the new **database** so that it is always available and accessible on a central web server, so that you can inquire using the new web services application interface (RESTful API) which is kept open to all potential users. Also, a web application was also developed using the new API, thanks to which, users can also attain **new data** available by searching directly with maps.

According to the agency, the benefits gained from the project can be seen in the following chart.

Benefits gained from modernising the roads database in Norway

WWW
Greater security, integrity and **accessibility of information**

Greater flexibility to make changes or improvements to the **data model**

Open data to be reused (both internally and externally)
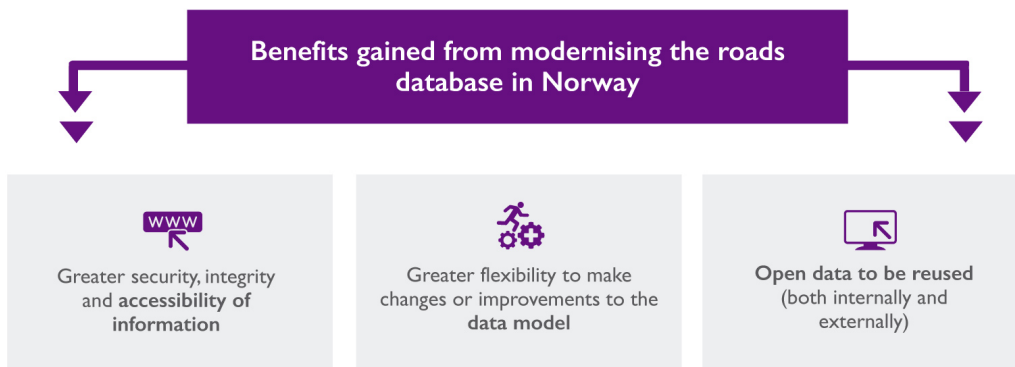
Chart 4

2.6.2. Applying transparency standards to development aid from Sweden

In 2010, the Swedish agency for cooperation (OpenAid) was created to provide greater **transparency** to the country's development aid programme. One of the key actions of this new agency was to launch a platform openaid.se as **data centres** that allow you to access all information on how much aid, when, who and for what it was given to by the agency.

Given the amount and variety of **data sources**, aid donors and recipients, adopting international transparency standards for aid (IATI) was key to the success of the initiative. The use of this open standard together with the **suitable metadata**, the geo-localisation and a complete documentation helped to increase usability quotas for **data available** and to build a series of tools to help access, monitoring, evaluation, visualisation and the understanding of all flows of aid managed by the agency.

3. OPEN DATA TO PROMOTE PUBLIC INNOVATION

The opening up of a growing amount of **data** is also making the **application of ideas and new and innovative practices in the area of public management possible**. More and more frequently, this is leading to the government or third parties using **data** to develop **new services** that are innovative or improve the efficiency of existing public services through **complementary or alternative solutions**, like the ones we see in the examples of this section.

3.1. Identify patterns to support decision making

The more **data** available, the more possibilities we have to be able to create an exhaustive analysis which allows us to identify common cause-effect patterns, which is extremely useful when producing a decision making policy based on evidence.

3.1.1. Predictive analysis in the government of France

Aims of predictive analysis in th government of France

| Regulate industrial sectors using suitable data analysis | Organise information so that it is useful for making decisions | Improve the daily work of government officials increasing the availability of data in real-time | Increase the autonomy and freedom of choice for public service users |
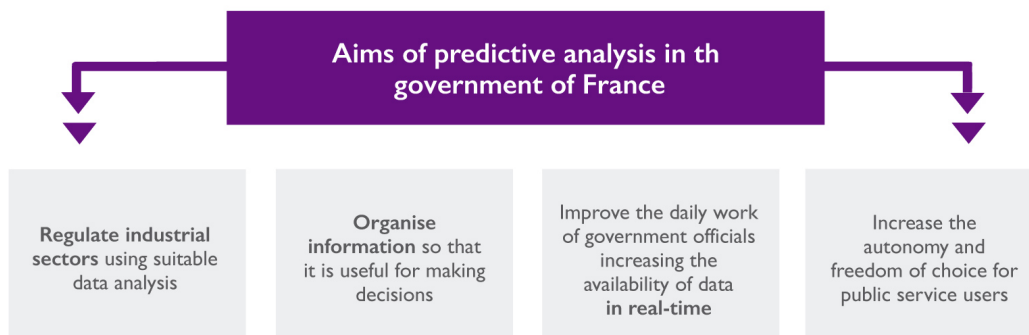
Chart 5

