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The expected benefits of Open Government Data initiatives:

The cases of the United Kingdom and India

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Résumé

Depuis 2009, plusieurs gouvernements ont mis en place des initiatives de données ouvertes gouvernementales (DOG) à des échelles locales ou nationales. Ces initiatives visent à rendre accessibles des données du secteur public pour permettre à diverses parties prenantes de les réutiliser à des fins politiques, économiques ou sociales. Bien que la majorité de ces initiatives soient pour l'instant le fait des pays développés, cette tendance est progressivement en train d'évoluer. De fait, il convient de mieux comprendre dans quelle mesure ces initiatives peuvent générer les bénéfices avancés par leurs défenseurs et insuffler un certain changement.

Cette étude cherche à analyser les mécanismes qui influencent l'impact des initiatives de DOG. Nous avons constaté que les preuves concrètes des impacts des initiatives de DOG sont relativement rares et c'est pour cette raison que nous avons opté pour une approche basée sur des études de cas dans deux pays : le Royaume-Uni et l'Inde. S'inspirant de la littérature actuelle, nous avons alors développé un cadre conceptuel qui décrit la chaîne de valeur des DOG et qui identifie les différents facteurs qui influencent le succès de ces initiatives. Avec un objectif à la fois descriptif et explicatif, nous analysons la manière dont les DOG sont utilisées et comment ces dernières peuvent influencer le changement. Notez que nous gardons une certaine réserve quant aux liens directs entre les initiatives de DOG et leurs impacts.

De façon générale, les preuves des impacts directs et de l'utilisation des DOG sont limitées. Ainsi, on constate qu'au Royaume-Uni les impacts des initiatives de données apparaissent comme limités, et ce malgré la création d'un environnement propice, d'une prise en considération des besoins des utilisateurs et d'une forte demande de la population pour les DOG. Bien que la participation citoyenne et la satisfaction des citoyens relativement aux services publics soient en hausse, on ne peut pas avancer avec certitude que ce sont les initiatives de DOG qui ont permis de découvrir les scandales de corruption, d'accroître la transparence budgétaire, ou encore d'influencer la réforme du secteur public. Le constat est similaire en Inde, où les preuves concrètes des bénéfices des initiatives de DOG sont limitées. De nombreux éléments qui composent le socle permettant à des initiatives de DOG de se développer sont faibles, voir absents. On

constate alors qu'il n'y pas de solutions toute-faite pour mettre en place des initiatives de DOG. Enfin, il convient aussi de prendre en considération les dimensions politiques, légales, organisationnelles, institutionnelles, sociales et techniques quant à la publication et à la réutilisation des DOG.

Mots clés: données ouvertes gouvernementales, chaîne de valeur, gouvernement ouvert, loi sur l'accès à l'information, e-gouvernement, crise de la gouvernance, contrat social, transparence gouvernementale, responsabilité politique, prestation des services publics, renforcement des pouvoirs des citoyens, infomédiaires

Abstract

Since 2009, a wave of national and local governments have developed Open Government Data (OGD) initiatives, proactively releasing public sector information that can be reused by multiple stakeholders for a broad range of political, economic and social purposes. Although the majority of these initiatives are from developed countries, this is currently changing. Therefore, one needs a better understanding of how such initiatives can generate their acclaimed benefits and influence change. This study seeks to analyze the mechanisms that influence OGD initiatives to achieve their expected benefits. Because evidence of the impacts of OGD initiatives is relatively scarce, we have focused on a case study approach, examining the development of OGD in the United Kingdom and India. Building upon the current literature, we construct a conceptual framework that illustrates the OGD value chain and identify the different factors that influence the success of these initiatives. This study generates descriptive and explanatory accounts of how OGD is being used and how it influences change, without necessarily making strong claims about causal links between OGD initiatives and their expected impacts. In general, evidence of the impacts of OGD is limited. Despite the creation of an enabling environment, a continued focus on user needs, and a strong demand for OGD, evidence of the socio-democratic impacts of OGD in the UK is mixed. While we observe increasing e-participation trends and citizen satisfaction with public services, it is unclear whether OGD enabled UK citizens to discover corruption scandals, enhance budget transparency, or influence public sector reform. On the contrary, there remain many gaps to overcome before OGD can lead to widespread use and its acclaimed benefits in India. Currently, evidence of the expected benefits of OGD in India is scarce. Many of the key elements in the OGD value chain are underdeveloped or absent, making it challenging for OGD to deliver on its promises. As Davies (2014) points out, there is no one-size-fits-all approach to OGD. One also needs to take into account the political, legal, organizational, institutional, social, technical dimensions of OGD publication and reuse.

Keywords: Open Government Data, value chain, Open Government, Access to Information legislation, E-government, governance crisis, social contract, political transparency and accountability, public service delivery, citizen empowerment, infomediaries

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Acronyms

Apps	Applications
ATI	Access to Information
BIS	UK Department for Business, Innovation and Skills
CC0	Creative Commons
CPI	Corruption Perceptions Index
CSOs	Civil Society Organizations
DCLG	UK Department for Communities and Local Government
DEFRA	UK Department for Environment, Food and Rural Affairs
DH	UK Department of Health
EGDI	E-Government Development Index
FOI	Freedom of Information
HM	Her Majesty
IBP	International Budget Partnership
ICT	Information and Communication Technology
IDI	ICT Development Index
IDRC	International Development Research Centre
ITU	International Telecommunication Union
MKSS	Mazdoor Kisan Shakti Sangathan
MP	Member of the Parliament
NDSAP	National Data Sharing and Accessibility Policy
NeGP	National E-Governance Plan
NGOs	Non-governmental Organizations
NHS	UK National Health Service
NIC	National Informatics Centre
NII	UK National Information Infrastructure
OBI	Open Budget Index
ODB	Open Data Barometer
ODI	Open Data Index
ODRA	Open Data Readiness Assessment
ODUG	UK Open Data User Group

OECD	Organization for Economic Co-operation and Development
OGD	Open Government Data
OGL	Open Government License
OGP	Open Government Partnership
OKF	Open Knowledge Foundation
PIO	Public Information Officer
RTI	Right to Information
UN	United Nations
UNDESA	United Nations Division of Economic and Social Affairs
WJP	World Justice Project

Foreword

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Chapter 1. Introduction

The last few years have been marked by various governance crises around the world. From the Occupy movements that took place in some industrialized countries, the anticorruption movements in Brazil[1] and India[2], to the uprisings in various Arab countries[3], citizens and civil society groups around the world have signaled their frustration with the State's weaknesses and its inability to handle increasingly complex global problems of democratic deficits, fiscal crises, and developmental failures (World Bank, 2012).

A new social contract is emerging as citizens are redefining how they relate to the State. Citizens advocate the need for stronger checks and balance mechanisms and demand that government be participatory, enabling citizens to exercise voice and be engaged in policy-making and policy implementation (Dokeniya, 2011; United Nations, 2013; World Bank, 2012). At the heart of some of these movements is a new generation of tech-savvy citizens building upon transformations in Information and Communication Technologies (ICTs) demanding that governments become more transparent and accountable.

In an increasing number of countries, the State is responding to, and in some cases leading the move towards a more transparent, participatory and responsive government. In the last few years, governments have launched a series of democratic innovations that seek to increase government transparency and accessibility, improve public service delivery and empower citizens. Examples include Access to Information (ATI) laws, Ombudsman and Information Commissioner offices, public interest disclosure acts, participatory budgeting, online discussion forums and citizens' panels in local government (Gavelin, Burall, & Wilson, 2009).

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[1] *Brazil Anti-Corruption protests stay active,* http://riotimesonline.com/brazil-news/front-page/brazil-anti-corruption-protests-stay-active/

[2] *India's Anti-Corruption movement aims to galvanize democracy,* http://www.washingtonpost.com/world/asia-pacific/indias-anti-corruption-movement-aims-to-re-energize-democracy/2011/08/09/gIQAWMVWAJ_story.html

[3] *The Arab Spring: A year of revolution,* http://www.npr.org/2011/12/17/143897126/the-arab-spring-a-year-of-revolution

Among the latest democratic innovation are Open Government Data (OGD) initiatives. Open Government Data can be defined as « government information proactively disclosed and made available online for everyone's access, reuse and redistribution without restrictions » (United Nations, 2014, p. 163). Government efforts that promote the trends towards open government data have been described as OGD initiatives. Since 2009, a wave of national and local governments have developed OGD initiatives, proactively releasing public sector information ranging from government spending data to datasets relating to education, labor and social welfare that can be reused by citizens, academics, journalists, civil society organizations (CSOs), individual developers, small and medium enterprises, and large companies for a broad range of political, economic and social purposes. According to the 2013 OECD Government at a Glance report, 56% of OECD member countries now have a national OGD strategy, while 12% have separate OGD strategies for individual line ministries and 28 % have joint strategies.

While the original discourse around OGD mainly included higher-income, industrialized and long-established democracies, the second wave is more likely to include a greater number of middle income and developing countries. These may have different objectives in pursuing OGD initiatives and face different challenges in implementing and reaping the benefits from these initiatives (Gigler, Custer, & Rahemtulla, 2011). Therefore, one needs a better understanding of how such initiatives can generate their acclaimed benefits and influence change. The objective of this study is to analyze the mechanisms that influence OGD initiatives to achieve their expected benefits.

OGD initiatives aim to achieve a broad spectrum of policy goals, which can be classified across four categories, including transparency and accountability; citizen empowerment; government efficiency; and growth and innovation. First, OGD champions advocate for its potential to increase government transparency and accountability as increased access to government information should facilitate public scrutiny and enhance citizens' ability to hold government and public service providers to account. Secondly, OGD is considered essential for participatory governance and citizen empowerment, supporting citizens to make better-informed choices thus strengthening citizen's voice over politicians and in general. Thirdly, OGD is assumed to enhance government efficiency as it enables government to better plan and target resources. Finally, OGD is believed to be a catalyst

for innovation and economic growth. OGD champions advocate its commercial and social value as a raw ingredient for entrepreneurs, private sector and CSOs to create new services and public goods. This study will only focus on the « socio-democratic benefits » of OGD, including increased political transparency and accountability, improved service delivery and citizen empowerment.

Despite its infancy, several different research approaches to OGD initiatives have been developed. These can be classified into three groups, including readiness assessments, implementation studies and impact studies (Davies, Perini, & Alonso, 2013). Readiness assessments seek to assess whether a country, city or sector meets the preconditions to implement an effective OGD initiative. Generally, such studies have a distinct set of assumptions of what constitutes an effective OGD initiative. On the contrary, implementation studies follow a more objective and less normative approach. Such studies seek to assess whether and how OGD initiatives are implemented. Varying widely in their approach, implementation studies document the underlying objectives and drivers of OGD, the availability and quality of key datasets, the proportion of institutions publishing data and describe the principal barriers and supportive factors that need to be addressed. Impact studies for their part seek to assess whether OGD has led to value creation. Generally, they examine whether OGD has triggered one of its expected benefits explained in further detail in the previous section. However, reliable evidence on the outcomes and impact of OGD initiatives remain scarce. It is not yet clear if such initiatives are truly delivering on their promises (Davies et al., 2013, p. 3).

This study cuts across all three aspects of OGD research as we i) assess to which extent the contextual factors are conducive for OGD initiatives to be effective, ii) examine how the OGD policy design addresses the challenges that may derive from OGD implementation, iii) analyze the availability, openness and usability of government datasets, iv) and examine whether OGD has delivered on its promises. Building upon the current literature, we construct a conceptual framework that illustrates the OGD value chain and identifies the different factors that influence the success of OGD initiatives. For each component of the value chain, we construct an assessment grid and describe the different criteria that will be used to assess the expected benefits of OGD initiatives. This study seeks to generate descriptive and explanatory accounts of how OGD is being used

and how it influences change, without necessarily making strong claims about causal links between OGD initiatives and their expected impacts.

Because evidence of the impacts of OGD initiatives is relatively scarce, we have focused on a case study approach, examining the development of OGD in two countries, the United Kingdom and India. Our choice of countries is motivated by two main reasons. First, the United Kingdom and India are both pioneers in the OGD movement. Among the first to launch an OGD initiative alongside the United States, the UK government launched data.gov.uk in January 2010, releasing to the public more than 2,000 datasets ranging from traffic statistics to crime figures. The government of India for its part initiated the National Data Sharing and Accessibility Policy (NDSAP) in February 2012, which aimed at increasing the availability and accessibility of non-sensitive government data generated by government entities using public funds. In October 2012, India launched an accompanying online portal of government datasets - data.gov.in - that can be used by ordinary citizens for political, economic and developmental purposes. Secondly, country-specific evidence allows us to make different observations on the implementation of OGD initiatives and its effectiveness. The next wave of OGD portals is more likely to include a greater number of middle income and developing countries. According to Gigler et al. (2011), this phenomenon provokes questions regarding the transferability of the default model, developed by first wave countries, into developing country contexts with different institutional conditions and capacities of societal actors. The choice to study a developed country in contrast to an emerging economy hence allows us to account for these differences.

This study relates to a growing empirical literature on the relationship between government information dissemination, via the media and Access to Information (ATI) legislation, and governance and economic development (Bellver & Kaufmann, 2005; Besley & Burgess, 2002; Islam, 2003; P. Pandey, Goyal, & Sundararaman, 2008; Reinikka & Svensson, 2004; Strömberg, 2004). In this study, we focus however on country-specific factors, which we believe influence and explain the differences in the success of OGD initiatives across countries. Furthermore, this study emphasizes in greater detail the accessibility, openness and quality of the disseminated government information which determine how the data will be used and if, and to which extent OGD can trigger its

expected benefits. Finally, this study draws on both quantitative and qualitative existing secondary data from different sources.

This study seeks to provide a better understanding of how OGD initiatives can trigger their expected benefits and complements the existing methodological approaches to examine open government data, improved governance and social change. Additionally, it should contribute to the existing literature by providing insights on the potential risks and negative outcomes that may arise from OGD initiatives, which have currently been underexplored.

This study is structured as follows. The second chapter presents a review of the literature on Open Government Data and examines the origins, philosophy and drivers of OGD initiatives. The third chapter presents our methodological approach to analyze the mechanisms allowing OGD initiatives to achieve their expected benefits, including increased transparency and accountability, more responsive public service delivery and citizen empowerment. The chapter also presents the conceptual framework that will guide our analysis and describes our data sources. The fourth and fifth chapters present a comparative case study of the UK default model of OGD release in relation to India's more recent and less articulated OGD initiative. The sixth chapter proposes a roadmap for moving forward describing the principal barriers and supportive factors that must be addressed for OGD initiatives to be sustainable in the long-term. Finally, the seventh and last chapter concludes and presents future avenues for OGD research.

Chapter 2. Literature Review

This chapter presents a review of the literature on Open Government Data initiatives. We first present the main definitions used in this study and examine the origins, philosophy and drivers underlying OGD initiatives. We then analyze the origins and implications of the current governance crisis and explain how information asymmetries weaken the relationships of power and accountability that link governments and citizens in the public service delivery chain. Thirdly, we evaluate how OGD enables rethinking the State[4] and address the current shortcomings in both democratic institutions and public service delivery. Fourthly, we present the different approaches to OGD research and situate this study in the current research landscape. Furthermore, we analyze the expected benefits of OGD initiatives as well as the factors that influence their relative success. While OGD is essentially a promising tool to achieve a broad spectrum of policy goals, the final section examines the limits and potential downsides of OGD initiatives.

2.1 Origins, philosophy and drivers

Today's governments face a crisis of legitimacy. Citizens have lost trust in the political institutions that exercise power in their name, their efficiency and effectiveness of solving complex social and economic problems (Noveck, 2009). Voter turnout and membership in political parties has considerably dropped over the last decades. Additionally, various surveys show declining satisfaction and confidence in public institutions (OECD, 2005, 2009). For instance, a survey conducted by the American Society of Newspaper Editors (ASNE) for Sunshine Week[5] indicated that approximately three-quarters of Americans perceive their federal government as secretive and that this belief has significantly increased over the years. Furthermore, a public opinion survey conducted in the UK indicates that 40% of the respondents depict local public services as bureaucratic (OECD, 2005). The survey further revealed that citizens demanded government to provide more information on how decisions are reached at and how

[4] The concept of "rethinking the state" was first developed in the 1997 World Bank World Development Report. The report put forward a two-part strategy to change and reinvigorate the role of the state in the context of a changing world.

[5] Sunshine Week is an Open Government initiative that promotes a dialogue about the importance of open government and freedom of information.

public funds are spent. Indeed, a 2008 Open Budget Index (OBI) Survey found that 80% of the world's governments do not provide adequate information for the public to hold them accountable for managing public funds. The report indicated that half of the interviewed countries are hence able to hide wasteful and corrupt spending (International Budget Partnership, 2008).

2.1.1 Open Government

In response to the current governance crisis and citizens' demands for a transparent and accountable State, governments across the world have embraced the concept of Open Government. The term Open Government has multiple meanings. For some people, Open Government means facilitating the flow of information from government to citizens. For others, it is the use of social media by government agencies. Others perceive it as the adoption of wikis, crowdsourcing, mobile applications and developer contests as applied to the job of government (O'Reilly, 2010). Today however Open Government has a broader meaning. It has become an all-embracing term for a more transparent, responsive and accessible government. In this section, we first define the term Open Government and describe the evolution of its development. Then, we present in greater detail two major tools for Open Government initiatives, including Access to Information (ATI) legislation and e-government policies.

Open Government is defined by the OECD as « the transparency of government actions, the accessibility of government services and information and the responsiveness of government to new ideas, demands and needs » (Gavelin et al., 2009, p. 8). First, an open government is one that is transparent. This means that government bodies and departments should timely disclose information about their actions and decisions so citizens have a better understanding about the functioning of government and how their tax money is spent. Laws and institutional mechanisms that endorse citizens' rights of access to information are essential for increasing citizens' ability to scrutinize government's activities and are therefore a basic building block for democratic control. Secondly, government should be accessible to citizens. According to a 2005 OECD report, administrative burdens, distance, time and language can be significant barriers to access government services. These barriers can however be removed by developing for example citizens' charters, one-stop shops, on-line services, and plain language drafting

requirements. Thirdly, government should be responsive to the needs, demands and priorities of citizens. Effective and accessible mechanisms that voice these demands are essential for a more responsive government. For instance, such channels include customer complaint forms, focus groups and tools for public consultation. Openness thus goes beyond the more commonly used term of transparency. It introduces and encompasses two further aspects of the relationship between government and the citizens it serves, namely accessibility and responsiveness. Open Government essentially transforms how government conducts its business and may lead to qualitatively different forms of governance (OECD, 2005).

The trend towards Open Government gained momentum in the 1990s and found expression through new legislation and a wide array of policy measures, as well as formal and informal institutional frameworks. By 2005, 90% of OECD countries had passed a Freedom of Information Act and established an Ombudsman office and over 50% had implemented customer service standards (OECD, 2005). Some OECD member countries – such as Austria, Hungary and Poland – incorporated Open Government principles into their constitution (OECD, 2009).

A pioneering multilateral Open Government initiative was endorsed in September 2011 with the launch of the Open Government Partnership (OGP)[6] at the United Nations General Assembly. The OGP was formed to support eligible governments to make concrete commitments, in partnership with civil society, to promote transparency, empower citizens, fight corruption, and harness new technologies to strengthen governance. Founded by eight governments, today the OGP has welcomed the commitment of more than 50 additional countries to join the partnership. To become a member, countries must first meet certain eligibility criteria, including fiscal transparency, access to information, disclosures related to elected or senior public officials and openness to citizen participation and engagement in policy making. Once a country has demonstrated that it meets all four of the eligibility criteria, it must commit to uphold the principles of open and transparent government by endorsing the Open

[6] *About*, http://www.opengovpartnership.org

Government Declaration, delivering a county action plan, and committing to independent reporting on their progress[7].

A. Access to Information Legislation

Access to Information (ATI) legislation is commonly assumed to be a key building block of Open Government. ATI advocates for the right of the public to access government information, which is recognized as a fundamental right essential to protect other human rights. According to Janssen (2012), the ATI right has two aspects. First, citizens have the right to access government information on request. Second, government and public bodies have a duty to provide the requested information in a timely manner. ATI legislation is an important building block for citizens to become informed about their rights and entitlements, standards of public services, and performance of public service delivery (Ringold, Holla, Koziol, & Srinivasan, 2012).

The Swedish national legislation was the first to recognize the right to information in 1766. After over 200 years of inactivity, the first wave of access to information legislation came in 1990 as 12 countries passed such type of legislation. Today, nearly 80 countries have adopted ATI legislation and more than 30 countries have recognized freedom of information as a constitutional right. On an international level, the right to information is increasingly recognized by several international organizations, including the United Nations, the council of Europe, the organization of American states and the African Commission on Human and Peoples' Rights. Civil society actors have played an important role in raising awareness on the importance of the right to access information. ATI activists include for example Transparency International, the Carter Center and the Open Society Initiative (Janssen, 2012).

According to Ringold et al. (2012), the right to access government information can be endorsed in legislation in several ways. Countries can have ATI legislation at the regional and national level being part of a country's constitution. Furthermore, countries' legislation can include ATI laws that are specific to different sectors and specific in terms of accessibility. In general, ATI legislation specifies special circumstances in which information can be withheld. These exemptions include the protection of national

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[7] *How it Works,* http://www.opengovpartnership.org

security, personal privacy, commercial confidentiality, law enforcement and public order. Finally, ATI laws generally endorse internal appeals mechanisms that allow those who requested information to challenge refusals to disclose information as well as sanctions for officials and government bodies that fail to comply.

B. E-government policy

E-government is another major tool for a more transparent, responsive and accessible government. The concept e-government focuses on the use of new Information and Communication Technologies (ICTs) by governments as applied to the full range of government functions. However, there are many definitions of the term e-government. According to a 2003 OECD report, such differences may reflect different priorities in e-government strategies. In general, the OECD defines e-government as « the use of information and communication technologies, and particularly the Internet, as a tool to achieve better government » (OECD, 2003, p. 23).

Since the mid-1990s, e-government initiatives have figured on the political agenda of UN member countries in order to tap the vast potential of the Internet and ICTs for the single purpose of improving government's efficiency and effectiveness. In 1996, the web was home to less than 50 official government homepages. However, this number increased to over 50,000 websites in 2001 (ASPA & UNDPEPA, 2002). The sound progress in all the indicators of the e-government development index[8] has led to a world average of 0.4877 in 2012 as compared to 0.4406 in 2010 and 0.402 in 2003. Governments whose web presence in the early 2000s consisted of one or two static web pages have improved their online service delivery and been offering content rich, well-designed and citizen-centric websites. Despite improvements, there remains a discrepancy in the digital divide between developed and developing countries, particularly in Africa (United Nations, 2012). The factors that explain such imbalances will be further analyzed in the next sections of this chapter.