At the beginning of 2016, France's *Chief Data Officer* launched a platform of experts and companies in **data science** with the aim of helping public administration to design and implement services and policies through **predictive data analysis**.

This was launched as part of data that, at the same time, is closely linked to the **national open data initiative**.

3.1.2. Health rankings in Malawi

Malawi is making an effort to publish **data related** to the country's healthcare from a study completed which analysed the impact of a more transparent management of the country's health care system. A pilot trial of 2 years proved how the use of rankings to study the accountability of health centres in different districts had a positive effect on managing public health services due to greater availability to and **quality of information**.

These pilot trials contributed to defining the indicators needed to monitor the system, both in their suitability, reliability and relevance. Using rankings was also positive in

terms of communication, as it is simpler to convey priorities and shortcomings in each case.

Due to the study it was concluded that the rankings were a promising tool when not only **improving transparency**, but also detecting weaknesses. However, it was also concluded that the big challenge when implementing a programme at a national level is the availability of all **data** needed to be able to complete the evaluation and to be part of the regular monitoring and evaluation instruments used by the government.

3.2. More active development and implementation in public policy

Open data is also a tool that allows a more direct contact and communication between government and the public, which ultimately leads to more direct immediate policies.

3.2.1 Reducing child mortality in Mexico

In Mexico, the project "Prospera Digital" helps pregnant women have better and more **information on pregnancy**, reducing the levels of child mortality.

The system created **provides information** through mobile phones, giving advice on good practice and care during pregnancy. Due to this system critical cases were identified, helping the health care system to provide the necessary care to pregnant women.

Given the initial success of the initiative it is now in an expansion phase to other areas in Mexico. Also, the experience has served as inspiration to other similar projects, like "DVVIMSS", an initiative led by a non-governmental organisation and dedicated to the monitoring of HIV treatment, helping to identify shortages in distributing medication.

3.2.2. Transforming the Consumer Agency in South Korea

The South Korea Consumer Agency is exploring a new way of working with the aim of detecting and acting against potentially harmful industrial products more actively and effectively. For this the agency closely monitors the products that have frequently been problematic in previous investigations, and also using a new Consumer Injury Surveillance System (CISS) where consumers can direct their own complaints and claims.

In the first trial months of the new system a total of 63 illegal or defective products were withdrawn, which also gave a more efficient response to daily safety threats for citizens.

> " As a result of optimising the process and reducing duplicates with this new combined prevention system, the government has managed to save 320 million wons in the budget thanks to, for example, removing the need to obtain test samples and carry out the corresponding tests. "

Due to the success of the programme other departments and agencies - such as the Ministry of Public Security, the National Agency of Investigation and the Ministry of Food Security - are considering joining the programme and therefore improve internal collaboration.

3.3. Improving the quality of data through public feedback

Opening up **data to public scrutiny** has many different effects, but one of the most apparent is that there will be a large number of people consulting this **data** and putting

it to the test. Therefore, one of the side effects that usually comes with opening data is the partial "outsourcing" of data quality control, which means that it is ultimately more comprehensive and effective.

3.3.1. Land Registry for house prices in the United Kingdom

The [Land Registry](#) in the United Kingdom began to publish **data** on [land transactions](#) in 2013. Apart from the benefit in terms of **transparency** and the introduction of a whole new range of tools on the buying and selling of properties, one of the areas with the greatest positive impact due to the **opening up of this data** is precisely in the improved quality of the data.

Once published, **information is more accessible and visible** where immediately more enquiries are received on the published **data**. More specifically, since their initial publication there has been an [increase in the number of error enquiries and notifications](#), with up to a total of 2,256 corrections.

3.3.2. Address Database in Denmark

The proper functioning of a large number of public services, such as security and emergency services, postal and transport services, depend on a **database** of **correct and reliable** addresses.

This is why the government of Denmark decided [to open an address database to the public](#) for free.

Once they decided to open **the address database**, one of the first challenges was to tackle the huge variability in terms of the quality of the **data available**. Therefore, the project aimed to improve the **quality of data**. To do this, the agency established a collaboration agreement with [OpenStreetMaps](#) when identifying and correcting any

differences detected between both **databases**. However, <u>a large part of the quality achieved came directly from opening up the information</u>, which at the same time as promoting its use and open to public scrutiny, any error pending to be resolved was quickly brought to light. Also, as the **centralised data** is now in one database, maintenance was also much simpler.

4. OPEN DATA TO PROMOTE TRANSPARENCY AND PARTICIPATION

Due to the **opening up of data** there have also been **significant improvements in transparency and accountability in government**. This greater availability of information also **increases the possibility of citizens to directly participate in the systems.** Next we will see some of the actions made possible by these benefits.

4.1. Participation applications and platforms

It is increasingly more frequent to find collaborative platforms on specific issues that serve as tools to enable new communication channels between citizens and governments, helping to create a more active citizen participation in public policy.

4.1.1. Participatory budgets in the Philippines

One of the key principles of the <u>Action Plan</u> for 2014-2016 for the **open data** team in the Philippines was to be able to have a government led by **data.** A good example is the participatory budget local governments have launched through the <u>platform Check my Barangay</u>. The "Barangay" are smaller government divisions in the Philippines (similar to a town or a district) and there are 42,029 in total across the country.

This participation includes meetings in person to help local groups to analyse budget allocations in their Barangays, annual projects and priority areas of implementation.

Overall, participants concluded that the sessions were extremely useful for increasing their knowledge and skills in using websites and mobile technology to be able to monitor the government budget and planning. The project helped to create a communications culture with the government, which helped to create trust between citizens and those planning and distributing public services.

> " The project has meant that community members can supervise local government budgets and participate for the first time in history in the planning, due to **open data** from the Full Disclosure Policy Portal. "

4.1.2. Meeting the needs of neighbourhoods in Uruguay

The city of Montevideo decided to launch the platform "Por Mi Barrio", offering its citizens a new tool to inform them of any problem to do with the day-to-day in their city. The platform has been extremely useful to the municipality in better meeting the needs of its citizens and prioritising the problems with the greatest urgency, attending to them quicker, more efficiently and effectively.

On the other hand, as time has gone on they have also noticed more than half of the queries to the platform have been, in one way or another, related to waste management and collection. This caused the government to recognise the need to create new more specific services to achieve more efficient waste management, like the application "Dónde Reciclo", as well as improving other aspects that were subject to regular complaints, like the application "Cómo ir" which informs citizens about the available public transport options.

4.2. Monitoring government actions and decisions

An essential requirement for participating more actively in public policy, is first needing to gain a better understanding of them. **Open data** allows us to gain a greater understanding of what our governments are doing, what actions they are taking and on what they are basing their decisions on.