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[8] The UN e-government readiness index is a composite index that measures the capacity of governments to develop and implement e-government services. The index ranges from 0 (low level of readiness) to 1 (high level of readiness). Constructed within the framework of the UN global e-government survey, the indicator consists of three sub-indices: the web measure index, the telecommunication infrastructure index, and the human capital index. The index will be further explained in section 3.4.2 of Chapter 3 of this study.

The aim of e-government initiatives is manifold. National e-government policies seek to exploit new efficiencies, improve productivity within the public sector and empower citizens. Additionally, e-government initiatives aim to improve policy outcomes, the quality of public service delivery, citizen engagement and participation (OECD, 2003). Other objectives include reducing administrative burdens, cutting costs, increasing public sector productivity and efficiency (OECD, 2011).

E-government is an important tool for making government both more accessible and responsive. E-government can significantly reduce barriers, distances and transaction costs of dealing with public administration and can hence provide unobstructed access to government information and public services. Furthermore, e-government can be an effective mechanism to voice the needs and demands of citizens. Tools for e-consultation include, for example, online discussion forums, e-mail lists and government consultation portals.

2.1.2 Open Government Data

In the last few years, governments have launched a series of democratic innovations to make their government more open and accountable. Open Government Data (OGD) is the latest building block of Open Government initiatives. OGD embodies a new approach to proactively disclosing government data and helps bridge the current gap between governments and citizens (United Nations, 2014). It represents the ability of all stakeholders to have access to government data that can be used for a broad spectrum of public policy goals. In this section, we first define the concept of OGD. Then we describe the different types of OGD. Thirdly, we present eight OGD principles put forward by a group of 30 OGD advocates that set out best practice recommendations on how government should publish data in machine-readable formats that are easily accessible, reusable and distributable. Fourthly, we describe the beneficiaries of OGD who can use the data for a range of purposes. Fifthly, we portray the evolution of the OGD movement. Finally, we examine the distinctive attributes of OGD compared to Open Government, ATI legislation and e-government policies.

A. Definition

Government agencies generate and collect enormous quantities of data as part of their day-to-day activities. The idea of OGD is that such data should be easily accessible,

reusable and distributable without legal or technical restrictions as government data could be used by CSOs, media, private sector and citizens for a range of political, social and commercial purposes (Shkabatur, 2012; United Nations, 2013).

As defined by the Open Knowledge Foundation[9], Open Government Data is « data produced or commissioned by government or government controlled entities that can be freely used, reused and redistributed by anyone[10] ». Open Government Data needs to comply with the legal and technological standards of Open Data:

> « A piece of data or content is open if anyone is free to use, reuse, and redistribute it – subject only, at most to the requirement to attribute and or share-alike[11] ».

Recent government efforts that promote the trend towards government Open Data have been described as Open Government Data initiatives. These projects usually include the release of easily accessible, reusable and distributable government data as one of many steps designed to increase overall government transparency and accountability (Yu and Robinson, 2012). OGD initiatives generally work towards a broad spectrum of policy goals, including increasing government transparency and accountability, strengthening citizen participation and empowering local voices, stimulating innovation and economic growth, and improving government and public service delivery.

B. Types of Open Government Data

There are many kinds of open government data categories. The Open Knowledge Foundation identified eight categories[12] including geodata, culture, science, financial, statistics, weather, environment and transport. However, not all categories of OGD can be used to achieve these goals. Yu and Robinson (2012) classify data categories on a horizontal axis between two poles “service delivery” and “public accountability”. According to Heimstädt (2013), such categorization is useful for evaluating the underlying intentions of data disclosures. For instance parliamentary records, public expenditure and budgeting data can serve the purpose of increased political transparency and accountability. On the contrary, OGD data that is classified as “public

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[9] The Open Knowledge Foundation is a non-profit organization that promotes Open Data and Open Content. It was founded in 2004 in Cambridge, England.

[10] *Welcome to Open Government Data*, http://opengovernmentdata.org/

[11] *The Open Definition,* http://opendefinition.org/

[12] *What is Open?*, https://okfn.org/opendata/

service delivery" – such as demographic, healthcare, geographical and local transportation data – can be used to improve public service delivery. Acknowledging that most of open government data may serve both purposes, this study will analyze the availability and openness of both "public service delivery" and "public accountability" datasets.

At the Lough Erne Summit in June 2013, G8 members identified 14 high-value datasets, jointly recognized for unlocking the economic potential of open government data, supporting and encouraging innovation, and providing greater accountability to improve democratic governance (G8, 2013, p. 9). Since this study seeks to analyze the mechanisms through which OGD improves governance and public service delivery, we will focus on a small subset of these high-value datasets, including government budget and spending data, datasets relating to national election results as well as health and education data. Table 1 presents the 14 high-value datasets identified at the G8 Summit in June 2013.

Table 1: G8 Open Data Charter high-value datasets

Data Category	Example datasets
Companies	Company/business register
Crime and Justice	Crime statistics, safety
Earth observation	Meteorological/weather, agriculture, forestry, fishing and hunting
Education	List of schools; performance of schools, digital skills
Energy and environment	Pollution levels, energy consumption
Finance and contracts	Transaction spend, contracts let, call for tender, future tenders, local budget, national budget (planned and spent)
Geospatial	Topography, postcodes, national maps, local maps
Global development	Aid, food, security, extractives, land
Government accountability and democracy	Government contact points, election results, legislation and statutes, salaries, hospitality/gifts
Health	Prescription data, performance data
Science and research	Genome data, research and educational activity, experiment results
Statistics	National statistics, Census, infrastructure, wealth, skills
Social mobility and welfare	Housing, health insurance and unemployment benefits
Transport and infrastructure	Public transport timetables, access points broadband penetration

Source: G8 (2013)

C. OGD principles

The term Open Government Data became popular only recently after the publication of eight Open Government Data principles put forward by a group of 30 Open Government

advocates[13] during an Open Government Working Group Meeting in 2007, in Sebastopol, California (Ubaldi, 2013; United Nations, 2013). These principles guide the development of OGD initiatives as they set out best practice recommendations on how governments should make public data available in formats that comply with the Open Data definition. Box 1 outlines the eight Open Government Principles.

Box 1: Open Government Data Principles

Government data shall be considered open if it is made public in a way that complies with the principles below:
1. **Data must be complete**: All public data is made available. Public data is data that is not subject to valid privacy, security or privilege limitations.
2. **Data must be primary**: Data is published as collected at the source, with the highest possible level of granularity, not in aggregate or modified forms.
3. **Data must be timely:** Data is made available as quickly as necessary to preserve the value of data.
4. **Data must be accessible**: Data is available to the widest range of users for the widest range of purposes.
5. **Data must be machine processable**: Data is reasonably structured to allow automated processing.
6. **Data must be non-discriminatory**: Data is available to anyone, with no requirements of registration.
7. **Data must be non-proprietary**: Data is available in a format over which no entity has exclusive control.
8. **Data must be license-free**: Data is not subject to any copyright, patent, trademark or trade secret regulation. Reasonable privacy, security and privilege restrictions may be allowed.

Source: https://public.resource.org/8_principles.html

As specified by these principles, OGD should be machine-readable and available in bulk. Machine-readable data is data, which is in a format (standard computer language and not English text) that can be interpreted and extracted by a computer (Open Knowledge Foundation, 2012). For example, PDF formats are not machine-readable. Computers can display the text, but have great difficulty understanding the context (information about the document itself or its underlying data) that surrounds the text. A PDF format does not necessarily indicate who authored the document, where it came from or the nature of its content. Such information is called metadata. Machine readability directly influences data usability. Hendler and Pardo (2012) explain that datasets, especially very large datasets, on their own convey little information. Only when such data is processed – visualized, analysed or summarized – does it become informative and useful. For OGD

[13] Among the 30 open government advocates were Lawrence Lessig, law professor and a founding member of the Creative Commons license, and Tim O'Reilly, an advocate for the open source and free software movement who is credited with defining the concept of the web 2.0.

to realize its potential, government data should be released in formats that allow users to process and reuse the data so that they can examine it in ways that meet their interests and responds to their questions.

Furthermore, accessibility should be enforced through the use of open standards and open file formats allowing exploring, sorting, filtering and recombining data. An open file format is « one where the specifications for the software are available to anyone, free of charge, so that anyone can use these specifications in their own software without any limitations on re-use imposed by intellectual property rights » (Open Knowledge Foundation, 2012, p. 18). On the contrary, government data released in closed file formats requires the use of propriety software to read the data causing significant obstacles to re-using such data.

OGD should also be legally free to access and to reuse. For government data to be considered open, the data should be free from copyrights and be assigned an open license. Renowned examples of open license models are Public Domain Dedication and License (PDDL), Open Data Commons (ODC), and Creative Commons (CC0) copyright licenses.

D. Beneficiaries of Open Government Data

OGD can be used for a range of purposes (economic, social and political) by a number of beneficiaries, including public sector agencies, citizens, academia, CSOs, entrepreneurs, small and medium enterprises and large companies. According to Ubaldi (2013), the commonly recognized main beneficiaries of OGD include the following actors.

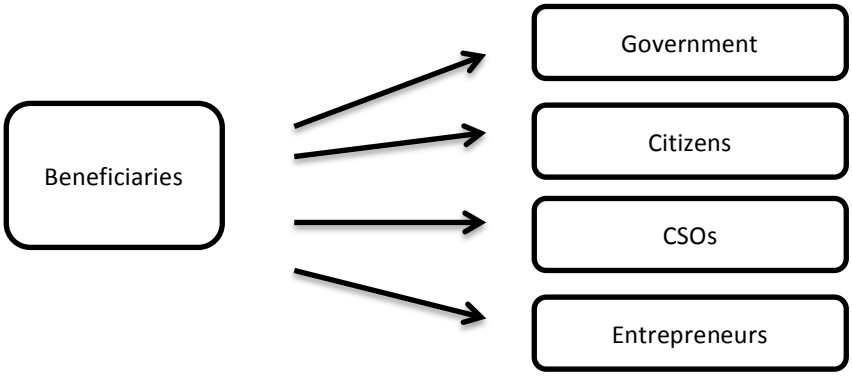
The first beneficiary of OGD is government itself as OGD ultimately alters the way government conducts its business. OGD induces government to change the way decisions are made and resources are allocated in such a manner that overall efficiency of government operations and public services is significantly increased.

Secondly, citizens are important beneficiaries of OGD as it supports citizen participation and public engagement in the co-development and co-production of public services through developed applications. The author argues that citizens may prefer to use secondary information type-products – such as services and applications, also called Apps – that are derived from OGD and not access OGD directly per se.

Thirdly, OGD is an essential building block for CSOs that can serve as important intermediaries to lobby for OGD implementation and advocate the benefits of OGD to public administration and the public. Furthermore, CSOs can be important intercessors for ordinary citizens to access and use OGD. Civil society organizations that play a significant role in the OGD movement include for example the Sunlight Foundation in the United States and the Open Knowledge Foundation in the United Kingdom.

Finally, OGD can be beneficial to IT professionals, enterprises, entrepreneurs and developers who can build on the data to develop services that compete with those developed by governments.

Figure 1: OGD beneficiaries



E. Evolution of the Open Government Data movement: Chronology

The OGD movement gained quickly momentum under the influence of high-level OGD champions in the US and the UK, and gained support from grassroots civil society groups, governments, and international organizations such as the World Bank and the United Nations.

In 2008, the Chief Technology Officer of the District of Colombia launched the first OGD initiative when releasing to the Internet more than 400 datasets containing data on for example the Districts' budget, contracts, and crime statistics (Shkabatur, 2012). The launch of the OGD repository was followed by a civic hacker competition, *Apps for Democracy*, to facilitate and encourage the development of applications featuring the newly released government datasets (Gigler et al., 2011). The contest produced 47

iPhone, Facebook and Web applications in 30 days with an estimated value of $2,600,000 that only cost the city $50,000 (Nichols, 2010).

In January 2009, US president Barack Obama released a Memorandum on Transparency and Open Government calling for a transparent, participative and collaborative government. In parallel, the president endorsed a federal OGD initiative, data.gov, an online OGD portal consisting of various datasets from several federal departments (Gigler et al., 2011). Shortly after, in January 2010, the United Kingdom launched its own OGD initiative, data.gov.uk, requiring central government agencies to release open datasets to the designated website. The UK Open Data initiative will be further analyzed in chapter Four of this study.

In March 2011, the federal government of Canada launched the twelve months pilot phase of its national OGD portal, which currently has more than 260,000 datasets from 20 participating departments and agencies (Denney, 2011; Pavlich, 2013). Alongside the platform, the government announced Canada's Action Plan on Open Government, which emphasized the government's commitment to enhance « Open Information, Open Data and Open Dialogue » (Government of Canada, 2013). Capitalizing upon the federal Open Data initiative, several provinces, including Quebec in 2012, launched their own Open Data portals (Government of Quebec, 2012). Quebec's initiative was preceded by a 2012 report[14], which focused on the necessity of the provincial government to enhance access to government data and partner with its citizens in order to improve the quality of governance, the effectiveness of public service delivery and the efficiency of the internal functioning of the state (Gautrin, 2012). In terms of availability, Canada is amongst those OECD countries who appear to have the most datasets on their centralized « one-stop data shop » (OECD, 2013).

International organizations such as the World Bank have also played an important role in the OGD movement. In 2010, the World Bank launched its own Open Data initiative releasing on its website more than 2,000 financial, business, health, economic, and human development indicators from more than 200 economies. Additionally, the World Bank launched an Access to Information policy making available to the public tens of

[14] The report entitled « Gouverner ensemble: Comment le Web 2.0 améliorera-t-il les services aux citoyens? » was commissioned by the government of Quebec.

thousands of documents and reports. Furthermore, the Bank has supported several OGD initiatives in developing countries – such as the OGD initiative in Kenya - by helping in the design and implementation process (Shkabatur, 2012).

F. Open Government Data distinctive attributes

In this sub-section, we examine the distinctive attributes of OGD compared to Open Government, ATI legislation and e-government policies.

Open Government Data vs. Open Government

Yu and Robinson (2012) argue that Open Government Data and Open Government can exist without the other. Governments can be transparent and accountable without using new technologies. On the contrary, government can embrace an OGD initiative and remain secretive by only providing access to neutral, descriptive and objective government data that does not enable citizens to hold government to account. However, by enabling the public release and free reuse of government data in machine-readable formats, OGD initiatives are an important building block of Open Government initiatives. Recognizing the importance of increased access to government data, OGD is a major requirement to which OGP members must commit. By signing the Open Government Declaration[15], member countries commit to proactively provide high-value government data in a timely manner and machine-readable, open formats.

Open Government Data vs. Access to Information

The OGD movement has close ties to the Access to Information movement. Both movements strive for broader availability to the public of government information, based on arguments for enhanced transparency and accountability. However there are also differences, especially in approach and focus (Janssen, 2012). First, though demand for OGD also stems from civil society, OGD activists are more often technology-savvy civil hackers or entrepreneurs than civil rights advocates. Secondly, OGD and ATI have different objectives. While OGD is focused on opening up raw, machine-readable datasets, ATI activists advocate for opening up any type of qualitative or quantitative information. Finally, OGD also relies on two drivers that are of less importance to ATI

[15] *Open Government Declaration,* http://www.opengovpartnership.org

activists, including innovation and economic growth on the one hand, and efficiency of the public sector on the other.

Open Government Data vs. E-government

OGD initiatives can build on e-government initiatives but go beyond their scope. E-government is mainly about the use of ICTs for improved public service delivery and communication between government and citizens. OGD initiatives, on the contrary, are strategies to increase government transparency and accountability, and citizen engagement. OGD initiatives alter the way government functions. While some elements of an OGD strategy include the use of ICTs, this is not merely a technical problem that can be solved by the government information technology department or outsourced to a company. OGD initiatives are processes that necessitate ongoing and sustained commitment towards transparency, accountability and citizen participation. This is why OGD initiatives necessitate different approaches that are not established elements of e-government (United Nations, 2013).

2.2 Governance Crisis

Examining the origins, philosophy and drivers of OGD, we explained that OGD is the latest democratic innovation to address the current governance crisis and developmental failures. OGD presents the ability of all stakeholders to have access to government data made available in machine readable and open formats that can be used to improve governance, empower citizens and enhance public service delivery. Prior to analyzing how OGD seeks to achieve these benefits, this section aims to disentangle the origins and implications of the current governance crisis.

Development, democracy and empowerment are obstructed, the argument goes, by a series of accountability failures (Gaventa & McGee, 2013; Ringold et al., 2012; World Bank, 2004). At the heart of the institutional accountability failures between citizens and the state is the problem of information asymmetry. Information asymmetry refers to a situation in which there is information disparity between the parties involved in a transaction (Snell & Sebina, 2007). In terms of citizen-government relationships, information asymmetry arises when relevant information about government policies, programs and services put into place to serve the needs of the public is known to those

who govern but not to those who are governed (Stiglitz, 2002). As a result, imperfect information arises and citizens are hence denied full knowledge of the policy-making process and how governments respond to their needs.

By being secretive, governments further create information asymmetries. Government officials have the power to distort and limit information by deciding to release into the public domain only the type and quality of information that best serves their own interests. Information asymmetries hence give public officials the discretion to pursue policies that serve their own political agenda instead of the interests of the public (Stiglitz, 2002).

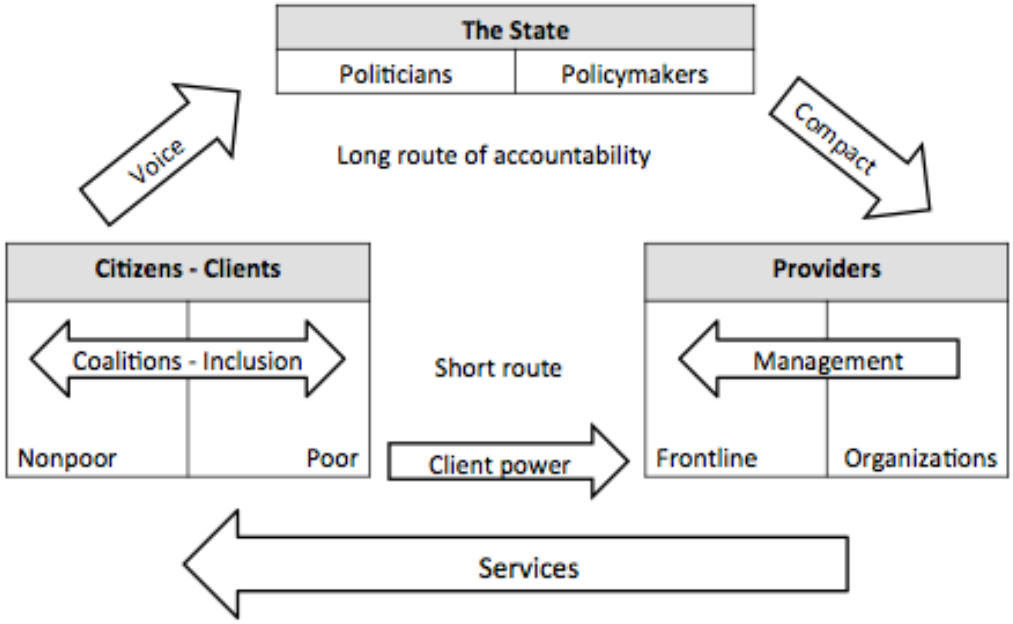
Moreover, information asymmetries constrain citizens' participation in democratic processes. Meaningful participation requires informed citizens who have access to information about the alternative actions that were available and the impacts that might have resulted. Furthermore, information asymmetries raise the cost for voters to becoming informed. Indeed, Stiglitz (2002), argues that voters have a threshold to the amount of time and energy they are willing to invest in gaining access to information necessary to guide them during elections and public participation. Consequently, information asymmetries dissuade a large number of voters who don't have special interests from actively engaging in public participation, leaving the floor open to those who do have special political interests. Information disparities hence reinforce lobbying and corruption, but most importantly, it discourages informed voters to impose effective checks and balances on the elected politicians.

The concept of agency problems associated with information asymmetries took center stage in the 2004 World Bank World Development Report, which argued that public service delivery failures are caused by accountability failures. The report developed a framework to analyze the power and accountability relationships that link citizens and the actors involved in the public service delivery chain. According to this framework, accountability can either be enforced through a long or short route. Through the long route of accountability, citizens influence and express voice over politicians who in turn influence service delivery through compacts with organizational providers. Through the short route of accountability, citizens individually and collectively can engage more

directly as purchasers, monitors and as co-producers. Failures in public service delivery arise when the relationships of accountability or the capacity of the actors is weak.

In the chain of service delivery, the report identified four broad actors. The first set of actors includes individuals (voters, patients, parents, students) who have a dual role as citizens and direct clients of government services. The second set of actors includes politicians and policymakers (prime ministers, presidents, parliamentarians, mayors, ministers of finance, health, education). The third set of actors includes organizational providers (health department, education departments, water and sanitation departments) who are responsible for elaborating internal policies specific to the organization and directing production responsibilities. The final set of actors includes frontline service providers (doctors, nurses, teachers, engineers) who are into direct contact with clients.

Figure 2: Key relationships of power



Source: World Bank (2004)

These actors are linked through four relationships of power and accountability. First, policymakers have broad agreements (compacts) with organizational providers about their long-term relationship. Through these compacts, politicians provide resources and

delegate power to service providers. Second, service providers manage frontline providers through the use of formal and informal tools of management. These tools provide frontline providers with assignments and delineated areas of responsibility, equipping them with the resources to act. Third, citizens exercise voice – express their preferences and influence - over politicians through formal (political parties and elections) and informal (advocacy groups) political mechanisms. For citizens to be able to hold policymakers accountable for their actions and decisions, they do not only need access to information about the political decision-making process, but most importantly, they need a variety of mechanisms of enforceability. Finally, citizens exercise client power over frontline service providers as they monitor the effectiveness of public service provision.

However, when citizens (the principal) exert influence over the agent, either through voice or through client power, they often lack access to relevant information about the actions and decisions of the agent (Besley, Burgess, & Prat, 2002). Information asymmetries create two problems: problems of hidden action (moral hazard) and problems of hidden type (adverse selection). Moral hazard occurs when an agent has the discretion to behave inappropriately. Adverse selection arises when characteristics about the agent's motivation and competence are unknown to the principal. In the absence of information asymmetries, effective incentives and enforceability mechanisms would enable the principal to hold the agent accountable. However when the accountability relationships are weak and when the principal lacks access to relevant information and efficient enforceability mechanisms, the State's accountability declines as well as its effectiveness of service provision as the public cannot identify problems nor can it criticizes mistakes (Noveck, 2009; World Bank, 2004). As a result, public service delivery failures arise.

2.3 Rethinking the State: Open Government Data

Examining the origins and implications of the current governance crisis, we demonstrated that information asymmetries weaken the relationships of power and accountability that link government and citizens in the chain of public service delivery. In the presence of information asymmetries, public officials and service providers have the

discretion to behave inappropriately and in their own special interests. As a result, the state's effectiveness of service provision declines. One of the main promises of OGD is that proactive release of government data in open formats will lead to improved governance and more responsive public service delivery. This section examines how OGD enables rethinking the state and addressing the current shortcomings in democratic institutions and public service delivery.

An effective state is vital for inclusive public service delivery, for markets to flourish, and for people to lead healthier, happier lives (World Bank, 1997). Using the contrasting example of South and North Korea, Acemoglu and Robinson (2012) have long argued that countries differ in their economic success because of their different political and economic institutions. While South Korea enjoys high levels of economic growth and living standards, good education and healthcare, North Korea is trapped in poverty and has living standards akin to those of a sub-Saharan African Country. Inclusive institutions are those that allow a country to achieve economic growth. Effective, transparent, and accountable institutions are critical for a nation's prosperity, and economic and social development. By balancing the power of public officials and holding them accountable, they enable governments to effectively deliver public services, an independent judiciary, a free press and a vibrant civil society. Inclusive institutions include a « golden threat of conditions »[16], which allow countries to thrive including the rule of law, the absence of conflict, the absence of corruption, the presence of strong property rights and institutions, and access to justice. In his recent speech at the Open Government Partnership summit, UK Prime Minister David Cameron petitioned that Open Government Data should be part of this golden threat.

2.3.1 New social contract

The concept of Open Government Data embodies a paradigm shift in the very conceptualization of the body politic: it effectively re-conceptualizes the relationship between a government and its citizens who are no longer passive subjects of a state but active citizens with a legitimate interest in government information, and thus having an

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[16] PM Speech at Open Government Partnership 2013, https://www.gov.uk/government/topical-events/open-government-partnership-summit-2013

inherent right to it (Gigler et al., 2011). In the era of OGD, the public sector cedes being the information gatekeeper and takes on a new role as publisher of information upon which the public gives its own representations and interpretations. As Gigler et al. (2011) explain, OGD involves a realignment of power and accountability dynamics. It reinforces both the long and short route of accountability as it alters the power relationships described in Figure 1 in three manners.

First, OGD enables citizens as voters to better hold elective officials to account as well as to address information asymmetries. Davies (2013) explains that the electoral mechanisms and the pressure of public opinion are left unchanged in this situation. However, the enhanced ability of journalists, pressure groups and citizens to access information around state decisions can drive such decisions more in-line with citizens' interests. Enabling citizens to express their opinions and to press their demands publicly allows states to acquire some of the credibility they need to govern well (World Bank, 1997). States that enjoin higher levels of credibility are then allowed more flexibility in policy implementation as well as in engaging citizens in the pursuit of collective goals.

Secondly, OGD creates the idea of a consumer democracy, one in which citizens engage in governance through individual consumption choices and selection of public services (Davies, 2013). Open Government Data enables citizens to gain more detailed, and personalized, information on public service delivery and hence to make more informed choices about which services to select. Here, governance happens through market mechanisms and distributed choices of individuals.

Finally, OGD creates the idea of co-production and more collaborative governance (Davies, 2013). Acknowledging the idea that development should no longer be state-provided, the OGD movement encourages citizens, CSOs and entrepreneurs to work together, and with the state, to improve policymaking and practice. OGD hence embodies a shift that re-conceptualizes the state, not as direct provider of growth, but as a partner, catalyst and facilitator (World Bank, 1997).

2.3.2 Aims, claims and assumptions

OGD initiatives aim to achieve a broad spectrum of policy goals, some of which may simultaneously benefit several of the beneficiaries identified in the previous section.

Ubaldi (2013) argues that understanding the different benefits OGD envisages is important to identify which enablers and type of data to prioritize in order to achieve the targeted impacts. The expected benefits of OGD policies can be classified in four categories: transparency and accountability, inclusive participation and citizen empowerment, growth and innovation, and government efficiency (Davies, 2010; Gigler et al., 2011; Heusser, 2012; Janssen, 2012; Shkabatur, 2012; Ubaldi, 2013; United Nations, 2013). This study mainly focuses on the "socio-democratic benefits" of OGD initiatives, including increased government transparency and accountability, more responsive public service delivery and citizen empowerment.

First, OGD is assumed to improve the quality of governance, strengthen democratic processes and increase government transparency and accountability. OGD champions emphasize « its spotlight effect in removing the veil of secrecy enshrouding the public sector's activities » (Gigler et al., 2011, p.6). OGD reduces information asymmetry as increased access to government information enables citizens to gain a better understanding about the functioning of government, how their tax money is spent, how laws and policies are made, and how decisions are arrived at (United Nations, 2013). Through reduced monopoly of information, OGD should thus facilitate public scrutiny and enhance citizens' ability to hold their government to account. This in turn can curb corruption and expose mismanagement. Furthermore, OGD should allow citizens to engage with their government in a more structured, informed and organized manner.

Secondly, OGD is considered to be essential for participatory governance and to empower citizens. Increased access to government information empowers citizens to make more informed decisions thus strengthening citizen's voice over politicians and in general. As the Web Foundation (2013)[17] explains, OGD can empower citizens, in particular marginalized groups, either directly or through the work of intermediary organizations who support citizens to access and use the data. Intermediaries can also use the data to campaign for greater inclusion of marginalized groups in decision making and receiving public services.

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[17] Established in 2009 by Sir Tim Berners-Lee, the man accredited with inventing the Web, the World Wide Web Foundation, also called the Web Foundation, is an organization that « seeks to establish the open Web as a global public good and a basic right, ensuring that everyone can access and use if freely ». *(https://webfoundation.org/about/)*

Thirdly, advocates of OGD support that it will lead to increased development efficiency. Increased access to government information can improve government and public service delivery as it supports political decision-makers to make better and fact-based policy decisions (United Nations, 2013). In parallel, greater access to data on governmental expenditures and performance as well as increased ability for public scrutiny can help to ensure due process in budgeting resulting increased budget transparency, reduced leakages and corruption, and thus better budget utilization (OECD, 2005). Moreover, OGD can expose information about malfunctioning and mismanaged service providers, which enables citizens to exert greater client power and make better-informed choices regarding the services they consume (Shkabatur, 2012). Consequently, OGD could induce organizational and service providers to improve the efficiency and effectiveness of service delivery.

Finally, OGD is believed to be a catalyst for innovation and economic growth. OGD champions emphasize its commercial and social value as a raw ingredient for entrepreneurs, private sector and CSOs to create new services and public goods. This argument has been prominent in the push for OGD in middle income and developing countries. For instance, Kenya tied its OGD policy to its economic growth strategy and the expansion of its ICT sector (Gigler et al., 2011).

2.4 The expected benefits of OGD initiatives

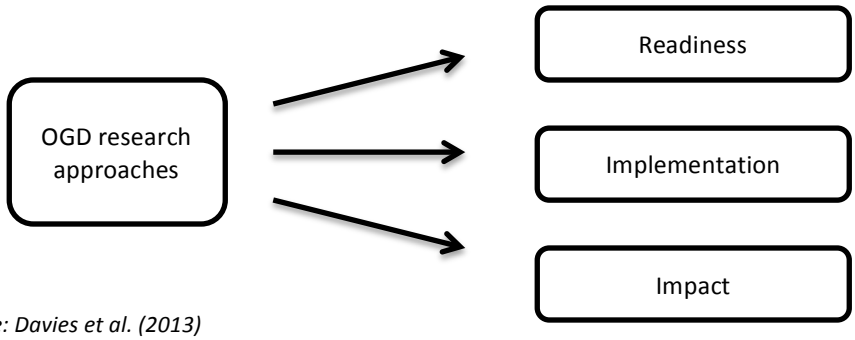
In this section, we first present the different approaches to OGD research, provide examples and classify this study within the current research landscape (Heimstädt, 2013). Secondly, since research on OGD impacts remains embryonic, this section also reviews some of the evidence of effectiveness and impact of other transparency initiatives that specifically focus on greater access to government information. Thirdly, we examine which factors enable or impede OGD initiatives to achieve their acclaimed benefits.

2.4.1 Research Approaches

Despite its infancy, several different research directions have evolved. Davies et al. (2013) suggest to classify OGD research into three broad groups, including open data

readiness assessments, open data implementation studies and impact studies. The three different OGD research directions are summarized in Figure 3.

Figure 3: OGD research approaches



Source: Davies et al. (2013)

Readiness studies seek to assess whether a country, city or sector meets the preconditions to implement an OGD initiative, and most importantly, for such initiative to be effective. Such assessments may also seek to highlight areas for further improvements. These studies generally have a distinct set of assumptions of what constitutes an effective OGD initiative and which factors are important for the initiative to achieve its expected benefits. Some international organizations have already led projects to assess country readiness for OGD initiatives. For instance, the *Open Government Data for Citizen Engagement in Managing Development (OGDCE)* toolkit developed by UNDESA[18] provides policymakers with policy guidelines and best practice recommendations to design, implement, evaluate and sustain OGD initiatives (United Nations, 2013). Furthermore, the toolkit provides practical advice on citizen engagement and how to involve stakeholders. The World Bank has also developed an *Open Data Readiness Assessment* (ODRA) methodological tool for conducting an action-oriented assessment of the readiness of a government to evaluate, design and implement an OGD initiative (World Bank, 2013a). Readiness studies include the Web Foundation feasibility studies in Ghana (2011a), Chile (2011b) and Indonesia (forthcoming), the World Bank Open Data readiness assessments for the governments of Ulyanovsk Oblast (Russian Federation) (2013b), Antigua and Barbuda (World Bank, 2013d), and the government of Peru (World Bank, 2013c), and the Uganda Open Government data readiness study conducted by CIPESA (2012).

[18] UNDESA is the Division of Economic and Social Affairs of the United Nations.

These studies have all benchmarked on OGD initiatives in developed countries like the US or the UK, considered by many as default models to emulate, regardless of the context in which the initiative is implemented (Gigler et al., 2011). In this respect, the modalities used by the US and the UK to design, catalyze and implement their OGD initiatives have become the default model for the release of open government data worldwide. This perspective has been reinforced by OGD advocates promoting a "transfer and diffusion" approach to OGD, assumed to be universally applicable, regardless of contextual differences in less developed countries. This model makes certain predictions regarding the demand and supply of open government data. On the demand side, it assumes that civil society and the private sector have the capability to use OGD for political, social and economic purposes. On the supply side, it assumes that governments have the political will to release government data and have the capacity to implement such initiatives.

Implementation studies follow a more objective and less normative approach (Heimstädt, 2013). They seek to assess whether and how OGD initiatives are implemented. These studies vary widely in their approach. Some measure the availability and openness of key datasets and look at the quality of the published data. Such studies include the Open Data Index conducted by the Open Knowledge Foundation (2013) and the Open Data Barometer led by the Web Foundation and Open Data Institute (2013)[19]. Other studies indicate the proportion of institutions publishing data. Existing case studies generally describe the implementation process of a specific OGD initiative, including its underlying drivers and principal objectives, and provide preliminary insights into data usage patterns. They also describe the obstacles that have occurred and the supportive factors that must be addressed, outlining a roadmap to move forward. In 2012, the World Bank conducted two such case studies analyzing the implementation process of OGD initiatives in Kenya (Rahemtulla et al., 2011) and Moldova (Rahemtulla et al., 2012).

Impact studies seek to assess whether OGD has led to value creation. Generally, they seek to assess whether OGD has brought one of its expected benefits, including

[19] Officially launched in November 2012, the Open Data Institute is a UK government-funded institution, which mission is to unlock the economic potential of open government data. The Open Data Institute will be further explained in chapter Four of this study.

increased transparency and accountability, citizen empowerment, growth and innovation and government efficiency. For instance, an EU commissioned research calculated that the market for government information in the EU is estimated at around 27 billion euros (MEPSIR, 2006). Another example is the cost-benefit analysis of the Trading Fund model, which estimated the economic value of government data in the UK at £6 billion (Newbery, Bently, & Pollock, 2008). However, as Davies et al. (2013) point out, most research of open data impacts include ad-hoc isolated case studies, but no comprehensive large-scale studies.

This study cuts across all three aspects of OGD research. This study seeks to contribute to the existing literature on OGD initiatives by providing insights into the mechanisms that allow such initiatives to achieve their acclaimed benefits. This study will seek to generate descriptive and explanatory accounts of how OGD is being used and how it influences change, without necessarily making strong claims about causal links between OGD initiatives and its impacts (Davies et al., 2013). Our conceptual framework is based on the "Open Data Political Cycle", the end product of an OGD workshop convened in 2012 in Brasilia by the International Development Research Centre (IDRC), the Web Foundation and the Berkman Center for Internet & Society of Harvard University. The Cycle will be explained in greater detail in Chapter 3 of this study.

2.4.2 Evidence of effectiveness and impacts

Future impact studies of Open Government Data initiatives can be divided into two main strains of research based on the scope of their analysis (Davies et al., 2013). Due to a lack of comprehensive OGD impact studies, this section reviews some of the evidence of effectiveness and impact of other transparency initiatives that specifically focus on greater access to government information since these provide insights into the possible trends OGD initiatives could take.

A. Macro-level academic research

The first strain of academic research examines the impact of access to government information at a macro-level, documenting statistical correlations between measures of government information dissemination and variables that capture their impacts on governance and development.

Islam (2003), for instance, using an empirical analysis, finds that countries with better information flows have better quality institutions and are better governed. Information flows are measured in her analysis by access to information and transparency. The access to information index represents the existence of Access To Information laws, while the transparency index [20]measures the frequency with which economic data is published. The author shows that increased access to information and more transparent political institutions are associated with improved governance as measured by various governance indicators[21].

Bellver and Kaufmann (2005) for their part show that, controlling for differences in levels of income, transparency is correlated with better socio-economic and human development indicators[22], as well as reduced corruption. Furthermore, they show that, for the same level of income, a country with a more transparent environment has more effective government agencies in providing public services. The degree of transparency is measured through an aggregate transparency index, which has two sub-components: economic and institutional transparency, and political transparency[23]. Though we do not directly make use of these indicators, we utilize a number of its sub-indicators, including the e-government index and the free press index.

These studies however fail to control for country-specific factors that may influence the impacts of increased access to information on governance and development. Given the early stages of OGD initiatives, accounting for these factors enables us to gain a better

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[20] The index is based upon eleven representative variables from four sectors – real, fiscal, financial and external sectors – for a total of 169 countries, including both developing and developed countries.

[21] Governance indicators include for example the rule of law, political instability, government effectiveness and measure for example corruption, freedom of the press and the extent to which the rule of law is respected.

[22] The human and development indicators include life expectancy at birth, female literacy rate and child immunization.

[23] This index covers 194 countries and is constructed based on variables that stem from both objective measures of transparency as well as perception-based measures. The economic and institutional component covers economic transparency, e-government, Access To Information laws, transparency in the budget process, transparency of policy and transparency in the public sector.

The political transparency component covers « transparency of political funding, openness of the political system and freedom of the press to monitor government's performance and express the people's voice ». The index ranges from -2.5 to 2.5. The country ratings and margins of error were generated through an unobserved component model.

understanding of the mechanisms through which OGD operates (Davies, Perini and Alonso, 2013). Therefore, we have chosen to conduct a comparative case study that focuses on two specific OGD initiatives in India and the United Kingdom.

B. Micro-level and case studies

The second strain of research is comprised of micro-level evidence and case studies that examine the impacts at a micro-level, often focusing on a specific initiative in a particular context.

Reinikka and Svensson (2004), for instance, using a quantitative micro-level policy experiment in Uganda, find that increased access to government information is a powerful deterrent to capture and corruption of public funds at the local level. In 1995, a Public Expenditure Tracking Survey (PETS)[24] conducted by the authors revealed that only 13 percent of a capitation grant program[25] to cover schools' non-wage expenditures had actually reached the schools due to leakages and grant captures by local officials. In response to the findings of the PETS, the central government began to disseminate information on monthly transfers of capitation grants to local governments in newspapers, enabling citizens to monitor state officials' usage of the grants. Using a repeat PETS, the authors evaluated the impact of the information campaign as a tool to reduce corruption. Access to information was measured through the degree of exposure to the information campaign. The authors instrument for exposure by distance to the nearest newspaper outlet. The study found that local capture was significantly less in the schools more extensively exposed to the information campaign.

P. Pandey et al. (2008) for their part show that increased access to government information can enhance public participation and strengthen democratic processes. The authors evaluate the impacts of a community-based information campaign on learning and school performance in three Indian states. The analysis is based on a cluster

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[24] These surveys trace the flow of public funds from the central government to the local facilities by comparing how much of the sent funds were actually received at the service delivery units. Consequently, one can easily calculate how much of the funds were captured. The PETS covered 250 primary schools.

[25] The central government finances and runs the capitation grant and district offices are used as distribution channels.

randomized controlled trial on 610 gram panchayats (GPs)[26], including 340 treatment villages. More specifically, the objective of the campaign was to disseminate information to the community, village education committees and parent teacher associations on both the quality and quantity of public services to which they are entitled and their responsibility to oversee school management. The study found that the community-based information campaign had a positive impact on community participation as both parent and school committee monitoring of school management and education outcomes increased. The information campaign significantly promoted dialogue and consultation about school quality issues between parents, teachers and school oversight committee.

2.4.3 Underlying factors shaping the impacts of OGD initiatives

Impact not only depends on internal effectiveness, but also on the initiative's interaction with the context in which it unfolds. Several studies have sought to determine which factors, both enabling and impeding, shape the possibility of OGD initiatives to achieve their goals and objectives. Analyzing the evolution of the UK and US open government data initiatives, Hogge (2010) identified three actor groups as instrumental to the success of OGD initiatives, including high-level political leaders, mid-level bureaucrats and the civil society. Based on interviews conducted with a selected number of experts, the report concludes that a fourth actor group is essential to the successful development of OGD in developing and middle-income countries. Such fourth tier includes international donors that provide funding and technical capacity. Gigler et al. (2011) for their part identified eight contextual factors that can enable or impede OGD initiative to be successful, including for example conducive legislative and regulatory frameworks, and sufficient national ICT infrastructure and policies. Furthermore, participants at the *Fostering a Critical Development Perspective on OGD* workshop, held ahead of the 2012 OGP meeting in Brasilia, developed an "Open Data Political Cycle" that illustrates and explains that OGD impact itself depends on a variety of factors, including logics of power, level of economic development, media, and civil society capacity, that interact in the process of delivering open government data (IDRC, Web Foundation, & Berkman Center, 2012). Additionally, Barbara Ubaldi (2013), the head of the E-Government Directorate

[26] A GP is a cluster of approximately 1-3 adjacent villages and is the smallest unit of local government.

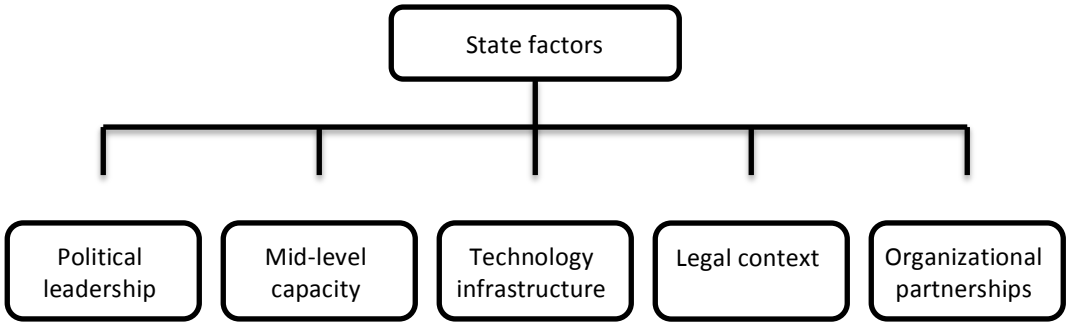
for Public Governance and Territorial Development at the OECD, describes the institutional, legal and organizational challenges that OGD policies should address for such initiatives to achieve its benefits.

Other studies that seek to determine the underlying factors shaping the impact of OGD initiative include the *Open Government Data for Citizen Engagement in Managing Development (OGDCE)* toolkit (United Nations, 2013), the *Open Data Readiness Assessment* (ODRA) methodological tool (World Bank, 2013a), and the *How To Note: Toward Open Government Data for Enhanced Social Accountability* (Shkabatur, 2012). This study examines both State (supply) and civic (demand) factors that interact in the process of delivering OGD in the UK and the India.

A. State factors

According to the above described studies, the success and sustainability of OGD initiatives depend on political leadership and commitment, middle-management level capacity, national technology infrastructure, legal and regulatory context, and organizational partnerships between the government and civil society. Figure 4 summarizes the state factors that influence the success of OGD initiatives.

Figure 4: State factors shaping the impacts of OGD initiatives



i. Political leadership and commitment

Top-political leaders are instrumental to the success of OGD. Political leaders act as high-level change agents by providing the political will and mandate to overcome resistance and secrecy that could inhibit the release of OGD. By reducing information asymmetries, OGD changes the power dynamics and creates political winners and losers (Gigler et al., 2011). OGD will thus face resistance from vested interested, including bureaucratic forces and actors inside and outside government that benefit from a culture of secrecy.

For example, political elites may oppose OGD initiatives as it has the potential to disrupt their influence and privileged access to data. Additionally, corrupt civil servants may resist the democratization of public information, as it would expose sensitive and uncomfortable information about their activities. OGD would thus overhaul the culture of impunity that arises from information asymmetries and a lack of transparency. Opposition to OGD initiatives may also be passive in the form of inertia of the existing bureaucratic culture that embodies norms and values that are opposite to the standards of transparency, cooperation and openness to which OGD aspires.

Strong, sustained political leadership is therefore important in counteracting both active and passive resistance. It can do so by drawing attention to the benefits of OGD and undertaking reliable commitments to release accessible, open and meaningful government data (World Bank, 2013a). For example, on his first day in office, US president Barack Obama issued a memorandum establishing an Open Government Initiative, which has empowered those mid-level bureaucrats and agencies working on data.gov to release their data.

ii. Mid-level bureaucrats capacity and commitment

In addition to top political leadership, middle management level capacity and commitment is also important for effective OGD initiatives. Mid-level bureaucrats, and not political leaders, are typically those who decide which datasets are to be published and how, how the accuracy and comprehensiveness of datasets are ensured, how they are updated, and to what extent they satisfy pubic demands. The existence of a special government entity with sufficient political weight to coordinate OGD matters is therefore an important precondition for OGD initiatives to be successful. By delineating a defined mandate and transparent standards, such agency can substantially reduce transaction costs for government officials charged with releasing government information.