4.2.1. Municipal Barometer of Norway

Open data sources to produce the Municipal Barometer of Norway

- Norway office of statistics
- Education Council
- Health Council
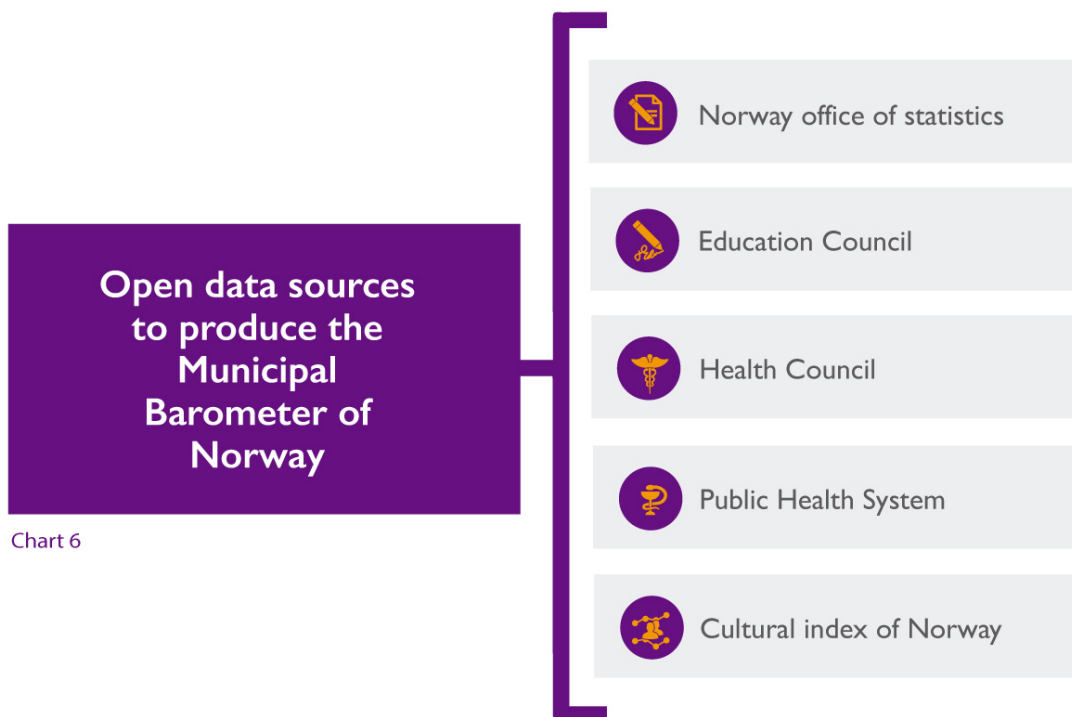- Public Health System
- Cultural index of Norway

Chart 6

Norway has a long **tradition of transparency**. A good example of this already established **culture of transparency** in the country is the Municipal Barometer, which the newspaper *Kommunal Rapport* compiles, comparing some key indicators for twelve social areas including primary education, the elderly, children's wellbeing,

nurseries and pre-school, healthcare, social wellbeing, culture, economy, living costs, environment and natural resources, administrative procedures, waste waters and sanitation.

4.2.2. Monitoring public contracting in Slovakia

In Slovakia, public contracts (except for some exceptions) are always published online, as it is a key requirement in order to have contractual value. This practice has been shown to be very useful as a tool to improve efficiency in public officials, as the media is always ready to denounce any potential excess that could ultimately be cancelled.

Improving the monitoring programme for public contracting in Slovakia

Due to the general culture of transparency in the country, there are also various NGOs whose aim is contracting in search of possible improvements:

Slovenski Digital monitors contracts regarding ICT and have managed to stop non-efficient contracts with a total value of 250 million euros in just one year.

The Institute of Economic and Social Studies uses the data available to look at the efficiency of government through the tool "**Price of the State**", which shows how much citizens pay for the different public services.

The Institute of Social and Economic Reform uses the **open data** to produce economic reports that explain why increasing taxes is a bad idea and how you should instead optimise government efficiency in certain areas.

Chart 7

4.3. Improving understanding of public policy

For citizens it is sometimes difficult to understand why some decisions have been made by government. Making available **data** needed to understand public policy is a

simple tool with immediate effect for **improving transparency** and accountability in terms of government actions.