For example, the Republic of Moldova created a coordinating unit for OGD, called the eGovernance Center, that reports directly to the State Secretary and Prime Minister (Rahemtulla et al., 2012; World Bank, 2013a). This body is responsible for managing the operations of the government Open Data portal and the implementation of the OGD directive by every public agency. The eGovernance Center works in close coordination with the Chief Information Officers of each ministry.

iii. National technology infrastructure

Furthermore, the technological backbone of an OGD initiative is the national technology infrastructure. A strong national technology infrastructure is essential for the quality of OGD and the efficiency of OGD portals. OGD initiatives are more likely to achieve their benefits when citizens have access to a basic ICT infrastructure, including mobile technology, computers, and connectivity, and when access to the Internet is widespread in both urban and rural zones. Additionally, OGD initiatives are more likely to be successful when government has a modern web presence, offers sophisticated and user-friendly e-services, and when government experiments with e-participation initiatives engaging with citizens through its websites and the social media (World Bank, 2013a).

iv. Legal and regulatory context

The efficiency of OGD initiatives also depends on the existing legislative and regulatory context in which it operates. A stable and permeable legislative and regulatory context – including ATI laws, Constitutional recognitions on the freedom of expression, as well as laws on copyright and privacy - can significantly reduce transactions costs for citizens to access and reuse OGD. On the contrary, inconsistent enforcement can impede both OGD supply and demand.

As previously explained, ATI legislation endorses citizens' right to access government information on request and delineates government and public bodies to provide the requested information in a timely manner. First, while an OGD initiative does not require the introduction of ATI legislation, such laws create a culture of transparency and accountability and endorse the recognition that government information belongs to the public (Gigler et al., 2011). Secondly, ATI legislation increases the capacity for enforcement. Through regulating the legal obligations of government, ATI legislation addresses a lack of political will to disclose or strengthen the technical capacity of public institutions to record, manage and make available relevant data.

Furthermore, intellectual property legislation that clearly permits the use and reuse of public sector information with minimal barriers can substantially enhance the use of OGD. However when transparent intellectual property standards are lacking, citizens and third party infomediaries become unwilling to use and reuse OGD as they may face fines or retribution for doing so.

v. Organizational partnerships

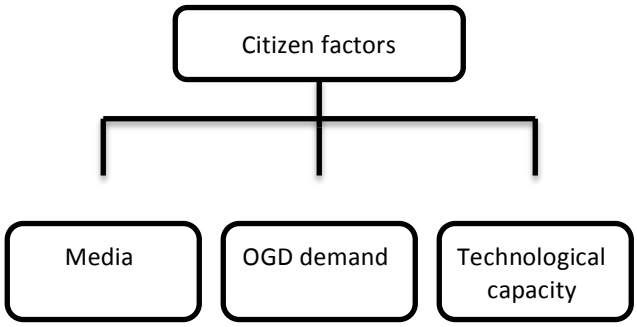
Finally, evidence among leading governments has shown that OGD initiatives are more sustainable and high-impact in the presence of effective interaction between civil society and the State. Governments should therefore create new types of partnerships with a wide range of stakeholders. Robust engagement can allow for a better understanding of the users' needs in terms of data types and formats. Additionally, capturing users' feedback may result in the creation of new features and tools.

For instance, to enhance citizen engagement with the city's OGD initiative, the major of New York appointed a Chief Digital Officer within the Mayor's Office, issued Open Data legislation that is part of a larger Digital NYC Roadmap, launched an annual NYC BigApps contest, developed linkages between City government and the local developer community, and launched a Citizen Toolkit for engaging with NYC government online (World Bank, 2013a).

B. Citizen factors

However, for OGD to trigger its expected benefits, citizens must be able to use, reuse or analyze the newly available government data. Their capabilities can be strengthened by an active and independent media, strong demand for OGD, and technological capacity. Figure 5 summarizes the citizen factors that influence the success of OGD initiatives.

Figure 5: Citizen factors shaping the impacts of OGD initiatives



i. Media

The presence of a free, independent media with pluralistic ownership is an important component for the success of OGD initiatives. The media is a leading force in informing citizens, raising awareness, disseminating findings and monitoring government performance. As illustrated by Reinikka and Svensson (2004), the media was a powerful deterrent of capture and corruption of public funds.

ii. Demand for OGD

In addition to the media, a strong demand-side pull for OGD is essential not only for creating and maintain pressure on government to release its data, but also for OGD to result in tangible outcomes. For instance, CSOs, journalists, civic hackers and activists can be important intercessors for ordinary citizens to access and use OGD. These infomediaries can create secondary information type-products such as Applications (Apps) and visualizations in order to translate the data into « information, knowledge and action » (Davies, 2014, p. 15). The role of such infomediaries gains significance as citizens lack access to ICTs and the technological capabilities to engage with OGD.

For instance, civil society was a critical demand-side driver of OGD in the US (Hogge, 2010). In 2004, a linguistics postgraduate student and software developer called Josh Tauberer launched GovTrack.us. The website repurposes publicly available data about key activities of the US congress and publishes it online in an accessible and searchable form. The website empowered an ecosystem of other websites that use this congressional data. Furthermore the role of third party intermediaries gains significance as fewer citizens have access to ICTs, which is the case in many middle income and developing countries.

iii. Technological capacity

Finally, realizing the full potential of OGD rests on the assumption of vibrant participation by all societal groups without discrimination. However a strong national ICT infrastructure does not in itself determine who can access and use OGD effectively. Digital literacy and technological capacity to engage with OGD are also important components. However substantial barriers exist for some societal segments, resulting in their digital exclusion from the benefits of OGD. Among the most important issues of OGD exclusion are infrastructure and access. According to the 2012 UN E-government survey, gaps in access to and use of ICTs and e-government services often consist of connectivity hurdles. These include the lack of affordable equipment, telephone lines and Internet connections. Furthermore, infrastructure disparities are generally highly correlated with economic and social status as well as geographic isolation. The challenges are presented along five lines of analysis: language, spatial divide, income gap, socio-cultural barriers and age.

First, language is a major obstacle to OGD-inclusion. This is particularly a major issue among marginalized groups with none or little education. According to the 2012 UN E-Government Survey, more than 80% of all government websites were in English. However, only one third of e-government users worldwide speak English as their native language.

The second parameter of OGD-exclusion is the rural/urban divide. Well-connected, wealthy communities that are geographically located in proximity to major cities are more likely to benefit from well-developed national ICT infrastructure. In contrast, poor, underserved constituencies are more likely to suffer from OGD-exclusion. They thus risk being underrepresented as active OGD users.

The income gap makes up an important third category of access barriers. Poor individuals and communities generally lack access to ICTs. Other access barriers usually exacerbate the income gap. These include low levels of education, difficult access to ICTs and other public services because of location in remote areas, and sometimes additional disabilities. The income gap is considerably more difficult to overcome in middle-income and developing countries where a large part of the population lives in poverty. In order to realize higher OGD participation, governments from these countries should put into place mechanisms that improve the affordability of ICTs. These can include subsidizing ICTs for low-income groups or introducing market-based mechanisms to improve ICT penetration and lower prices.

The fourth parameter of OGD-exclusion includes socio-cultural barriers. Societal customs that determine access to OGD include the status of women, ethnic and religious minorities, and persons with disabilities. According to the 2012 UN E-government survey, women have been associated with low use of computers, mobile phones and the Internet. They are also underrepresented in their ownership of technology devices. In general, they are associated with an overall disinterest in technology. However, the new social media and networking tools show some promising gender trends, as women tend to engage more with social networking sites than men.

Finally, the digital divide is also an age issue. As pointed out by the 2012 UN E-Government Survey, 45% of Internet users worldwide are below the age of 25, which

equals to one third of the population worldwide. Yet that leaves two third of potential users worldwide offline.

2.5 The limits and potential risks

OGD holds tremendous potential for increased government transparency and accountability, more responsive public service delivery and citizen empowerment. Despite the numerous benefits, Open Government Data also has its limitations and potential downsides. This section outlines the limits and potential risks of OGD, such as privacy and national security constraints, the illusion of transparency as well as inequalities in terms of its use, content and impact.

The first challenge of OGD includes privacy concerns. Privacy laws « seek to balance protection of individual personal information and anonymity with societal goals of increased transparency » (Gigler et al., 2011, p. 16). However, the boundaries between personal and non-personal data are not always straightforward. On the one hand, OGD risks making available private data and information that can be misused against individuals, communities or groups (United Nations, 2013). For example, personal information such as date of birth and Social Security Number in combination with other information can be used to obtain credit and steal identities (Schrier, 2010). On the other hand, lack of standards in this area can restrain government agencies from releasing valuable public sector information such as census data or household surveys as they are uncertain of what is acceptable to share (Gigler et al., 2011). Furthermore, established laws could overprotect individual privacy rights to the extent that it is nearly impossible for government agencies to release such information. This has been a limiting force in the implementation of the US Open Government initiative as well as in spurring citizen's use of e-government services.

Secondly, OGD may risk including the disclosure of information that can jeopardize international relations or endanger national security, including wartime military reports. This fear gained new standing after the terrorist attacks on September 11 and especially after the WikiLeaks scandal in 2010. According to Schrier (2010)[27], the US government

[27] Bill Schrier is the former Chief Technology Officer for the City of Seattle and director of the city's Department of Information Technology.

endorsed a new set of clauses that restrict sharing of government information out of fear that certain kinds of data might aid and empower future terrorists. Information subject to such restrictions include locations of public infrastructure, including fiber optic cable for phones, data systems, water pipelines, and highway bridges, as well as government plans for protecting such infrastructure.

Furthermore, access to OGD may be only available to those who have technological capacity, access to technology and to those who are digital literate. Consequently, OGD may lead to the marginalization of groups – such as the elderly, rural communities and marginalized groups - and may reinforce existing inequalities and especially the digital divide. Janssen (2012) argues that without the necessary skills and knowledge to interpret the datasets, many citizens will not be able to benefit from OGD. Consequently, these citizens will have less access to information than before the implementation of OGD portal. In the absence of mechanisms remedying OGD-exclusion, governments risk further exacerbating inequities of vulnerable groups.

Additionally, over-reliance on the OGD community might lead to the provision of one-dimensional, subjective information (Janssen, 2012). As explained earlier, in many cases, CSOs will serve as important intermediaries for citizens to access and use OGD. For instance, the OGD community will create secondary information type-products such as applications, visualizations or other tools that are derived from OGD. However, these secondary information type-products may hold value judgments. If OGD activists and organizations misuse their power and responsibility to transfer information to the public, over-reliance on the OGD community may cause subjective, one-dimensional information. This may lead to information inequality and disempowerment of the citizens.

Finally, Janssen (2012) argues that government Open Data initiatives may be used as a tool to create the perception of transparency. For instance, if we do not assume goodwill on the part of government, OGD initiatives may include datasets that were previously available and not relevant for transparent, responsive and accessible governance systems.

2.6 Conclusion

This chapter enabled us to gain a better understanding of the origins, philosophy and distinctive distributes of OGD initiatives as well as their underlying drivers and objectives.

OGD is essentially an important tool for a more open, transparent and accountable government. OGD embodies the contours of a new social contract as it realigns the power and accountability relationships that link government and citizens in the public service delivery chain. It presents the ability of all stakeholders – including government itself, citizens, civil society organizations and entrepreneurs – to have access to government data made available in machine readable and open formats that can be used to increase government accountability and transparency, empower citizens and enhance public service delivery.

Given the early stages of OGD initiatives and the second wave of OGD initiatives in middle income and developing countries, we need a better understanding of how such initiatives can create value and influence change. Therefore, this study seeks to contribute to the existing literature on OGD initiatives by providing insights into the mechanisms allowing such initiatives to operationalize and achieve their acclaimed benefits. Cutting across all three types of OGD research approaches, we construct a conceptual framework that illustrates an OGD value chain, including a variety of supply and demand side factors that interact in the process of delivering the expected benefits of open government data. This study also seeks to address the potential downsides and limitations of OGD.

Chapter 3. Methodology

This study seeks to analyze the mechanisms allowing OGD initiatives to achieve their expected benefits. In this chapter we focus on the operationalization of our study. First, we present our methodological approach by defining our research strategy as well as the type of research. Furthermore, we delimit the unit of analysis and explain our choice of case studies. Second, we present the conceptual framework that will guide our analysis. The conceptual framework is broken down in five components that form an OGD value chain. For each component, we construct an assessment grid and describe the different criteria that will be used to assess the expected impacts of OGD initiatives, including improved governance, more responsive public service delivery and citizen empowerment. Finally, we describe the data used in this study.

3.1 Methodological approach

3.1.1 Type of research

According to Wholey, Hatry, and Newcomer (2010) classification, our study can be classified as descriptive with an explanatory purpose. A descriptive case study presents a complete description of an event within its context. Such studies primarily describe what is happening and why, in order to show what a situation is like. An explanatory case study focuses on establishing cause-and effect relationships, explaining which causes produced which effects. The classification of our study as both descriptive and explanatory is hence consistent with the research objectives of our study. Our research objective is to analyze the mechanisms allowing two specific OGD initiatives – data.gov.uk and data.gov.in – to achieve their expected benefits.

3.1.2 Comparative case study

According to Yin (2009), the researcher choices regarding his research method depend on i) the type of research questions, ii) the extent of control a researcher has over actual events, and iii) the degree of focus on contemporary or historical events. Our analysis will be based on a comparative case study, examining in particular the OGD initiatives put forward by the government of India and the United Kingdom. Yin (2009) defines the case study approach as followed:

> « A case study is an empirical enquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident. In other words, you would use the case study method because you wanted to understand a real-life phenomenon in depth, but such understanding encompassed important contextual conditions because they were highly pertinent to your phenomenon of study » (p. 18).

Focused case study research hence allows identifying the dynamics that support the development of an OGD initiative as well as the country-specific factors that can impact upon the realization of its benefits (Davies et al., 2013). Furthermore, Eisenhardt (1989) argues that the case study approach is appropriate when the phenomenon or research topic is relatively new. In this context, the research objective must be to provide a better understanding of the observed event, and not to collect empirical data to improve a pre-existing theory.

3.1.3 Unit of analysis

According to Hamel (1997), a case study relates and considers an event within its particular context in order to examine how the event will develop itself. The purpose of the case study is hence to grasp how a given context enables the development of the event we seek to study. According to Yin (2009), the unit of analysis is closely related to the initial research question. Therefore, the unit of analysis that best suits our study is the country.

3.2 Choice of countries

The judgment sample selection method has been privileged in this research project. Babbie (2010) defines this technique as followed: « judgmental sampling is a type of nonprobability sampling in which the units to be observed are selected on the basis of the researcher's judgment about which ones will be the most useful or representative » (p. 193). Our choice of countries is made according to the following criteria.

First, the United Kingdom and India are both pioneers in the OGD movement. Among the first to initiate an OGD portal alongside the US, data.gov.uk was officially launched in January 2010, releasing to the public more than 2,000 datasets ranging from traffic statistics to crime figures. As explained earlier, most initiatives seek to emulate the UK example, thereby making this experience specifically instructive (Gigler et al., 2011).

India for its part is one of the most active countries in the South Asian region in pushing for the proactive release of government data in machine-readable and open formats. For instance, in February 2012, the government approved the National Data Sharing and Accessibility Policy (NDSAP), which aims at increasing the availability and non-sensitive government data generated by government entities using public funds. As part of the NDSAP, the government launched data.gov.in, a publicly accessible online portal of government datasets that can be used by ordinary citizens for political, economic, and developmental purposes.

Secondly, country-specific evidence allows us to make different observations on the implementation of the OGD initiative and its effectiveness. While the original discourse around OGD mainly included higher-income, industrialized and long-established democracies, the second wave is however more likely to include a greater number of middle income and developing countries. These may have different objectives in pursuing OGD initiatives and face different challenges in implementing and reaping the benefits from these initiatives. According to Gigler et al. (2011), this phenomenon provokes questions regarding the transferability of the default model, developed by first wave countries, into developing country contexts with different institutional conditions and capacities of societal actors. The choice to study a developed country in contrast to an emerging economy hence allows us to account for these differences.

3.3 Conceptual Framework

In this subsection, we develop the conceptual framework that illustrates the OGD value chain and identifies the different factors that influence the success of OGD initiatives. The conceptual framework is broken down into five different components, including institutional context, OGD policy design, OGD openness, OGD usage and impacts. All five components can be further broken down into a number of sub-components. For each of these sub-components we construct an assessment grid that will be used to evaluate the expected benefits of OGD initiatives. As part of each assessment grid, we outline a number of factors that are essential for OGD initiatives to achieve their benefits (evidence of best practice) and suggest a range of indicators. Many of these factors and indicators are drawn from existing studies described in our literature review.

Our conceptual framework is based on the “Open Data Political Cycle”, the end product of an OGD workshop convened by the International Development Research Centre (IDRC), the World Wide Web Foundation and the Berkman Center for Internet & Society of Harvard University. The workshop, titled “Fostering a Critical Development Perspective on Open Government Data”, was held ahead of the 2012 Open Government Partnership meeting in Brasilia. It brought together 20 renowned policy-oriented academics coming from diverse geographical areas and backgrounds in order to discuss an interdisciplinary research agenda on the impact of OGD initiatives under political, economic and social dimensions. The meeting included a debate on potential research questions and approaches that could inform an international research network on the impact of OGD in developing countries. The key issue explored was how OGD initiatives – particularly in the developing world – could lead to different outcomes and longer-term impacts. The Open Data Political Cycle illustrates and explains that OGD impact itself depends on a variety of factors that interact in the process of delivering OGD. We have added two dimensions to the cycle: OGD openness and usage.

The overall outcomes and benefits of OGD mainly depend on the implementation path such initiative takes. First, the implementation process is defined by the context in which an OGD initiative is embedded. The workshop report highlights that context creates a path dependency meaning that « future efforts are locked-in by the institutional features that characterize the political, social and economic habitat, where a particular open data initiative is born » (IDRC et al., 2012, p. 7). Institutional features identified in the workshop report include the public agenda, civil society capacity, the media and existing regulation. We will analyze two additional features, including the national technology infrastructure and demand for OGD. While the institutional context may be an important factor for OGD to unfold, a trigger often precedes the implementation of such initiative. Factors that trigger OGD may include, for example, new political or civil society leadership, a corruption scandal, international pressure or a new piece of regulation. The trigger leads to a political response from the public authority that commits to transparency and OGD as a way to respond to the momentum caused by the trigger.

A political response is then followed by strategic policy design (IDRC et al., 2012). An OGD policy design decides on the implementation process of an OGD initiative, to what

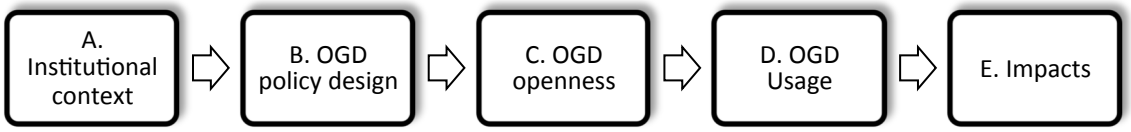
extent, by whom, within which limits, etc. For instance, the policy design determines which institutions, new or existing, will be involved in implementing and coordinating the OGD initiative across government agencies. Furthermore, the policy decides on which data to release, under which license and in which formats. It also determines how to make OGD more useful for its beneficiaries through engaging with a wide range of stakeholders.

Thirdly, the OGD policy design is an important determinant of the availability, openness and usability of the government datasets made available through the central online OGD portals. The policy decides on whether to make the public data available, accessible and authorized for both reuse and distribution. Most importantly, it determines whether to release high-value datasets that can enable increased transparency and accountability, improved public service delivery and citizen empowerment. Ultimately, the OGD policy decides whether the government datasets meet the citizens' needs.

Fourthly, as Davies (2014) points out, there is more to securing impact of OGD initiatives than the datasets themselves. The value of OGD is in its use and reuse by citizens, civil society organizations and entrepreneurs. In general, OGD initiatives are designed such that end-users either require technical skills, or need to rely on infomediaries in order to translate the data in « information, knowledge and action » (p.15). Furthermore, the role of these intermediaries gains significance as several societal segments face substantial barriers to access ICTs and thus OGD. If OGD beneficiaries lack the awareness, will and capacity to access and use the data, then there is little potential for OGD to achieve its expected benefits.

Finally, in a domino effect, the above described elements all need to be lined up for OGD initiatives to trigger outcomes and impacts. As pointed out by Davies (2014), it is possible to line up the elements in different orders and forwards different ends. However, if any key elements are missing, the chain-reaction from the release of government datasets to outcomes and impacts may be broken, impeding such initiatives from achieving their expected benefits.

Figure 6: Conceptual framework: OGD value chain



Source: Author, inspired by IDRC et al. (2012)

A. Institutional context

The first step in our OGD value chain is the characterization of the institutional context in which the OGD initiative unfolded. As explained earlier, context creates a path dependency. In our literature review, we have presented several factors that have the ability to influence the success of OGD initiatives, including political commitment and leadership, a conducive legal and regulatory context, sufficient national technology infrastructure, an active and independent media, and demand for OGD. This section also suggests a range of indicators to assess the extent to which these factors are conducive for an OGD initiative to achieve its benefits. Table 2 presents both the contextual factors that are essential for OGD initiatives to be successful and the indicators that will be used to examine the institutional context.

i. Political commitment and leadership

Since government is the primary producer and owner of public data, political commitment and leadership play a central role in the success of any OGD initiative. This is especially important in the initial takeoff stage, as well as to ensure the longtime viability of an OGD initiative (Gigler et al., 2011). OGD is more likely to achieve its benefits in the presence of visible OGD champions at the political level (World Bank, 2013a), and political commitments for open government and to fight corruption (United Nations, 2013).

To assess the degree of political leadership and commitment, we will use the indicators suggested by the *Open Data Readiness Assessment (ODRA)* tool developed by the World Bank. According to the ODRA framework, indicators of political leadership and commitment for OGD include a publicly announced political promise on OGD, the endorsement of an OGP National Action Plan, and the presence of OGD initiatives at the regional and/or city level (World Bank, 2013a).

ii. Legal and regulatory context

In addition to political commitment, the efficiency of OGD initiatives largely depends on the existing legislative and regulatory context in which it operates. A stable and permeable legislative and regulatory context – including ATI laws, privacy laws and intellectual property legislation – is an important enabler for citizens to access and reuse OGD. Since the foundation of OGD lies in the right to government information (United Nations, 2014), we have decided to specifically focus on ATI legislation.

To asses the effectiveness of ATI legislation, we will use the ATI indicators developed by Gavelin et al. (2009). In their attempt to measure and compare the development of government openness, the authors introduce a new set of indicators on ATI legislation, including a series of sub-indicators and follow-up questions to provide additional contextual information. In contrast to existing measurements, these indicators focus on the scope and efficacy of ATI legislation and not merely on its presence or absence. According to the authors, indicators of an effective ATI law include that i) ATI law presumes proactive publication, ii) the implementation of the law meets citizens' demand for information, meaning that exemptions and refusals to information requests are rarely used, and iii) the law ensures equal access to information for all citizens, meaning that there is no (low) fee for making requests and that exceptions for low-income exist.

iii. National technology infrastructure

The feasibility and effectiveness of OGD initiatives is also a function of the adequacy of the national technology infrastructure. OGD initiatives are more likely to achieve their expected benefits when governments have implemented sophisticated and user-friendly e-government initiatives, and when access to the Internet through broadband and mobile devices is widespread.

Firstly, to assess whether government has a modern web presence, we will use the e-government index (EGDI) developed by UNDESA, in particular its online service sub-indicator. The online service index assesses each country's national website – including the national central portal, e-services portal and e-participation portal, as well as websites of related government agencies and departments (United Nations, 2012). The assessment consists of four sections corresponding to four stages of e-government

development. According to this assessment, indicators of a sophisticated and user-friendly e-government initiative include government websites that i) provide current and updated information on public policy, laws and regulations across sectors and government departments (*Stage I Emerging Presence*), ii) deliver one or two-way e-communication between government and citizens and have technical features such as audio, video-capabilities and digital multilingualism (*Stage II Interactive Presence*), iii) offer transactional services such as online tax payments (*Stage III Transactional presence*), and v) feature interactive tools that enable governments to actively solicit citizens' views and democratic participatory decision making (*Stage IV Networked Presence*).

Secondly, to assess the degree of ICT access and use, we will use indicators suggested by the ODRA tool. According to the framework, indicators of a strong and adequate national technology infrastructure include i) robust Internet and broadband coverage/penetration that is widespread in both urban and rural zones, ii) affordable Internet and broadband connectivity for a significant percentage of the population, and iii) high levels of ICT usage by all segments of the population (World Bank, 2013a).

iv. Media

Additionally, the media plays an important role in assuring the success of OGD initiatives, as it is a leading force in informing citizens, raising awareness and monitoring government. OGD is more likely to achieve its benefits in the presence of an independent media, when the media is more active, and when journalists, news organizations and citizens enjoy freedom of communication and expression.

To measure the degree of media independence, we will use several indicators, including the Freedom of the Press and Freedom of the Net indicators developed by Freedom House as well as the Press Freedom Index developed by Reporters Without Borders. According to these assessments, indicators of an independent, active and free media include pluralistic and transparent media ownership, the presence of editorial independence as well as media coverage reflecting a diversity of viewpoints. Other indicators include absence of censorship and the existence of basic laws that contain provisions designed to protect freedom of the press and expression (Freedom House, 2014b; Reporters Without Borders, 2014).

v. OGD demand

Finally, the value of OGD is in realizing its prolific use and reuse by citizens and civil society groups to achieve a variety of policy goals. Civil society organizations, journalists, civic hackers and activists can be important intermediaries for ordinary citizens to access and use OGD by adapting and manipulating the data through applications and visualizations (Ubaldi, 2013).

To assess the degree of OGD demand, we use the ODRA indicators. According to the ODRA framework, OGD is more likely to achieve its benefits in the presence of a social audit movement with a possible demand for expenditure and budget data, and OGD civil society champions or infomediaries that have both the will and capacity to transform the data into information, knowledge and action (Davies, 2014, p.15).

Table 2: Institutional context assessment grid

Sub-component	Evidence of best practice	Indicators
Political leadership and commitment	➢ Commitments across the political spectrum on transparency and OG through the release of government data ➢ Head of Government / Senior Minister proactively driving OP agenda across government ➢ Visible OGD champions at political level	✓ Publicly announced political promise or policy position on OGD or OG ✓ Endorsement of OGP National Action Plan with open data commitments ✓ OGD activities at regional/city level
Legal and regulatory context	➢ ATI presumes proactive publication of information ➢ ATI law meets citizens' demand for information ➢ ATI law ensures equal access to information and documents for citizens	✓ Officials are obliged to publish information and documents proactively and in a short timeframe ✓ The usage of exemptions and refusals to information requests are low ✓ No (or low) fee for making requests ✓ Exceptions for those with low income exist
National technology infrastructure	➢ Governments have implemented sophisticated and user-friendly e-government initiatives ➢ Widespread access to the Internet through broadband and mobile devices	✓ Government websites provide current and update information across sectors and departments ✓ Government websites deliver one or two-way e-communication and have technical features ✓ Government websites offer transactional services ✓ Government websites feature interactive tools that enable government to meaningfully engage with citizens ✓ Fixed and mobile broadband coverage is robust and widespread in both urban and rural zones ✓ Fixed and mobile broadband connectivity is affordable and provided at a low cost ✓ ICTs are widely used
Media	➢ Independent media ➢ Active media ➢ High degree of freedom of communication and expression	✓ Media coverage reflects a divert of viewpoints ✓ Media ownership is pluralistic ✓ Presence of editorial independence ✓ The constitution and basic laws contain provisions designed to protect freedom of the press and expression ✓ Absence of censorship
OGD demand	➢ Civil society and media demand transparency, accountability and participation ➢ Civil society and media demand FOI and OGD	✓ Presence of social audit movement ✓ Existence of OGD civil society champions

Source: Author

B. OGD policy design

The second step in our value chain is the analysis of the OGD policy design, which decides on the implementation process of an OGD initiative. Long-term strategies regarding the development of OGD initiatives are critical for OGD to flourish. Without specific strategies and related policies, the quality and availability of open government data may diminish over time (Ubaldi, 2013). According to Helbig, Cresswell, Burke, and Luna-Reyes (2012), this may result in a loss of public interest and OGD usage, as well as missed value creation. Therefore, to ensure that the focus is on the envisioned aims and results, OGD policies should take into account the institutional context in which they are embedded and address the numerous challenges – technical, economic, social, legal and institutional - that may derive from OGD implementation (Ubaldi, 2013). Since examining all the above challenges is beyond the scope of this study, we have chosen to only focus on the organizational, institutional, legal and social challenges. To assess how the policy design addresses these challenges, we will mainly use the OGD indicators developed by Barbara Ubaldi. Analyzing the preconditions that enable efficient and effective implementation of OGD initiatives, Ubaldi (2013) developed a methodology comprising an analytical framework that can be applied to both ex-ante and ex-poste analysis of OGD initiatives, including a related set of data/indicators to be collected across countries. Table 3 summarizes the key dimensions of a successful OGD policy design and presents the indicators that will be used to examine the effectiveness of the policy in addressing the organizational, institutional, legal and social challenges inherent to OGD implementation.

i. Organizational structure

Due to the crosscutting nature of OGD, governments should put in place the appropriate organizational structure to sustain the OGD initiative. Mid-level bureaucrats, and not political leaders, are typically those who are responsible for the actual implementation of an OGD initiative. Successful OGD initiatives therefore require the existence of a special entity with sufficient political weight to coordinate and champion OGD matters across government agencies, to ensure that OGD policies are implemented and that all stakeholders are brought on board.

For the organizational structure to be effective, governments should designate an inter-agency body to coordinate the OGD initiative. Each department should also endorse a specific departmental OGD strategy setting out specific commitments regarding OGD release. Finally, the government should appoint Open Data managers, Chief Information Officers or Chief Technology Officers among key agencies in charge of data management and coordinating OGD matters (World Bank, 2013a).

ii. Institutional framework

To ensure the availability, openness and usability of government data, the government should implement an overarching institutional framework that clearly defines which data to share, in which formats, at what time intervals and under which license (United Nations, 2014).

Indicators of an overarching institutional framework that ensures compliance include the adoption of data principles providing guidance and best practice recommendations, an inventory that identifies unpublished datasets, mechanisms that prioritize the release of high-value datasets as identified in the G8 Open Data Charter (see Table 1 p. 13), and mechanisms of enforcement to ensure compliance. Furthermore, government should commission government data publishers to report on progress.

iii. Legal framework

A consistent legal framework is critical to facilitate OGD accessibility and reuse (Ubaldi, 2013). While ATI legislation endorses the citizens' right to access government information, such laws do generally not give an automatic right to reuse public sector information. Furthermore, the right to access government databases is in some countries excluded from the law and in others the law is unclear. Additionally, in many countries, public agencies assert intellectual property rights – such as copyright and database rights – over the data they have generated or collected. Therefore, ATI legislation as well as clear licensing guidelines are a cornerstone of OGD. For OGD to be accessible and reusable, ATI acts should undergo amendments that create the conditions for accessing and reusing raw, un-manipulated OGD datasets.

As per the OGD indicators developed by Ubaldi (2013), a conducive ATI law for OGD accessibility and reuse is one that requires the release of government datasets in electronic, open and machine-readable formats, and is accompanied with a Code of

Practice providing guidance on issues related to making government data available for reuse. Additionally, government should endorse the use of an open license for sharing and reusing government datasets.

iv. Organizational partnerships

Finally, OGD initiatives are more sustainable and high-impact in the presence of effective interaction between civil society actors and the State. Robust engagement between the public sector and OGD users can allow for a better understanding of the users' needs in terms of data, timeliness of updates and formats. Additionally, capturing users' feedback may result in the creation of new features and new tools. Therefore, agencies should regularly engage citizens and other stakeholders to get feedback and input on their services, decisions or activities.

According to Ubaldi (2013), indicators of interactive and meaningful organizational partnerships include the endorsement of policies setting out principles for citizen engagement and the implementation of rich mechanisms for citizen engagement featured on the OGD portal. Governments should also engage in activities to promote reuse of government data through co-creation type events such as hackathons, code sprints and apps challenges.

Table 3: OGD policy design assessment grid

Sub-component	Evidence of best practice	Indicators
Organizational structure	➢ Existence of special entity with sufficient weight to coordinate and champion OGD	✓ Designation of inter-agency body to coordinate OGD ✓ Endorsement of specific departmental open data strategies ✓ Existence of OGD managers, CIO, CTO among key stakeholder agencies
Institutional framework	➢ Government should implement an overarching framework that clearly defines which data to share, in which formats, at what time intervals and under which license	✓ Adoption of open government data principles ✓ Inventory of unpublished datasets ✓ Mechanisms to prioritize the release of high-value datasets ✓ Effective enforcement mechanisms of compliance
Legal framework	➢ ATI includes right to access databases ➢ ATI gives a right to reuse information ➢ OGD, except for confidential data, is not subject to copyrights	✓ ATI requires government data release in electronic, open and machine-readable formats ✓ ATI law is accompanied with a Code of Practice ✓ Endorsement of an open license for sharing and reusing government datasets
Organizational partnerships	➢ Public agencies regularly engage OGD users to get feedback and input ➢ Agencies have a track record for engaging with developers to create applications and eServices	✓ Endorsement of citizen engagement policies ✓ OGD platform has a rich mechanism for citizen engagement ✓ Existence of co-creation type events

Source: Author

C. OGD openness

The third step in the value chain is the assessment of the availability and usability of OGD as well as the technical and legal openness of government datasets. Long-term strategies and policies that set the vision for releasing government data are critical for OGD initiatives to be successful. However, it is not just important that governments are releasing public data; what really matters is how much key information is actually made available. As the Web Foundation and Open Data Institute (2013) point out, no matter how much data the government releases through the central portal, if these datasets are not the ones demanded by citizens or the kinds of data that can enable transparency, accountability, innovation and greater inclusion, then there may be little potential for an OGD initiative to deliver its expected benefits (p. 15). Table 4 presents the indicators to assess the availability and usability as well as the technical and legal openness of OGD.

As explained in Chapter 2 section 2.1.2, G8 members identified 14 high-value datasets, jointly recognized for supporting innovation, and providing greater accountability to improve governance. Since this study only seeks to analyze the "socio-democratic"

benefits of OGD initiatives, we will focus on a small subset of these high-value datasets, including government budget and spending data, datasets relating to national election results as well as health and education data. These datasets have been chosen for their breadth and relevance, and were most likely to be available in both countries. To determine what constitutes these datasets, we refer to the datasets details formulated in the Open Data Index and the Open Data Barometer *(see Annex 1)*. These indicators provide a global assessment of the state of open government data. They focus on a small number of key datasets, which were selected to represent different functions of government as well as to capture a range of key national information.

As explained in further detail in the previous chapter, OGD initiatives aim to enable citizens to hold government to account, exert greater client power and make better-informed choices regarding the public services they consume. However for OGD to support informed choice and accountability, certain types of information should be available. We will use the data type classification put forward by the UK National Audit Office (2012, p. 12) to analyze the availability, quality and usability of government data. To support citizens in choosing providers and holding public officials, in particular local service providers, to account, the UK agency argues that the following types of information should be made available:

- Descriptive information about providers, for example location and provider type
- Objective, standardized activity and performance information that sets out the levels of services provided and their quality
- Information about performance based on people's experiences, for example user satisfaction information
- Information on spending, enabling analysis of links between spending and performance
- Contextual information about data, including quality disclosure, to assist interpretation

To assess the state of government budget data we will rely in particular on the Open Budget Index, developed by the International Budget Partnership (IBP). This indicator examines the public availability and comprehensiveness of eight key budget documents that governments should publish at various points in the budget cycle *(see Annex 1 for a*

detailed description). More specifically, we will assess whether the data used to produce these documents is published on the OGD portals, including total expected revenue, expenditure, debt levels, and broad sector allocation. The IBP has also developed certain criteria for how to present budget information in a consistent and comprehensive manner. According to the organization, all expenditures should be classified by administrative unit, by functional classification, and by economic classification. Furthermore, the documents should present multi-year estimates of aggregate expenditure (International Budget Partnership, 2012).

Additionally, for OGD initiatives to achieve their expected benefits, government data should be made available in a form that ensures ease of use and reuse. To assess the degree of legal and technical openness of government datasets, we rely on the Open Data Index and the Open Data Barometer. These indicators developed a list of questions to assess the availability and openness of government data. According to these assessments, government data should be available online and in digital formats for the data to be accessible. Additionally, to ensure re-use and redistribution, the data should be machine-readable, and made available in open standards and open file formats. Government data should also be available in bulk and released on a timely basis. Finally, government data should be easy to discover, sustainable and linked (Open Knowledge Foundation, 2013; Web Foundation & Open Data Institute, 2013).

Table 4: OGD openness assessment grid

Sub-component	Evidence of best practice	Indicators
Availability and usability of budget and spending data	➢ Datasets enable transparency, accountability, improved public service delivery and greater inclusion	✓ Government publishes all 8 key budget documents ✓ Budget date used to produce these documents is available on the portal ✓ Such data is presented in a consistent and comprehensive manner: 1) expenditures are classified by administrative unit, 2) expenditures are classified by function classification, 3) expenditures are classified by economic classification, 4) multi-year estimates of aggregate expenditure is presented
Availability and usability of national electoral data	➢ Datasets enable transparency, accountability	✓ Datasets are available constituency/state-wise ✓ Datasets provide information on participating political parties, voter turnout, successful candidates, seats won, expenditure
Availability and usability of education and health data	➢ Datasets enable transparency, accountability, improved public service delivery and greater inclusion ➢ Datasets support informed choice	✓ These datasets should include all five data types: 1) descriptive information, 2) objective standardized activity and performance information, 3) user satisfaction information, 4) information on spending enabling analysis of links between spending and performance, 5) contextual information to assist interpretation
Technical and legal openness of data	➢ Government data is made available in a form that ensures easy of use and reuse	✓ Data is publicly available for free ✓ Data is available online and in digital formats ✓ Data is machine-readable ✓ Data is available in open standards and file formats ✓ Data is available in bulk ✓ Data is released in a timely fashion

Source: Author

D. OGD usage

The fourth step in the OGD value chain is the analysis of OGD usage. As Davies (2014) points out, there is more than just datasets to secure impact of OGD initiatives. The value of OGD is in its use and reuse by ordinary citizens as well as civil society organizations and entrepreneurs who can serve as infomediaries. If OGD beneficiaries lack the awareness, will and capacity to access and use the data, then there is little potential for OGD to achieve its expected benefits. To assess the trends of OGD usage, we will use the indicators developed by Ubaldi (2013), which are presented in Table 5.

According to Ubaldi (2013), indicators of high levels of OGD use include increasing trends in the number of total visitors, visits, page views, online dataset views, data downloads, apps developed using OGD, new services built on top of OGD, and in the number of Apps downloads.

Table 5: OGD usage assessment grid

Sub-component	Evidence of best practice	Indicators
OGD uptake	➢ Site usage and dataset usage statistics follow an increasing trend	✓ Increase in the number of total visitors and page views ✓ Increase in the total number of online views for all dataset ✓ Increase in the total number of downloads for all datasets
OGD re-use	➢ OGD reuse is high	✓ Increase in the number of apps developed based on OGD ✓ Increase in the number of new services created built on top of OGD ✓ Increase in the number of apps downloaded and information on the fields

Source: Author

E. Impacts

The final step in the OGD value chain is the assessment of OGD impacts. As explained in greater detail in the previous chapter, OGD initiatives aim to achieve a broad spectrum of public policy goals. However, there are a certain number of elements that need to be lined up before OGD initiatives can trigger these benefits. If any key elements are missing, the chain-reaction may be broken impeding an OGD initiative from achieving its acclaimed benefits. This study only focuses on the “socio-democratic” benefits of OGD, including increased transparency and accountability, more responsive public service delivery and citizen empowerment. Given the infancy of these initiatives, analyzing the impacts of OGD is rather difficult. Therefore, following Davies et al. (2013) recommendations, this study seeks to generate descriptive and explanatory accounts of how OGD influences change without necessarily making strong claims about causal links between OGD initiatives and their impacts. Table 6 presents the indicators to assess the expected impacts of OGD initiatives.

To assess the impacts of OGD we will use the Open Data Barometer, in particular its impacts sub-index. To our knowledge, it is the only indicator that made on attempt at measuring whether OGD initiatives have delivered their expected benefits. The impacts

sub-index examines six kinds of OGD impact, including government efficiency, transparency and accountability, environmental sustainability, inclusion of marginalized groups, economic growth, and supporting entrepreneurs. To measure OGD impact, the assessment looked for « credible claims made in academic publications, mainstream media and online sources which explicitly attribute certain impacts to open data released by the countries government » (Web Foundation, 2013, p. 37). The extent of impact was given a score on a scale from 0 to 10 (highest score possible). The highest scores were only granted where there was peer-reviewed or audited evidence of impact. One should however be careful when interpreting these results, as they do not offer substantive proof of impact nor are they easily comparable as the assessment primarily relies on secondary sources that may have different methodologies for computing impacts. Despite these caveats, we believe that the Open Data Barometer can be particularly instructive as it enables us to gain insights into the future trends of OGD impacts.

According to the Open Data Barometer impacts sub-index, indicators that OGD has strengthened governance include increased government transparency and accountability, citizen empowerment and improved service delivery. In particular, we examine whether OGD enabled i) citizens to identify and challenge corruption, ii) citizens to express their voice and meaningfully participate in policy-making, and iii) government to better plan and target resources and enabled outside actors to build new services on top of OGD.

Table 6: Impacts assessment grid

Sub-component	Evidence of best practice	Indicators
Enhanced transparency and accountability	➢ OGD has strengthened democratic processes and increased government transparency	✓ OGD enabled to identify and challenge corruption
Citizen empowerment	➢ OGD has empowered citizen's voices	✓ OGD empowered citizens to express their voice, to participate in policy making and access government services
Improved public service delivery	➢ OGD has increased government efficiency and effectiveness	✓ OGD enabled government to better plan and target resources ✓ OGD enabled outside actors to build new services on top of open data which deliver more effective public services

Source: Author

3.4 Data

Having presented our OGD value chain and its different components, we now turn to the data we use in this study. We present our different data sources and define the indicators that will be used, and explain their choice. Finally, we briefly focus on caveats to consider when using secondary data.

3.4.1 Data sources

To ensure both the viability and validity of our data, we have chosen to use multiple and diversified data sources. This will in particular allow triangulation of the collected data. As defined by Denzin (1978), triangulation is « the combination of methodologies in the study of the same phenomenon » (p. 291) for validation purpose. He distinguishes three types of data triangulation: time, space and person. This classification is derived from the idea that the robustness of data can vary based on the time data were collected, people involved in the data collection and the setting from which the data were collected (Begley, 1996; Hussein, 2009). According to Jonsen and Jehn (2009), there are three purposes of triangulation:

> « The primary purpose is to eliminate or reduce biases and increase the reliability and validity of the study. […] The second purpose is to increase the comprehensiveness of a study, and thus to provide qualitatively derived richness and achieve a more complete understanding of the phenomenon under study, thus it entails complementarity. The tertiary purpose is the effect of increased confidence regarding results that triangulation brings to the researcher » (p. 126).

Following the recommendations of the *Open Government Data for Citizen Engagement in Managing Development (OGDCE)* toolkit developed by UNDESA, our study is based on both quantitative and qualitative existing secondary data (United Nations, 2013). The study draws on academic and scientific research papers, working papers, indicators, case studies, journal articles, blog posts, from multiple sources including international institutions, the UK and Indian government, and international non-governmental organizations.

3.4.2 Indicators

Our analysis draws on different indicators to assess OGD openness, usage and its impacts. These indicators include the Open Data index, the Open Data Barometer, the Open Budget Index, and the e-government development index.

Open Data Index

The objective of this study is to analyze the mechanisms allowing OGD initiatives to achieve their expected benefits, including increased government transparency and accountability, improved public service delivery, and citizen empowerment. However, for OGD to achieve these impacts, the data should be truly open and transparent.

Initiated and coordinated by the Open Knowledge Foundation in 2013, the Open Data Index (ODI) assesses the state of public information release and practice around the world (Open Knowledge Foundation, 2013). More specifically, the ODI ranks countries on the availability, accessibility and timeliness of 10 key datasets[28] *(See Annex 1 for a detailed description of some of these datasets).* The results of the ODI are calculated based on the Open Data Census, which collects information on the evolution of OGD at the national and city level. The Census draws on contributions from civil society members and open data advocates, including citizens, open data experts, government officials and journalists. These submissions are then peer-reviewed by a team of over 60 expert country editors. Each dataset is attributed an overall score based on the response to specific questions about information availability and openness with different weightings. The overall country score, a sum of all dataset scores, ranges from 0 (lowest score) to 1000 (highest score). In 2013, the ODI covered 70 countries and 700 datasets of which 84 were considered to be open.

Open Data Barometer

Another indicator of the availability, openness and usability of government data is the Open Data Barometer. Conducted by the Web Foundation and Open Data Institute (2013), the Open Data Barometer provides a global multidimensional snapshot of OGD practices at national level. More specifically, the Open Data Barometer explores

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[28] These datasets include transport timetables, government budget, government spending, election results, company register, national map, national statistics (demographic and economic indicators), legislation, postcodes, and emissions of pollutants. They have been chosen for their breadth and relevance, and are considered to be of high value by the G8 Open Data Charter.

countries readiness to secure benefits from OGD, the availability of key datasets and evidence of emerging impacts from OGD. The Open Data Barometer consists of three sub-indices: the readiness sub-index, the implementation sub-index and the impacts sub-index. Given a score between 0 and 10 (highest), the readiness sub-index assesses to which extent the country has in place the political, legal and social foundations for realizing the potential benefits of OGD initiatives. The implementation sub-index assesses the relative openness of 14 high-value datasets, examining a range of aspects of data availability and openness including online availability, machine-readability and license. Each dataset is given a score between 0 and 100, based on a weighted 10-points checklist. The impacts sub-index examines to which extent there is evidence of the political, social, environmental, and economic benefits of OGD initiatives. It assesses six types of impacts, including transparency and accountability, entrepreneurial open data use, government efficiency, economic growth, environmental sustainability, and inclusion of marginalized groups. Each of these impacts is awarded a score between 0 and 10. The Open Data Barometer is based upon three types of data, including peer reviewed expert surveys, detailed dataset assessments completed by expert researchers and secondary data taken from the World Economic Forum, United Nations e-Government Survey and Freedom House. In 2013, the Open Data Barometer covered 77 countries and 1,078 different datasets across fourteen categories.