4.3.1. Analysing agricultural subsidies in Mexico

The Mexican NGO Fundar (Centre of Analysis and Investigation) has created the platform "Subsidios al Campo" where you can openly access **data** on agricultural subsidies from various official government sources. This platform allows you to find out, among other **data**, who and where the people receiving support are, what products receive more money and those that receive less or the states that receive the most subsidies.

The platform has led to more public debate on the destination of financial aid that the government gives to the agricultural sector, contributing to improve investment in this area, optimising the distribution of subsidies, combating inequality and exclusion, supporting small producers and **increasing transparency** in the process. At the same time, it has also opened a dialogue on the need to modernise and improve beneficiary patterns.

4.3.2. Understanding public spending in Austria

The project offenerhaushalt.at, launched by the Centre for Investigation in Public Administration (KDZ), aims to provide access to all **information on public spending** by local government in Austria in a more intuitive, visual, but in depth, way so that it is possible to detect common patterns, for example.

So far, over 900 local administrations have shared their **data on public spending** with the project which has allowed some detailed analysis such as, for example, forecasting the future financial status of local public administrations. Also, some cities like

Salzburg and Linz have also launched their own extensions of the original project **adding additional data** on grants and subsidies offered by the city to social and cultural organisations.

4.4. Restoring public trust in government

While public trust in government is at an historic low across the world, **open data** can be an innovative **transparency tool** capable of reversing this trend.

4.4.1. Parliamentary transparency in Norway

In Norway over 15 million records are stored a year in the parliamentary records and at the same time over 200,000 petitions are made to **access information**. Of which, it is estimated that around 80% could be resolved automatically if the records were made public.

Benefits of the Norwegian app Parliament-app

Information search on members of parliament and the political parties they belong to	Records on all the issues raised in parliamentary sessions, as well as who raised them	Records on all written questions raised in each session, including who raised them	More transparent, efficient and accessible Parliament for citizens

Chart 8

To this, we must also include the monitoring campaign from the website Holder De Ord (Are they keeping their promises?) whose aim is to provide voters a comparison of the promises made by politicians during the election campaigns and their real actions as the subsequent government.