Open Budget Index

As explained earlier, for OGD to deliver its impacts, the government should make available high-value datasets that enable transparency and accountability, more responsive public service delivery and citizen empowerment. For the purpose of this study, we focus on a subset of these high-value datasets, including government budget data.

Created by the International Budget Partnership (IBP)[29], the Open Budget Index (OBI) measures public access to information on the receipt and expenditure of public funds. More specifically, the OBI rates countries on the availability of key budget documents, the quantity of information provided and the timeliness of their dissemination

[29] Established within the Center on Budget and Policy Priorities in 1997, the International Budget Partnership collaborates with civil society actors to conduct budget analysis and advocacy in order to improve budget transparency.

(International Budget Partnership, 2012). Conducted every two years, the OBI is calculated based on the Open Budget Survey, which measures the state of budget transparency, participation and oversight in countries around the globe. The Open Budget Survey consists of 125 questions completed by independent local experts in the countries assessed. In 2012, the Survey covered 100 countries. The majority of the questions focus on the availability and comprehensiveness of budget information in eight key budget documents[30] *(see Annex 1 for a detailed description of the documents).* The remaining questions include information on the opportunities for public participation in the budget process, and the roles played by the legislatures and supreme audit institutions in budget formulation and oversight. To the extent possible, specific evidence supplements the responses provided. Such evidence includes references to available budget documents, provisions in laws, public statements, or interviews with government officials or other relevant actors. The results are reviewed by two anonymous peer reviewers and by the IBP. Once completed, the OBI, a simple average of the quantified questionnaire responses, assigns each country a score that can range from 0 to 100, with 100 being the highest score possible.

E-government development index

Without the adequate national ICT infrastructure, the feasibility and effectiveness of OGD initiatives will be hampered. Several factors are likely to strengthen the potential of OGD initiatives to achieve its benefits, including widespread Internet and broadband coverage, presence of e-government initiatives and digital literacy of OGD users.

Developed by UNDESA[31], the e-government development index (EGDI) is a composite indicator measuring the willingness and capacity of governments to use ICTs to deliver public services (United Nations, 2012). Conducted every two years, the EGDI is based on the UN global e-government survey, which assesses and rates the e-government performance of countries. The EGDI consists of three sub-indices: the online service

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[30] According to internationally accepted good practice criteria for public financial management, all governments should publish eight key documents at different stages of the budget cycle. These documents include a pre-budget statement, the Executive's Budget Proposal, the Enacted Budget, In-Year Reports, a Mid-Year Review, a Year-End report, an Audit Report and a Citizens Budget. Many of these international standards are drawn from those developed by multilateral organizations, including for example the IMF's *Code of Good Practices on Fiscal Transparency* and the OECD *Best Practices for Fiscal Transparency*.

[31] UNDESA is the Division of Economic and Social Affairs of the United Nations.

index, the telecommunication infrastructure index and the human capital index. The online service index assesses each country's national website as well as websites of government agencies and departments. The index ranks countries based on coverage, sophistication, user-friendliness and availability of e-services. The telecommunications index is a weighted average composite of five indicators: estimated internet users per 100 habitants, number of main fixed telephone lines per 100 inhabitants, number of mobile subscribers per 100 inhabitants, number of fixes internet subscriptions per 100 inhabitants, and number of fixed broadband facilities per 100 inhabitants. The human capital index is a weighted average composite of two indicators: adult literacy rate and the combined, primary, secondary, and tertiary gross enrolment ratio. The EGDI ranges from 0 (low level of development) to 1 (high level of development). The e-government survey also includes an e-participation dimension, which focuses on e-information sharing, e-consultation and e-decision making. The e-participation index value reflects how useful these features are and how well they have been deployed by the government compared to all other countries. The 2012 UN E-Government Survey covers 193 United Nations member states.

3.4.3 Limitations of the data used

There are three main disadvantages of using secondary data. First, access to documents or specific information might not always be available. Consequently, the researcher may fail to include information that could be important and decisive for his analysis. As a result, our comparative analysis as well as our conclusions and recommendations may be biased (Quivy & Campenhoudt, 2006). Secondly, the accuracy of secondary data is most of the time questionable. Not only is the researcher not aware of the data collection pattern, he has no control over it either. Therefore, the selection and quality of secondary data are sometimes impossible to validate (Bajpai, 2011). Furthermore, the researcher's analysis of the collected data and information might not be entirely objective (Quivy & Campenhoudt, 2006). Finally, the researcher might use secondary data that are developed for some other purpose in some other time frame in some other circumstances. This could undermine the relevance of the data in terms of its use in the current problem (Bajpai, 2011). Since the collected data does not entirely match the criteria developed by the researcher, the latter should manipulate the data in order to validate the hypotheses (Quivy & Campenhoudt, 2006).

3.5 Conclusion

In this chapter, we have presented our methodological approach, including the unit of analysis as well as our choice of case studies. More precisely, we have highlighted the advantage of conducting a qualitative comparative case study based on secondary data. Furthermore, we have presented the conceptual framework that will guide our analysis and described the OGD value chain including its different criteria that will be used to assess the expected benefits of OGD initiatives. We will use multiple and diversified data sources to ensure the reliability and viability of the collected secondary information. We are aware of certain methodological limitations, particularly in terms of access and relevance of the collected data. Nevertheless, we believe that this method of data collection will enable us to yield significant results.

The next two chapters use a case study approach to examine the mechanisms that enable OGD initiatives to achieve their expected benefits in two contrasting countries, the United Kingdom and India. Getting into the narrative will allow one to identify the underlying drivers, principal objectives and the evolution of OGD initiatives. It enables us to gain a better understanding of the political, legal, regulatory, technological and social factors that interact with the development of OGD. These chapters also provide insights into the portals' usage patterns and their expected impacts.

Chapter 4. Case study 1: Data.gov.uk

This chapter presents our first case study of the development of OGD in the United Kingdom while the next chapter will examine the Indian OGD initiative. In 2009, former Prime Minister Gordon Brown catalyzed the OGD movement in the UK by appointing Tim Berners-Lee, the man accredited with inventing the World Wide Web, as an expert advisor to assist the government's efforts in the area of OGD. Among the earlier OGD initiatives, data.gov.uk was officially launched in January 2010, releasing to the public more than 2,000 datasets ranging from traffic statistics to crime figures that can be reused by citizens, academics, individual developers, small and medium enterprises, and large companies. At the preview launch, Andrew Scott, the Director of Digital Engagement, outlined four goals driving the UK's OGD portal and surrounding policy, including transparency and accountability, citizen-led public sector reform, economic and social innovation and gaining prominence in semantic-web (Cabinet Office, 2009). This has been complemented by the development of an enabling environment, including the Public Sector Transparency Board, the Open Data White Paper, the Open Government License, the Open Data User Group, and the Open Data Institute.

In this case study, we first describe the history, politics and demographic background of the United Kingdom. We then characterize the institutional context in which the UK OGD initiative is embedded and examine to which extent the contextual factors are conducive for OGD to achieve its expected benefits. Thirdly, we examine the UK OGD policy design and assess in particular how the policy addresses the organizational, institutional, legal and social challenges that may derive from OGD implementation. Fourthly, we present a general overview of data publishing in the UK and analyze in particular the availability, openness and usability of government datasets. This chapter also provides insights into trends of OGD uptake and reuse. Finally, we examine whether data.gov.uk has delivered on its promises.

4.1. Country profile: United Kingdom

A former colonial empire and original signatory of the Declaration of the United Nations, the United Kingdom of Great Britain and Northern Ireland, commonly known as the United Kingdom (UK), has a long history as a major player in international affairs

(Norbury, 2003). A former Big Three leader with the United States and Russia, it has been a permanent member of the United Nations Security Council since its inception in 1946. The UK is also a member of the European Union, the NATO, G7, G8 and the OECD.

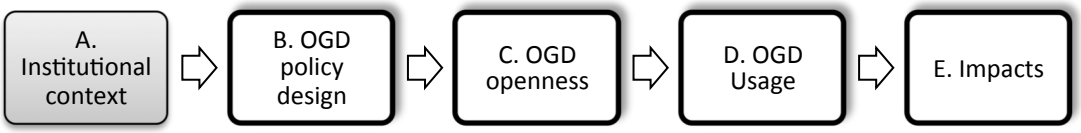
The UK is a constitutional monarchy with a parliamentary system. Parliament comprises two chambers: the House of Commons and House of Lords. Despite devolved administrations in Wales, Scotland and Northern Ireland, the Parliament remains the supreme authority of government as well as law-making

In 2011, there were an estimated 63 million people resident in the UK (United Nations, 2011). The capital of the UK is London, the largest city of the European Union (Norbury, 2003) with a population of 9 million (United Nations, 2011). The majority of the British population (59.3%) identifies themselves as Christian. However, minority religions include Islam (4.8%), Hinduism (1.46%), Sikhism (0.75%), and Judaism (0.47%) (Office for National Statistics, 2012). While English is the official language, there are 6 officially recognized regional languages, including Scots, Welsh and Irish (Norbury, 2003).

4.2 OGD value chain

In this section, we develop the UK OGD value chain and characterize its different components, including institutional context, OGD policy design, OGD openness, OGD usage and impacts. More specifically, we apply the different assessment grids accompanying each sub-component of the OGD value chain to evaluate the expected benefits of open government data in the UK.

A. Institutional context



The implementation process is defined by the context in which an OGD initiative is embedded. There are a number of contextual factors that affect an OGD initiative. This section examines the institutional features that characterize the economic, political and social habitat in which data.gov.uk unfolded, including political leadership and commitment, legal and regulatory context, national ICT infrastructure, media and

demand for OGD. This section also provides insight into the underlying drivers of the UK OGD initiative and identifies the key actors that were instrumental to the development of the OGD movement.

The UK open government data initiative was both supply and demand side driven. Three groups of actors played a crucial role in the initiative's success, including an active civil society pressuring government to open up its data, supporting and skilled mid-level bureaucrats, and high-level change agents setting the vision for the OGD agenda. An additional extrinsic motivator was external pressure arising from a political scandal.

i. Political leadership and commitment

Political commitment and leadership is key to the success of any OGD initiative. Political leaders provide the political will and mandate to overcome resistance and secrecy that could hamper an effective OGD initiative. Table 8 presents the main indicators of political leadership and commitment for OGD in the UK.

For several years prior to Gordon Brown's announcement, the government had been under pressure from civil society (TheyWorkForYou.com and Free our Data campaign)[32] to release its data in open and machine-readable formats, and to make it available for reuse for everyone. In particular, OGD champions criticized the "Trading Funds" model, which includes the funding of several government-owned bodies (such as the Ordnance Survey, the HM Land Registry and the Patent Office)[33] from revenues from the commercial exploitation of public data (Hogge, 2010).

This pressure has led to internal policy reviews and initiatives such as the Power of Information review and the Power of Information Taskforce. In 2007, Ed Mayo (former director of National Consumer Council) and Tom Steinberg (director of MySociety) were commissioned by the Cabinet Office to conduct the Power of Information Review (Mayo & Steinberg, 2007). The review was based on a literature review into the current and potential benefits of political engagement and communication, three in-depth case

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[32] This will be further examined in the next section v. *OGD demand.*

[33] The Ordnance Survey is the national mapping agency of the UK. Her Majesty's (HM) Land Registry is a non-ministerial department that registers the ownership of land and property in England and Wales. The Patent Office, also called the Intellectual Property Office, is the official government body responsible for granting Intellectual Property rights in the United Kingdom.

studies illustrating the costs and benefits of more online public sector information exchange, and interviews with over 60 decision makers, website operators, and users inside and outside government The report strongly argued in favor of a new government approach to public sector information. It recommended a strategy through which government:

> « welcomes and engages with users and operators of user-generated sites in pursuit of common social and economic objectives; supplies potential re-users with the public sector information they need, when they need it, in a way that maximizes the long-term benefits for all citizens; and protects the public interest by preparing citizens for a world of plentiful (and sometimes unreliable) information, and helps excluded groups take advantage » (May & Steinberg, 2007, p.20).

To guide the implementation process of such strategy, the review made 15 recommendations, many of which had to do with the future role of open government data. When interviewed for the *Open Data Study: New Technologies* conducted by Hogge (2010), Tom Steinberg identified two major opportunities offered by the review: « the Power of Information Review was a combination of cheerleading and one or two really meaningful policies » (p.11). The first opportunity was to act as a high-level change agent for opening up government activities and data to citizens. The review helped setting a tone around agendas in Whitehall convincing public actors that this is worth doing and that this is not frightening. The second was to instigate an evidence-based review of the Trading Fund model. The Government response to the review was broadly positive and accepted the majority of the recommendations (Cabinet Office, 2007). The Treasury and the then Department for Business, Enterprise and Regulatory Reform jointly commissioned a cost-benefit analysis of the Trading Fund model, which was published in February 2008 (Newbery et al., 2008). Another major outcome of the review was the founding of the Power of Information Taskforce in March 2008 (Hogge, 2010). The taskforce was convened by then Cabinet Office minister Tom Watson and chaired by former MP Richard Allan. The taskforce included grassroots and industry representatives as well as members of the public sector. One of the most striking outcomes of the Power of Information Taskforce was the *Show Us A Better Way* competition, a £20,000 contest for the best proposals for reuse of public sector information. The contest attracted around 500 entries, and was won jointly by 14 projects. The results of the contest as well

as the evidence-based review of the Trading Fund model led the Taskforce to make 25 recommendations around freeing up of geospatial data and reform of the Ordnance Survey.

However there was strong resistance from a small number of government agencies, in particular the Ordnance Survey, which benefited from the Trading Funds model. The government's position however changed in late 2009 when former UK Prime Minister Gordon Brown appointed Tim Berners-Lee and Nigel Shadbolt, professor of Artificial Intelligence at Southampton University, as government advisors to assist the implementation of the UK OGD initiative (Hogge, 2010). These thought leaders played an important role in pushing the OGD agenda. However an additional extrinsic motivator was external pressure arising from political scandals, in particular the UK parliamentary bogus expenses scandal[34]. Data.gov.uk was officially launched in January 2010. Later that month, London Mayor Boris Johnson created London Data Store opening up more than 200 data sets (BBC News, 2010b; Cabinet Office, 2010).

When David Cameron assumed the office as Prime Minister in May 2010, he pledged to make government more open by setting up a Transparency Agenda. This policy has been taken forward through three major policy announcements. In May 2010, the Prime Minister sent his first letter to government departments commissioning on practical implementation of the transparency agenda (Cameron, 2010). The letter set out key standard transparency requirements for all government departments, including the release of central government and local government spending data, crime data and other key datasets (e.g. positions and salaries of key civil servants) in an open and re-usable format. In July 2011, David Cameron addressed the Cabinet Ministers in a second letter setting out new commitments. Alongside the standard requirements, the second letter asked for the release of service-specific data in areas including health, education, crime and justice, and transport (Cameron, 2011). The Chancellor's Autumn Statement 2011 announced additional commitments, specifically supporting the release of OGD

[34] In 2009, the Telegraph revealed how members of the UK Parliament, including Government and ministers, exploited the system of parliamentary allowances and expenses for their personal use for several years.

that has the potential to unlock economic growth (HM Treasury, 2011). Table 7 outlines the key requirements for the UK transparency agenda.

Table 7: Requirements for the UK transparency agenda

Key standard transparency requirements	Sector-specific data
Monthly publication of all expenditure over £25,000, including a plain English descriptions explaining their scope and purpose	Clinical audit data, detailing the performance of publicly funded clinical teams in treating key healthcare conditions
Monthly publication of all expenditure over £500 on the Government Procurement Card	Data on satisfaction and engagement by NHS provider
Monthly management information on staff numbers and pay bill costs in Civil Service departments, their agencies and their executive NDPBs	Bringing together school spending data, school performance data, pupil cohort data and Ofsted judgments in a parent-friendly portal, searchable by postcode
Quarterly detail on travel, hospitality, gifts and meetings with external companies for Ministers	Sentencing data by court, including the age, gender and ethnicity of those sentenced, the sentence given and the time taken at teach stage from offence to completion of the case in court
Quarterly detail on expenses, travel and hospitality for Senior Officers	National crime mapping website, providing the public information on what happens next for crime occurring on their streets
Organizational charts for central government departments and agencies: six-monthly publication of posts, salaries and job descriptions	Real time data on the Strategic Road Network including incidents, speeds and congestion
Online publication of all new tenders and contracts awarded over £10,000	Rail timetable information published weekly

Source: Cameron (2010, 2011)

The UK is currently the lead-chair of the Open Government Partnership. One of the eight founding governments, the UK published its first OGP National Action Plan in September 2011. The 2011-2013 Plan made 41 commitments and focused on innovations in open data and online service delivery (Cabinet Office, 2011). In October 2013, the government, this time in partnership with civil society organizations, published the second 2013-2015 OGP National Action. Since the first plan was criticized for overly focusing on open data, the second plan was structured around five themes, including open data, government integrity, fiscal transparency, empowering citizens and natural resource transparency (Cabinet Office, 2013c).

Table 8: UK political leadership and commitment for open government data

Indicators	Sub-indices
Publicly announced political promise or policy position on OGD or OG	✓ Power of Information Review (2007) ✓ Government commissioned cost-benefit analysis of the Trading Fund model (February, 2008) ✓ Power of information Taskforce (March, 2008) ✓ Show Us A Better Way competition (June, 2008) ✓ David Cameron Transparency Agenda (May 2010)
Endorsement of OGP National Action Plan with open data commitments	✓ Founding member of the OGP ✓ Current lead-chair of the OGP ✓ Has published 2 OGP National Action Plans - **2011-2013 OGP National Action Plan** (mainly focused on open government data) - **2013-2015 OGP National Action Plan** (structured around 5 themes, including open government data)
OGD activities at the regional / city level	✓ London Data Store (launched in January 2010)

Source: Author

ii. Legal and regulatory context

Effective ATI legislation is essential for the development of an OGD initiative as such laws endorse the recognition that government information belongs to the public and increase the capacity for enforcement. As per the indicators developed by Gavelin et al. (2009), ATI legislation in the UK is in general conducive for OGD to achieve its expected benefits as it presumes proactive publication, meets citizens' demand and ensures equal access for all citizens. The indicators are summarized in Table 9.

The UK 2000 Freedom of Information Act (FOI) came into force in 2005. The Act applies to over 100,00 public bodies, including central government departments and agencies, local government, policy, state schools, colleges and universities as well as publicly owned companies. It provides a basic right to access government information subject to a set of exemptions (Information Commissioner's Office, 2007). Though the Act does not have a purpose clause, it aims to achieve six objectives, including increasing the openness and transparency of government, increasing the accountability of government, improving the quality of government decision-making, improving public understanding of government, increasing public trust in government and increasing public participation in government (Hazell, Worthy, & Glover, 2010). In 2013, monitored central government bodies received a total of 51,696 requests, of which 38,074 were resolvable, meaning that it was possible to give a substantive decision on whether to release the requested information (Ministry of Justice, 2014).

Information is generally published in a short time frame. During 2013, 91 percent of requests either received a response within the statutory deadline of 20 days or were subject to a permitted deadline extension (Ministry of Justice, 2014). Half of all resolvable requests received during 2013 were granted in full. Under the 2000 FOI Act, public officials also have the duty to publish information and documents as a matter of course. This obligation is embodied in the publication scheme (as per section 19), which requires all public authorities under the Act to set out their high-level commitments to proactively publish information. It specifies what sort of information will be proactively released, the manner in which it will be released and whether it will be released free of charge or upon payment (HM Government, 2000). According to the Ministry of Justice (2011), there has been an increase in the extent of proactive disclosure of information.

The usage of exemptions and refusals to information requests is relatively low. As per certain provisions of the 2000 FOI Act, public authorities can refuse to provide the requested information if « the request is considered vexatious or repeated; the cost of compliance would exceed the appropriate limit; if the information falls in one or more of the categories of exemptions listed in Part II of the Act » (Ministry of Justice, 2014, p. 13). In 2013, a total of 11,251 requests were rejected in full, representing 30 percent of all resolvable requests. The usage of refusals to information requests has followed an upward trend since 2005. This is mainly due to an increase in the number of FOI requests exceeding the cost limit. On the contrary, requests subject to one or more of the exemptions listed in Part II slightly decreased since the implementation of the FOI Act. The most widely used exemptions include personal information, commercial interests, information intended for future publication and law enforcement.

Although no exceptions for those with low income exist, the fee for making ATI requests is relatively low. Under certain provisions of section 9 of the FOI Act, public authorities are allowed to charge for FOI requests. Authorities can charge a fee both for those requests that exceed the appropriate cost limit (£600 for central government, £450 for other public authorities) and for other disbursements incurred when handling a request such as photocopying, printing or postage. However FOI requests are almost all free. In 2013, only 1.5 percent of all requests to monitored bodies were subject to a fee. Furthermore, almost all of these requests were made to the National Archives who

usually charges fees for FOI requests. The average value of fee paid in 2013 was £60 (Ministry of Justice, 2014).

Table 9: UK legal and regulatory context

Indicators	Sub-indices
ATI legislation	FOI came into force in 2005
Requested information is published in a short timeframe	✓ 91 percent of all resolvable requests were published within the statutory deadline of 20 days
Officials are obliged to publish documents proactively	✓ As per section 19, public officials have the duty to publish information and documents proactively ✓ Increase in the extent of proactive disclosure of information
The usage of exemptions and refusals to information requests is low	In 2013, 30 % of all resolvable requests for information were rejected × Increase in refusals to information since 2005 ✓ Decrease in usage of exemptions - Most widely used exemptions: personal information, commercial interests, information intended for future publication, law enforcement
No (or low) fee for making requests	✓ Only 1.5 percent of all requests for information were subject to a fee ✓ The average value of fee paid in 2013 was £60
Exceptions for those with low income exist	× No

Source: Author

iii. National technology infrastructure

The national technology infrastructure is the backbone of an OGD initiative. Without the adequate infrastructure, the feasibility and effectiveness of OGD initiatives will be hampered. As per the EGDI, the UK enjoys a relatively strong national technology infrastructure. In 2012, the UK was the third leading e-government development leader in the world and among the top five countries in online service delivery. Furthermore, access to the Internet through broadband and mobile devices is widespread.

The UN ranked the UK at the fourth place in its 2012 E-Government Survey, with an online service index of 0.9739, with 1 being the highest. In 2012, the government provided 85 percent of all online e-services assessed. According to the Survey, all government websites provide current and updated information on public policy, laws and regulations. Furthermore, 95 percent of all government websites assessed deliver one or two-way e-communication between government and citizens, and have technical features. Additionally, in 2012, the government offered 79 percent transactional services and 81 percent services in Stage IV (United Nations, 2012). Table 10 presents the EDGI online service sub-index and its components.

In 2008, the government redesigned its main government online portal, direct.gov.uk, which provides a one-stop-shop for all government information and services from both the central and local authorities. All public services, forms, tools and transactions that the government provides are listed in a user-friendly manner through its Do It Online page. The portal also features a JobCentre Plus page where citizens can search one of the UK's largest online databases of job vacancies as well as a separate business gateway, www.business.gov.uk (United Nations, 2012).

Table 10: Extent of service delivery in the UK in 2012

Rank	Online service index value	Stage I: Emerging presence	Stage II: Interactive presence	Stage III: Transactional presence	Stage IV: Networked presence	Total
4	0.9739	100	95	79	81	85

Source: United Nations (2012)

In terms of access to ICTs, the UK ranked at the seventh place in both the 2010 and 2011 International Telecommunication Union (ITU) ICT Development Index (IDI) with an access sub-index of 8.47, and scored highly in all of its constituent indicators (ITU, 2012). While fixed-telephone and mobile-cellular penetration rates are stagnating, the number of households with connected devices significantly increased from 50 percent in 2002 to 85 percent in 2012. Broadband is widely available. Nearly 100 percent of all households have access to high speed internet (ADSL) connections and 45 percent have access to fiber optic cable (Ofcom, 2013). However, several societal segments remain unable or disinclined to have broadband access due to economic and educational barriers. Furthermore, the share of individuals over 65 with broadband access is significantly lower that that of all other age groups. This gap has however been narrowing.

Since 2010, ICTs usage has registered unprecedented levels of growth. Between 2010 and 2011, the IDI use sub-index improved by 0.87, almost three times the global average progression (ITU, 2012). Fixed (wired) broadband penetration increased by three percentage points, while the share of internet users increased to 82 percent in 2011 compared to 78 percent in 2010. Growth in the use sub-index was mainly due to a remarkable increase in mobile-broadband penetration, which rose from 43 percent in 2010 to 62 percent in 2011. This can be explained by the « smartphone revolution » as both the number of smartphone users and the amount of downloaded data significantly

increased since 2011. According to the 2013 Freedom of the Net report, the UK provides competitive and favorable prices for communications services (Freedom House, 2013b). Table 11 presents the IDI access and use sub-indicators, including their components.

Table 11: ICT access and use in the UK in 2011

Indicators	Access	Usage
Fixed-telephone subscriptions per 100 inhabitants	53.2	-
Mobile-cellular subscriptions	130.8	-
International Internet Bi/s per Internet users	166'073	-
Percentage of household with computer	84.0	-
Percentage of household with internet access	85.1	-
Percentage of individuals using the Internet	-	82.0
Fixed broadband subscriptions per 100 inhabitants	-	32.7
Mobile-broadband subscriptions per 100 inhabitants	-	62.3

Source: ITU (2012)

In 2013, the government published the Assisted Digital Strategy providing a cross-government approach to assist those individuals who face difficulties in getting online (Cabinet Office, 2013a). As part of the Assisted Digital Strategy, each department made several commitments to take into account the needs of digitally excluded individuals when designing digital services as well as to provide both offline and online support enabling these individuals to access government information and services.

iv. Media

Since the media is a leading force in informing citizens and monitoring government performance, it plays an important role in assuring the success of OGD initiatives. UK citizens enjoy a free press and strong protections of free speech. The media, which is editorially independent, was an important demand-side driver of the development of the OGD in the UK. Table 13 summarizes the indicators of the degree of media independence in the UK.

The UK media are diverse and competitive. There are many national newspapers of various types (mass market tabloids, middle-market tabloids and quality broadsheets), which span the political spectrum. Radio broadcasting remains mainly dominated by stations owned and operated by the British Broadcasting Corporation (BBC), which account for nearly half of the British radio market. The BBC offers a wide range of regional and local radio stations (Media Reform Coalition, 2014; Ofcom, 2012).

Despite low barriers to entry in news markets, the recent years have seen a consolidation of ownership of private media outlets in the hands of a small number of large companies including News Corporation and the publicly owned BBC. According to a recent survey of media ownership and plurality in the UK, only three companies (News UK, Daily Mail and General Trust, and Trinity Mirror) control nearly 70% of national newspaper circulation. Consolidation of ownership in the newspaper industry has however taken place in the context of declining levels of readership (Media Reform Coalition, 2014).

According to the 2012 Freedom of the Press report, British media are free and largely independent from government interference. However, evidence from the Leveson inquiry revealed close links between news providers and public officials, including government actors and public service providers. The *News of the World* phone-hacking scandal exposed corrupt links between reporters and the police, « who had not adequately investigated hacking reports, failed to alert possible victims of hacking, and allegedly received money from News of the World journalists » (Freedom House, 2012, p. 357).

The UK law provides for freedoms of speech and expression (through the Human Rights Act of 1998) as well as freedom of the press. While the government generally respects these rights in practice, several laws that weaken press freedom remain in place, including the 1984 Police and Criminal Evidence Act and the 2006 Prevention of Terrorism Act, which can criminalize speech that is considered to encourage terrorism. Recurrent during the 2011 London Riots, the 1984 Police and Criminal Evidence Act can require the media to turn over reporting materials to the police (Freedom House, 2013a).

Despite its free press and strong protections of free speech, the UK has slipped down world press freedom rankings. The country tumbled down three places (33rd place out of 180 in 2014) in the Reporters Without Borders (2014) annual World Press Freedom Index. Likewise, the Freedom of the Press 2014 report put the UK five places down (36 out of 197) in comparison to last year (Freedom House, 2014b). More alarming, the UK has been included for the first time on the Reporters Without Borders' Enemies of the Internet, alongside authoritarian regimes including North Korea, China and Iran. Press freedom has fallen partially due to actions taken against journalists reporting on national

security issues and surveillance practices[35]. Though there is no general law authorizing Internet censorship, the government has taken strong measures against citizens who post information perceived as a security threat. Despite a small number of incidents of harassment and assaults on journalists in Northern Ireland in 2012, physical attacks on the media are generally rare in the United Kingdom (Freedom House, 2013a). Table 12 presents the UK freedom of the press and the net indicators.

Table 12: Freedom of the press and the net in the UK

Freedom of the Press	Reporters Without Borders (2014)	World Press Freedom Index: 19.93 Rank: 33 Difference in rank (2013): -4
	Freedom House (2014)	Press status: Free Press Freedom score: 23 Rank: 36 Difference in rank (2013): -5
Freedom of the Net	Reporters Without Borders (2014)	Enemy of the Internet: Yes
	Freedom House (2013)	Internet Freedom score: 24 Internet Freedom status: Free Social media/ICT Apps blocked: No Political/social content blocked: No Bloggers/ICT users arrested: No

Source: Freedom House (2013b, 2014b) and Reporters Without Borders (2014)

The media played a critical role in stimulating OGD demand by encouraging citizens to put pressure on government to make its data available in open and machine-readable formats. In March 2006, the newspaper the Guardian launched the *Free our Data* campaign, calling for the government to abandon copyright on key public data, making it freely available to citizens and businesses (Arthur & Cross, 2006). The newspaper called on citizens to claim access to government data by lobbying MPs or simply joining the campaign. According to Huijboom and Van den Broek (2011), the campaign led to internal policy reviews and initiatives such as the Power of Information review and ultimately boosted the implementation of the UK OGD policy.

[35] For instance, the British government threatened legal action against the Guardian over its reporting of whistleblower Edward Snowden's surveillance disclosures. The government sent to two members of the GCHQ to the newspaper's head offices to watch over the destruction of the hard drives that contained the leaked documents as well as reporters' stories.

Table 13: Media in the UK

Media	Indicators	
Media coverage reflects a diversity of viewpoints	✓	Newspapers span political spectrum
Media ownership is pluralistic	✗ ✗	Consolidation of media ownership 3 companies control 70% of national newspaper circulation
Presence of editorial independence	✓	British media are free and largely independent from government interference
The constitution and basic laws contain provisions designed to protect freedom of the press and expression	✓ ✗	Human Rights Act of 1998 Several laws that weaken press freedom remain in place: - 1984 Police and Criminal Evidence Act - 2006 Prevention of Terrorism Act
Absence of censorship	✓	No general law authorizing Internet censorship

Source: Author

v. OGD demand

Civil society was a critical demand-side driver of OGD in the UK. For several years, civil society had pressured government for change through both traditional advocacy as well as through frontrunner grassroots demonstrator projects such as TheyWorkForYou.com (Hogge, 2010).

Launched in the UK in June 2004, TheyWorkForYou.com is a website run by MySociety[36], which is itself a project of UK Citizens Online Democracy, a registered charity. The website was originally developed by a small group of loosely-affiliated volunteers « who thought it should be really easy for people to keep tabs on their elected Members of Parliament (MPs), and their unelected Peers, and comment on what goes on in Parliament »[37]. Between them, the original volunteers had already developed and run a range of civic engagement and other related websites, including PublicWhip.org.uk[38] and DowningStreetSays.com[39]. TheyWorkForYou.com aggregates data from the House of Commons, House of Lords, Scottish Parliament and the Northern Ireland Assembly as well as other publicly available data such as the MPs Register of Members' Interests, election results and voting records. The website repurposes data already published

[36] MySociety is a not-for-profit organization that invents and popularizes digital tools that aim to empower citizens.

[37] *About us*, http://www.theyworkforyou.com/about/

[38] PublicWhip.org.uk is a parliamentary vote tracking website.

[39] DowningStreetSays.com is a repository of summaries of "thelobby briefing", a twice-daily question and answer session between the Prime Minister's Spokesman and a select number of journalists.

online, in this case via the Hansard[40] website, presenting it in a format that is accessible and searchable, and allows for user feedback. It launched despite the fact that it did not have the right to reproduce Hansard records, which were protected by copyrights. The website was later adopted by MySociety. According to Hogge (2010), it was the utility of such applications and not their broad user base, which seem to have inspired public officials to engage with the OGD agenda.

The Open Knowledge Foundation (OKF) was also a key player in the push for OGD. Founded in 2004, the Open Knowledge Foundation is a not-for-profit organization that promotes open knowledge, including open content and open data, and develops (technical, legal and educational) tools and communities around different aspects of digital information[41]. When interviewed for the *Open Data Study: New Technologies* conducted by Hogge (2010), Jonathan Gray, community coordinator of the OKF, explains that the organization has been involved in the debate around open data issues from an early phase, in organizing events that brought together civic hackers and government representatives to jointly create civic web services using open data (p. 9). Shortly after, they released the first draft of the Open Knowledge Definition to define openness in relation to content, information and data[42]. Since then, they have also released the Open Data Handbook, which discusses the legal, technical and social aspects of open data. The book is especially designed for those seeking to open up data (Open Knowledge Foundation, 2012).

Table 14 summarizes the indicators of demand for OGD in the UK. It is important to keep in mind that these were not the only players in the push for OGD. They were however the most visible ones.

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[40] Hansard is the edited verbatim report of proceedings of both the House of Commons and the House of Lords.

[41] *About*, https://okfn.org/about/

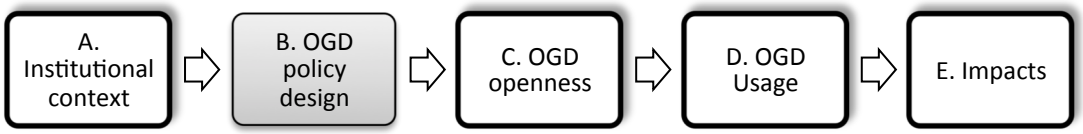
[42] *What is Open?,* https://okfn.org/opendata/

Table 14: Demand for open government data in the UK

Indicators	Sub-indices
Presence of social audit movement	✓ TheyWorkForYou.com ✓ PublicWhip.org.uk ✓ DowningStreetSays.com
Existence of OGD civil society champions	✓ MySociety ✓ Open Knowledge Foundation

Source: Author

B. OGD policy design



Data.gov.uk was launched in beta (invitation only) on 30 September 2009 as the Cabinet Office Director of Digital Engagement issued a call for developers to test the new OGD portal (Cabinet Office, 2009). More than 2,4000 developers offered feedback and started experimenting with the data. In December 2009, the government published the report "Putting the Frontline First: Smarter Government" in which it committed to radically open up valuable government data through a single access point and promote transparency (HM Government, 2009). Data.gov.uk was officially released in January 2010. At its launch, the portal contained 2,500 datasets ranging from traffic statistics to crime figures, for private and commercial use (BBC News, 2010b). In April 2010, the Ordnance Survey announced that it would release crucial geo-datasets in open and machine-readable formats through data.gov.uk (BBC News, 2010a).

In the first half of 2010, OGD became a major topic of public policy debate during the upcoming general elections opposing Gordon Brown (Labour Party) and current Prime Minister David Cameron (Conservative Party) (Heimstädt, 2013). In his Technology Manifesto, David Cameron outlined his ideas on how to « build a new British economic model and make the British government the most technology-friendly in the world » (The Conservative Party, 2010, p. 2). One of his key proposals was a legislative change towards a "Right for Government Data". Subsequently, the incumbent prime minister Gordon Brown revealed the "National Digital Strategy", including the creation of a Web Science Institute under the direction of Sir Tim Berners-Lee and Nigel Shadbolt (Heimstädt, 2013).

When David Cameron assumed power as new Prime Minister in May 2010, he set up a Public Sector Transparency Board, a central coordinating body responsible for offering support to departments, setting open data standards and advising on the implementation of the OGD policy. In September 2010, the Government released the Open Government License (OGL), a licensing model that facilitates the use and re-use of government data. Although plans for the Web Science Institute were initially cancelled, the Open Data Institute, a government-funded institution to develop the economic potential of OGD, was established in November 2012 (Heimstädt, 2013).

i. Organizational structure

Due to the crosscutting nature of OGD, governments should put into place the appropriate organizational structure. To ensure that the focus is on the aims and results envisioned, the UK government has established a Transparency and Open Data Team as well as a Public Sector Transparency Board. Additionally, each department released their own open data strategy including departmental commitments for proactively publishing public data. Table 15 presents the indicators of the organizational structure of the UK OGD policy design.

The Cabinet Office plays the lead role in promoting the transparency agenda across government. It is responsible for coordinating and monitoring the UK OGD initiative across public agencies, providing secretariat support to a Public Sector Transparency Board, bringing together Whitehall officials to embed transparency across government and providing guidance to all government departments on how to release government data. In particular, the Cabinet Office defines the scope of the transparency agenda and formulates next steps. The implementation of data.gov.uk is headed by the Transparency and Open Data team in the Cabinet Office, working across government departments to ensure timely and accessible data release (National Audit Office, 2012).

In May 2010, the Prime Minister announced the creation of the Public Sector Transparency Board established in the Cabinet Office to drive forward the Government's transparency agenda (Cameron, 2010). The Transparency Board was implemented in June 2010. Offering advice on the transparency policy to the Cabinet Office, the

Transparency Board[43] is responsible for setting up open data standards across public agencies and encouraging the release of more government data. Through a set of shared public data principles *(see Box 2)*, the Transparency Board provides guidance for government departments on how to maintain inventories of data and release data based on public demand. Chaired by the Minister for the Cabinet Office, Francis Maude, its members are a mix of data specialists, who challenge public sector bodies in the implementation of transparency and open data standards [44].

In June 2012, the Cabinet Office published the Open Data White Paper (*Unleashing the Potential*), which sets out a two-year programme to put data and transparency at the heart of government and public services. In addition to highlighting the benefits of OGD, the document outlines how the government intends to unlock and seize the benefits of government data sharing, while safeguarding private information and data (HM Government, 2012).

After two years of having had the center of government leading the OGD initiative, government departments were expected to take a greater role in driving forward the OGD efforts (HM Government, 2012). Therefore, alongside the White Paper, each government department published their first open data strategy. Each strategy contains a department's commitment for proactively publishing public sector data between 2012 and 2014, complementing their existing statutory publication schemes. These individual departmental Open Data strategies represent an important step forward in the way the UK is making public data readily and systematically accessible and are a core requirement of each government department (Ubaldi, 2013). The departmental open data strategies are published on data.gov.uk[45] as well as on each departmental website.

To drive cultural change, many departments have also set up sector-specific transparency boards, which are continuously challenging government to publish more data and ensure that departments understand the impact of each release (Cabinet

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[43] http://data.gov.uk/blog/new-public-sector-transparency-board

[44] For instance, other members of the Transparency Board are Sir Tim Berners-Lee, Professor Nigel Shadbolt, Tom Steinberg, and Dr. Rufus Pollock from Cambridge University, an economist who helped found the Open Knowledge Foundation.

[45] *Open Data Strategies*, http://data.gov.uk/open-data-strategies

Office, 2011; HM Government, 2012). Members of these boards are government officials as well as open data experts and activists. These boards provide an avenue for engagement with the wider community, with many boards active in inviting experts from businesses, academia, civil society and the media to inform them of their experiences in using the data published by each sector. By bringing in feedback and input from experts, these dedicated sector boards are able to find out about the day-to-day issues around the practicalities of OGD and work collectively to overcome barriers. These boards could therefore ensure that data publication is prioritized to deliver the maximum benefit.

Table 15: UK OGD policy design: Organizational structure

Indicators	Sub-indices	
Inter-agency body to coordinate OGD	✓	Cabinet Office defines the scope of the OGD agenda and formulates next steps
Agency responsible for OGD portal	✓	Transparency and Open Data in the Cabinet Office
Central government open data strategy	✓	Open Data White Paper
Departmental open data strategy	✓	14 departmental open data strategies making commitments for proactively publishing government data between 2012-2014
OGD managers, CIO, CTO among key stakeholder agencies	✓ ✓	Public Sector Transparency Board Sector-specific transparency boards

Source: Author

ii. Institutional framework

To ensure that the data publishing does not happen in an ad hoc manner, the government should implement an overarching institutional framework that clearly defines which data to share, in which formats, at what time intervals and under which license. The UK government has developed Public Data Principles and a National Information Infrastructure (NII) to ensure the availability, openness and usability of government data. Table 16 presents the indicators of the institutional framework of the UK OGD policy design.

The Public Data Principles provide the framework for government-data release (HM Government, 2012). Published by the Public Sector Transparency Board in June 2010, these principles provide guidance to public agencies on how to make published government data as useful as possible. As stipulated by the Principles, government data should be published in open formats, be reusable, machine-readable, standardized to enable comparisons and linkable. In the Open Data White Paper, the UK government

announced that the principles were formally adopted as a policy. Box 2 outlines the UK Public Data Principles in further detail.

Box 2: United Kingdom Public Data Principles

These principles have been drawn up by the Public Sector Transparency board and highlight main principles and good practice when sharing open data:
1. Public data policy and practice will be clearly driven by the public and businesses that want and use the data, including what data are released when and in what form
2. Public data will be published in re-usable, machine-readable form
3. Public data will be released under the same open license, which enables free re-use, including commercial re-use
4. Public data will be available and easy to find through a single, easy-to-use, online access point *(www.data.gov.uk)*
5. Public data will be published using open standards, and following relevant recommendations of the World Wide Web Consortium (W3C)
6. Public data from different departments about the same project will be published in the same, standard formats and with the same definitions
7. Public data underlying the Government's own websites will be published in re-usable form
8. Public data will be timely and fine-grained
9. Release data quickly, and then work to make sure that it is available in open standard formats, including linked data forms
10. Public data will be freely available to use in any lawful way
11. Public data will be available without application or registration, and without requiring details of the user
12. Public bodies should actively encourage the re-use of their public data
13. Public bodies should maintain and publish inventories of their data holdings
14. Public bodies should publish relevant metadata about their datasets and this should be available through a single online access pint; and they should publish supporting descriptions of the format provenance and meaning of the data

Source: http://data.gov.uk/library/public-data-principles

Additionally, the UK government uses the Five Star Open Data Scheme developed by Sir Tim Berners-Lee to rate datasets for their level of openness, in particular the degree to which datasets are reusable (HM Government, 2012). As outlined in Box 3, at the One-star level, data are accessible on the Internet under an open license (such as the Public Domain Dedication and License, Open Data Commons, or Creative Commons copyright license). However, data are locked up in a document. At the Two-star level, data are accessible on the Internet, in machine-readable formats. However at this stage the data are still locked up in a document. Users need proprietary software to get the date out of the document. At the Three-star level, the data are available on the Internet and everyone can use it very easily. However the data does not have any links from other resources pointing to the data. At the Four-stage level, the data has links from other resources to it. At the Five-star level data have links from other resources to it and are

linked to other datasets. The current minimum standard for publication of government datasets through data.gov.uk is 'Three Stars'.

Box 3: Five Star Open Data Scheme

★	make your stuff available on the Web (whatever format) under an open license
★★	make it available as structured data (e.g., Excel instead of image scan of a table)
★★★	use non-proprietary formats (e.g., CSV instead of Excel)
★★★★	use URIs to identify things, so that people can point at your stuff
★★★★★	link your data to other data to provide context

Source: http://5stardata.info/

Additionally, the government established a National Information Infrastructure (NII) in response to the Independent review of Public Sector Information led by Stephan Shakespeare (2013) who recommended that the government should have a twin-track approach to the release of government data prioritizing the release of the most (potentially) impactful data alongside other datasets. The NII applies in the first instance to data held and owned by central government departments. The NII contains government datasets, which are likely to have the broadest, and most significant economic and social impact if made available and accessible (Cabinet Office, 2013b).

In setting out the NII, the Cabinet Office has worked with central government departments to identify all the datasets that are currently not published on data.gov.uk and to provide a facility to maintain an inventory of what they are, what data they contain and information about when they might be released or why they are not suitable for publication. The NII also provides information to those outside government about what data is available and when such data may become available.

At the same time, the Cabinet launched a platform to assess all datasets for their potential to create economic and social impact. As part of this platform, the UK government developed an over-arching framework that identifies high-level categories of data as well as characteristics of the different types of data. The data categories are similar to the high-level categories of data in the G8 Open Data Charter. These high-level

categories include datasets relating to government accountability and democracy, global development, crime and justice, companies and business development, transport and infrastructure, science and research, energy and the environment, health and social care, education, social mobility and welfare, society and culture, and others (e.g. defense, international relations). Furthermore, the NII supports organizations to release data by providing advise about those datasets that they should consider the highest priority for release (Cabinet Office, 2013b).