4.4.2. Transparency Portal in Brazil

In 2004, a Transparency Portal was created in Brazil as a tool to improve **fiscal transparency** by openly publishing **government budget data**. After two years, the portal has been improved to become a key tool in the fight against the serious problem of widespread corruption in the country.
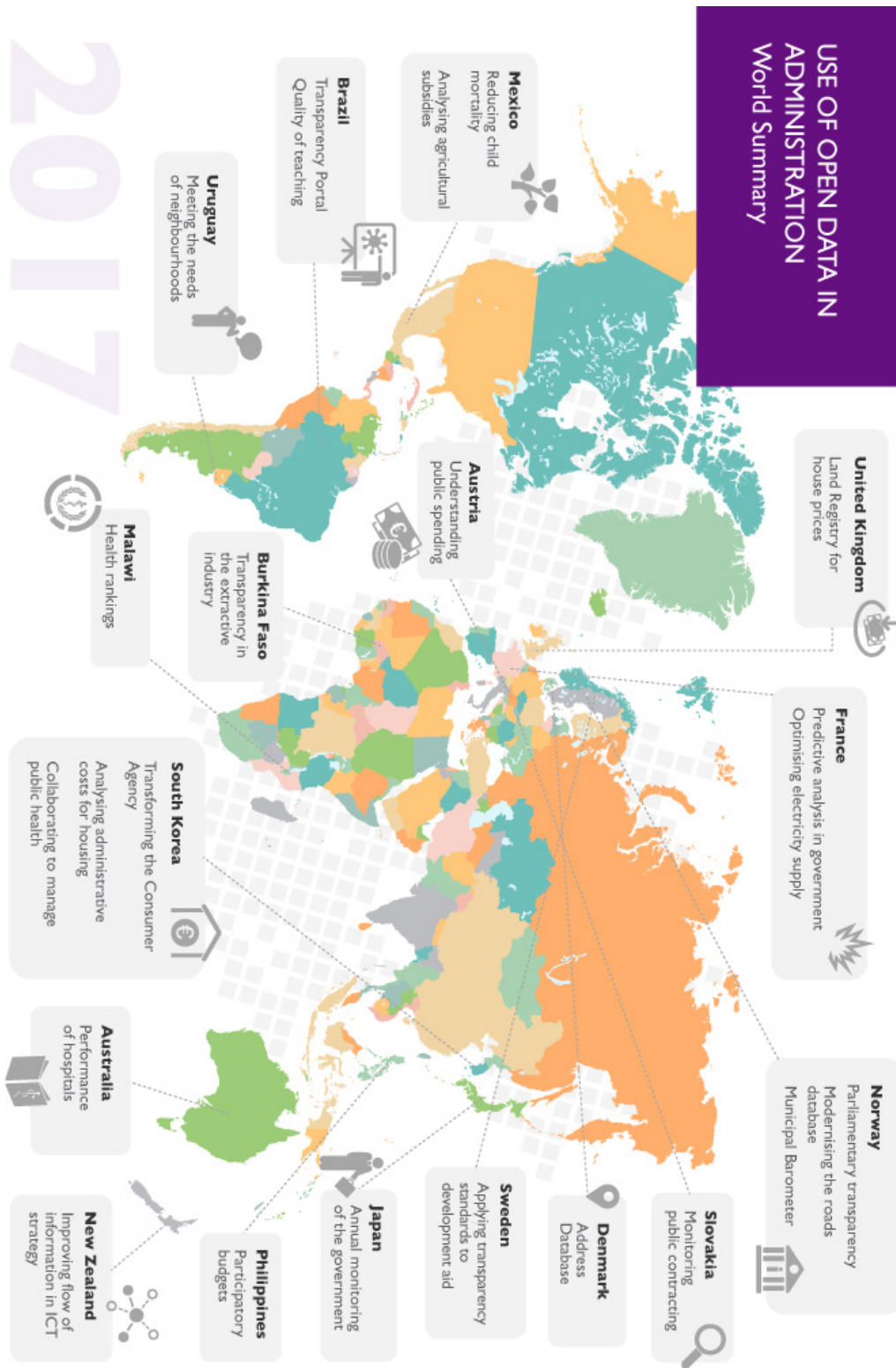
> This growing availability of **data on state budgets** has meant, for example, monitoring costs at large sporting events such as the FIFA World Cup or the Olympic Games, as well as enabling public control of other costs that are usually controversial, such as insitutional advertising, the use of institutional credit cards and the cost of technological projects.

Currently, the portal has over 900,000 unique visitors a month, and has become a benchmark and model for other similar initiatives in Latin America in countries such as Mexico, Chile and El Salvador. Also, this pioneering initiative has led to other platforms to control public spending in the country such as "Orçamento ao seu Alcance" and "Gastos Abiertos" in Sao Paulo.

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USE OF OPEN DATA IN ADMINISTRATION
World Summary

2017

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Analysing agricultural subsidies

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Transparency Portal
Quality of teaching

Uruguay
Meeting the needs of neighbourhoods

Austria
Understanding public spending

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5. CONCLUSIONS

5.1. Looking towards the future of public policy

With the previous examples we have been able to show how **open data** is being used not just by society to actively participate in government and to influence how they implement public services, but it is also being used by government itself to receive feedback, reflect, collaborate, understand and learn.

More and more **governments are relying on data** to optimise their processes and services, to promote innovation within and outside of government and to **promote transparency** and a more active participation among citizens in public policy.

The Aporta Challenge will give us the opportunity to newly explore, first-hand, the value of data in government. Proposals like this Challenge allow us to stimulate talent, technical capacity and creativity of participants, and therefore, to develop and test new prototypes, solutions and services to help us prepare for *a new era of policy led by data*.

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