Finally, in the Open Data White Paper, the government commissioned departments to quarterly report on progress made on i) their transparency and open data commitments set out in their departmental open data strategies, and on ii) the key standard transparency commitments outlined in the Prime Minister's letters of May 2010 and July 2011 (*see Table 7 p.72*) (HM Government, 2012). The first report on progress, called "Written Ministerial Statement on Transparency and Open Data", was published in December 2012 and covered the reporting period between July and September 2012 (Cabinet Office, 2012a). Since then, the government has published six Written Ministerial Statements, with the latest report covering the period between October and December 2013 (Cabinet Office, 2014). These reports are made available on the *Library* page of data.gov.uk. Additionally, departmental compliance with the key standard transparency requirements can be tracked directly on the *Spend Reports* page of the portal. For each ministerial and non-ministerial department, the *Spend Reports* page shows the status of expenditure data (up-to-date or has past data), the number of spreadsheet files with spend transactions the department has published, the number of spend transactions, the date of the most recent spend transaction reported and the total value of the spend transactions reported.

Table 16: UK OGD policy design: Institutional framework

Indicators	Sub-indices
Adoption of open government data principles	✓ UK Public Data Principles ✓ Five Star Deployment Scheme
Inventory of unpublished datasets	✓ National Information Infrastructure
Effective enforcement mechanisms of compliance	✓ Quarterly Written Ministerial Statement on progress ✓ Spend Reports page

Source: Author

iii. Legal framework

A consistent legal framework is critical to facilitate OGD accessibility and reuse. To address the legal challenges inherent to the development of OGD, the UK government has made a legislative change towards a "Right for Government Data" and released the UK Open Government License (OGL). Table 17 presents the indicators of the legal framework of the UK OGD policy design.

The UK FOIA was amended in May 2012 by the Protection of Freedoms Act, (Janssen, 2012). The Dataset Section of the 2012 Protection of Freedoms Act extends the existing FOIA by requiring datasets to be available in a reusable format. As outlined by the White Paper, this new section pushes public authorities to consider disclosing public data that is not already routinely published and sets out what is meant by a dataset to allow for a better understanding between the OGD requestor and the public authority holding the requested data.

Through embedding the release of datasets in a public authority's publication scheme (amending Section 19), the FOIA now provides an enhanced right to data (HM Government, 2012). Where the FOIA requires release of a dataset, public authorities now have a responsibility to release the requested datasets in a machine-readable and reusable format. Additionally, to ensure a comprehensive approach to an enhanced right to data, the Government amended Section 45 of the FOIA by extending its accompanying Code of Practice in April 2012. The expanded Code of Practice provides guidance to applicants and public authorities on a number of administrative issues related to making datasets available for re-use. These include for example giving permission for datasets to be reused and making datasets available for reuse in accordance with the terms of a license.

Additionally, in September 2010, the Government released the Open Government License (OGL). The OGL forms part of the UK Government Licensing Framework and permits free, permanent, non-exclusive access to material made available under the license (The National Archives, 2013). It facilitates the use and reuse of a broad range of public sector information for commercial and non-commercial purposes, thereby contributing to increased citizen engagement. The OGL is intended to be compatible with

widely used models such as the Creative Commons and Open Data Commons Attribution licenses.

Table 17: UK OGD policy design: Legal framework

Indicators	Sub-indices
Amendments to ATI	2012 Protection of Freedoms Act amends the FOIA
ATI requires OGD release in electronic, open and machine-readable formats	✓ Amended Section 19 of the FOIA by embedding the release of datasets in a public authority's publication scheme ✓ Public authorities now have a responsibility to release the requested datasets in a machine-readable and reusable format
ATI law is accompanied with a Code of Practice	✓ Amended Section 45 of the FOIA in April 2012 ✓ Extend the FOIA accompanying Code of Practice to provide guidance to applicants and public authorities to make datasets available for reuse
Endorsement of open license for sharing and reusing OGD	✓ Open Government License

Source: Author

iv. Organizational partnerships

OGD initiatives are more sustainable and high-impact when government creates partnerships with a wide range of stakeholders. To engage OGD users in the continued development of OGD, the UK government created the Open Data User Group, the Open Data Institute and committed to release a Developer Engagement Strategy. Furthermore, data.gov.uk features an extensive mechanism for users to become involved. Table 18 presents the indicators of the organizational partnerships designed to engage OGD users.

In March 2012, the government announced the creation of the Open Data User Group (ODUG), a single stakeholder group to include the users' perspective into the process of OGD policy making. By acting as a "proxy" for business and the civil society (Heimstädt, 2013), the ODUG aims to advise the Data Strategy Board (DSB) on public data that should be prioritized for release as OGD. As described in the White Paper, it acts as a strong mechanism for driving demand-led transparency in the public interest (HM Government, 2012). The ODUG is made up of members from a broad representation of the data user community with an interest in OGD, including academia, SMEs using OGD, central and local government representatives, cabinet office transparency team members, and open data campaigners and activists. In addition to its formal membership, the ODUG engages with users and re-users of OGD in a range of ways, including online and in person. The

ODUG is responsible for addressing data requests received through the portal (Department for Business & Innovation and Skills, 2012).

Two months later, the UK government published an implementation plan to establish an Open Data Institute, a government-funded institution to develop the exploitation of OGD, in London (Open Data Institute, 2012). The initial focus of the Open Data Institute was on incubating and nurturing new businesses exploiting open data for economic growth and innovation. The Government appointed Tim Berners-Lee and Nigel Shadbolt as president and chairman of the Open Data Institute. The Institute was officially opened in November 2012 and was established as a non-profit organization. It received funding from the government's innovation agency, Technology Strategy Board, and from the philanthropic investor Omidyar Network. The general mission of the Open Data Institute is to unlock the economic potential of OGD. To achieve this mission, the organization develops and mentors start-up OGD companies, offers diverse training material and programs, supports research projects relevant to both OGD exploitation and impact, and establishes a national and international open data community (HM Government, 2012).

As part of the Open Data White Paper, the UK government committed to publish a Developer Engagement Strategy in order to focus on user needs. As described in the document, such strategy will set out clear principles for how individual government departments are expected to engage with the developer community. In particular, it will make recommendations on skills and competencies required for effective engagement with this community. A clear engagement strategy will allow primary data users – citizens, academics, individual developers, SMEs and large companies – to ask government for specific datasets, provide feedback on how they have used them and inform government about anomalies or mistakes in the data (HM Government, 2012).

Data.gov.uk has an extensive mechanism for users to get involved. For instance, users can comment and rate the datasets on its potential to stimulate economic growth, social growth, improve public service delivery as well as its potential to be linked to other datasets. The portal allows users to directly contact both the data provider and the person handling FOI requests related to information contained in dataset. Through the

"Data Requests section"[46], users can express their needs for specific datasets. The portal uses a search engine to offer several ways of finding data requests. Users can view all requests or search by title, organization, status, outcome, and data theme. The section also features an interactive dashboard, the Open Data Request Roadmap[47]. The default dashboard shows all the data requests ODUG has received to data, including their current status, the organization or individual who have submitted data requests. However, users can make use of a set of filters to find the data requests they are interested in. ODUG has also published a sort of explanatory guide summarizing how the data requests are processed[48].

Furthermore, the portal allows for users to submit applications (Apps) and visualizations, which are featured on a dedicated Apps page[49]. Users can rate the Apps on a scale between 0 and 5 stars and provide comments. The portal also invites users to feedback on the architecture of the website, and ultimately to get in touch with the web designers[50]. Additionally, developers can discuss ideas, applications and using of the data on the discussion forum. According to the portal, there is also a wiki were developers can work together to share techniques, ideas, problems and tools, using government data as well as data from other sources. Moreover, to keep up to date with the latest progress and developments of the portal, users can read the blogs page[51]. Bloggers are mainly members of the government. Each blogger has its own page featuring the blogger's activity statistics, recent content and comments as well as a sort of personal introduction. Currently, the blog features 189 blogs. The most active entries blog about themes relating to government, policy and society. Finally, since the original *Show Us A Better Way* competition, the Open Data Institute has run several hackathons (Cabinet Office, 2013d).

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46 *Data Requests,* http://data.gov.uk/data-request
47 *Open Data Request Roadmap*, http://data.gov.uk/odug-roadmap
48 *ODUG Overview*, http://data.gov.uk/odug/overview
49 *Apps*, http://data.gov.uk/apps
50 *About*, http://data.gov.uk/about
51 *All Blogs*, http://data.gov.uk/blog

Table 18: UK OGD policy design: Organizational partnerships

Indicators	Sub-indices
Institutionalized mechanisms for citizen engagement	Open Data User Group Open Data Institute
Endorsement of citizen engagement policies	✓ Commitment to publish a Developer Engagement Strategy
OGD platform has rich mechanisms for citizen engagement	✓ Ratings of datasets ✓ Direct contact with data provider ✓ Data requests section ✓ Open Data Request Roadmap ✓ Explanatory guide summarizing data requests process ✓ Apps page ✓ Feedback mechanisms to comment on the architecture of the website and get in touch with web designers ✓ Discussion forum ✓ Wiki where developers can work together to share techniques, ideas, problems and tools, using government data ✓ Blogs page where government members blog about themes relating to government, policy and society
Existence of co-creation type events	✓ ODI has run several hackathons

Source: Author

C. OGD openness

The third step in the OGD value chain is the assessment of the availability, openness and usability of government data. As explained in the previous chapter, it doesn't just matter that governments are releasing public data; what really is important is how much key information is actually made available and if such information responds to citizens' needs. In order to provide a detailed assessment of OGD openness, we first present a general overview of data publishing on data.gov.uk as well as the trends of data requests. Then, we examine in more detail the degree of openness of five high-value datasets that have been chosen for their breadth and relevance.

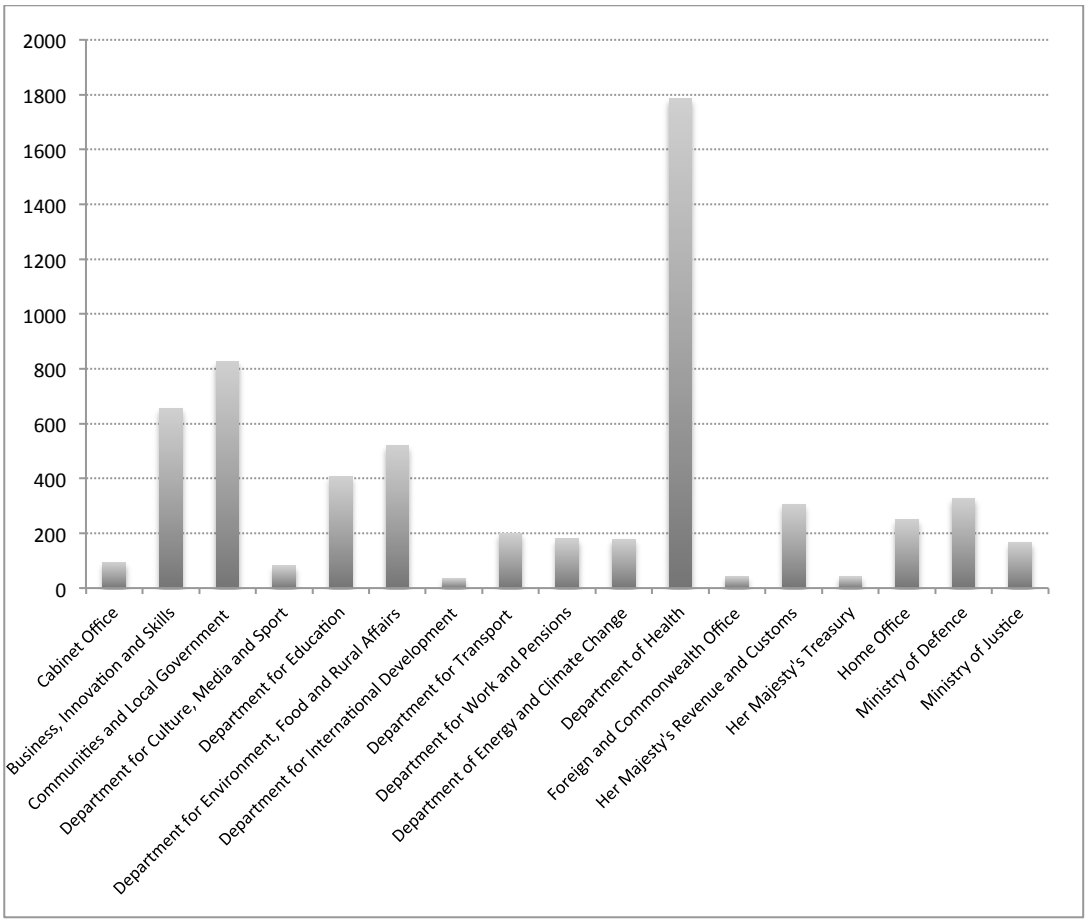
i. Trends of data publishing on data.gov.uk

Currently, 1,183 publishers have provided access to 15,045 published datasets. Publishers range from academics, executive agencies, ministerial departments, to private sector entities. Datasets are classified by publisher, theme, license, resource format, openness score (beta version) and location dataset type. Each dataset provides guidance on accessing its data.

As illustrated by Figure 7, nearly 60 percent of all central government datasets have been published by four departments, including the Department of Health, the Department for Communities and Local Government, the Department for Business, Innovation and Skills, and the Department for Environment, Food and Rural Affairs. These figures include the datasets released by their sub-publishers. The divergence between highly publishing ministries and others may be due to higher volumes of information handled by different ministries (Rahemtulla et al., 2012). However, such difference may for a large part be reflective of overcoming certain barriers to releasing government information, including privacy legislation, information overload, limited quality of data, national security considerations, and existing charging models (Huijboom and Van den Broek, 2011).

In general, compliance with the Public Data principles has been mixed. At present, only 25 percent of all published central department datasets are of 'Three Stars' and above with the remaining datasets at 'Two Stars' or below. More than 70 percent of the datasets have been published under the OGL.

Figure 7: Total number of central government department datasets on data.gov.uk in 2014



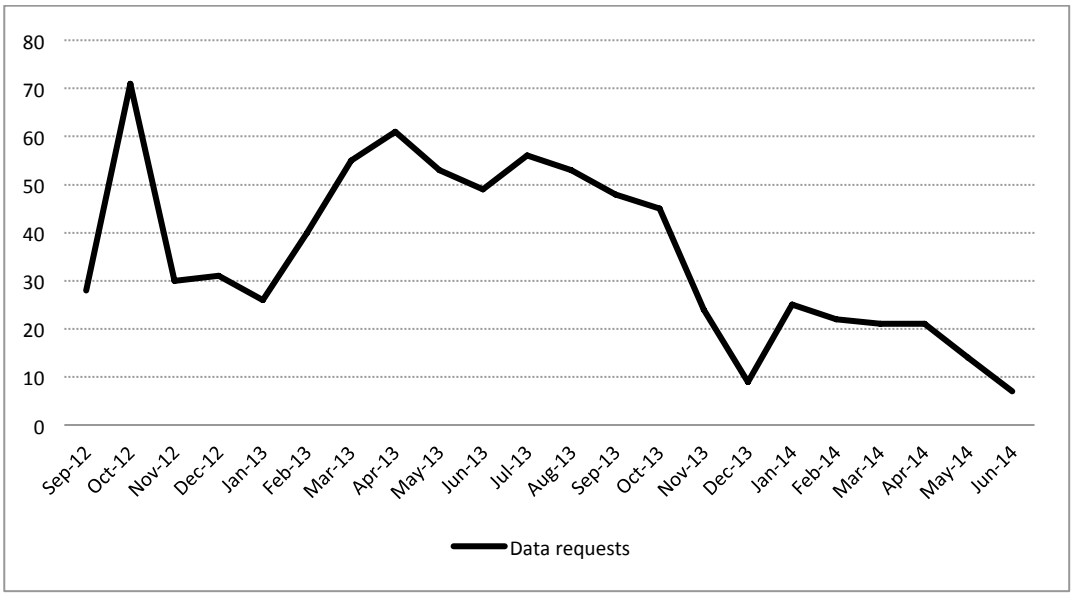
Source: data.gov.uk

ii. Trends of data requests

As explained in the previous section, users can express their needs for specific datasets through the "Data Requests section" of the OGD portal. Between September 2012 and June 2014, the portal received 789 data requests. Datasets relating to government, environment, location, society and health were more frequently requested than compared to linked data and defense data. Requests for government datasets have however followed a downward trend as indicated by Figure 8. Since October 2012, the number of data requests decreased by 90 percent. Such drop can suggest two things. One the hand, data requests may have fallen because citizens have become less engaged with the portal in general. If this is the case, then we should also observe downward usage trends. On the other hand, such fall may be due to the fact that the current published datasets are more in line with citizens' needs. We believe that the latter is the

more appropriate explanation for decreasing trends of data requests on data.gov.uk, given the many mechanisms the government has implemented to engage with OGD users such as the transparency boards and the ODUG. Additionally, the total number of data requests is only available since September 2012 arguably excluding a significant number of requests as the portal was launched in January 2010.

Figure 8: Data requests on data.gov.uk from September 2012 to June 2014



Source: data.gov.uk

iii. High-value datasets

As explained earlier, there is little potential for OGD to deliver on its promises if the data does not enable transparency and accountability, improved service delivery, and greater inclusion. In this sub-section we analyze the availability and usability as well as the legal and technical openness of five high-value datasets, including government budget and spending data, datasets relating to national election results, and education and health data. To assess their degree of openness, we rely on several indicators, including the Open Data Index (ODI)[52], the Open Data Barometer implementation sub-index[53] and the Open Data Index (OBI). Table 19 and Table 20 summarize the results of the Open Data Index and the Open Data Barometer assessments of OGD in the UK.

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[52] Initiated by the Open Knowledge Foundation, the Open Data Index ranks countries on the availability, accessibility, and timeliness of 10 key datasets.

[53] Conducted by the Web Foundation and the Open Data Institute, the Open Data Barometer provides a global multidimensional snapshot of OGD practices at a national level. In particular, its implementation sub-index assesses the relative openness of 14 high-value datasets.

Table 19: UK Open Data Index 2013

Dataset	Score (%)	Exists	Digital form	Publicly available	Available for free	Available online	Machine readable	Available in bulk	Openly licensed	Timely and updated
Transport timetables	100	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Government budget	90	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**
Government spending	100	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Election results	70	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**	Yes
Company register	100	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
National map	100	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
National statistics	100	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Legislation	90	Yes	Yes	Yes	Yes	Yes	Yes	**No**	Yes	Yes
Postcodes – zipcodes	100	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Emissions of pollutants	90	Yes	Yes	Yes	Yes	Yes	Yes	**No**	Yes	Yes

Source: Open Knowledge Foundation (2013)

Table 20: UK Open Data Barometer 2013

Dataset	Score	Exists	Available online	Machine readable	Available in bulk	Free	Openly licensed	Updated	Sustainable	Discoverable	Linked
Map	100	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Land	100	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Census	95	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**
Budget	95	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**
Spend	95	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**
Company	100	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Legislation	90	Yes	Yes	Yes	Yes	Yes	Yes	**No**	Yes	Yes	Yes
Transport	90	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**	**No**
Trade	90	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**	**No**
Health	95	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**
Education	95	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**
Crime	95	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**
Environment	95	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**
Elections	95	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**

Source: Web Foundation and Open Data Institute (2013)

The Open Data Barometer ranks the UK as the most advanced country in terms of data availability and accessibility, with an implementation sub-index of 95, with 100 being the highest score possible (Web Foundation & Open Data Institute, 2013). All datasets scored 90 or higher. According to the assessment, UK government data were all available for free, online and in bulk as well as machine readable, openly licensed, and sustainable. Only a small number of datasets were not updated in a timely manner (legislation) neither discoverable (transport and trade). However, 70 percent of the assessed datasets were not linked. In general, the ODI shows similar results. Ranked at the top of the table, the UK received an ODI score of 940, with 1000 being the highest score possible. All datasets scored 70 out of 100 or higher (Open Knowledge Foundation, 2013).

Government budget data

The UK has one of the world's most open and transparent budget systems. Published by the International Budget Partnership (IBP), the 2012 Open Budget Survey ranked the UK third with an OBI score of 88 percent, closely behind New Zealand and South Africa. According to the Survey, the government provides the public with extensive and comprehensive information of the national government's budget and financial activities (International Budget Partnership, 2012). Likewise, government budget data scored highly in the Open Data Barometer, receiving a score of 95 out of 100. The data scored positively in all 10 aspects of data availability and openness, except for linked data (Web Foundation & Open Data Institute, 2013). The ODI shows similar results, scoring 90 percent (Open Knowledge Foundation, 2013). Table 21 summarizes the indicators of the availability and usability of UK government budget data.

According to the International Budget Partnership (2012), the government publishes all eight key budget documents assessed in the Open Budget Survey. These documents are made available online in PDF format and reusable under the terms of the OGL. Some raw data used to produce these documents is provided in Excel format on data.gov.uk.

Her Majesty's (HM) Treasury, the government's economic and finance ministry, is the biggest producer of national government budget and spending data. HM Treasury maintained the Combined Online Information System, known as COINS, the main government database for managing budgetary and expenditure data, covering organizations across the public sector (McClean, 2011). The Prime Minister ordered the

online publication of historical COINS budgetary and spending data in his first letter in May 2010. The COINS database was released in June 2010. As part of its Open Data Strategy, HM Treasury (2012) committed to make the data more accessible, manageable and comprehensive to the wider public. In June 2012, the OSCAR (Online System for Central Accounting and Reporting) replaced the COINS database. The database holds public sector budgets, outturns, forecasts as well as more detailed data, for example in relation to staff costs and purchase of goods and services. Budget data is annually and quarterly available from 2005 to 2013. While the COINS database reported at the parent department level, data under OSCAR is now held at both the departmental and organizational level, increasing data granularity. Additionally, data is made available by function (such as defense, railway, health and environment) and by economic group (such as pay, staff costs, rental costs and purchases of goods and services). OSCAR does however not allow for comparisons between departments at a detailed level since they can choose the detail at which they report spending (HM Treasury, 2012).

Criticized for being overly complicated, the government has published several documents that should assist citizens in understanding the data and their recording as well as how the data may be used and aggregated. These publications include the "Project Oscar" factsheet, "Understanding the OSCAR Data release" report and the "Publication of in-year Spending Data from the OSCAR Database" guidance note.

Table 21: UK government budget data openness

Indicators	
OBI (%)	88
ODI score (%)	90
ODB score (out of 100)	95
Main publisher	HM Treasury
Data availability and accessibility	Government publishes all eight key budget documents ✓ Made available online in PDF format and reusable under OGL ✓ Some raw data available on data.gov.uk COINS/OSCAR database ✓ Holds public sector budgets, outturns, forecasts ✓ Quarterly and annually available for 2005-2013 ✓ Made available by department, organization, function, economic group × Does not allow for comparisons between departments
Contextual information	✓ Project Oscar ✓ Understanding the Oscar Data Release ✓ Publication of In-year Spending Data from the OSCAR Database

Source: Author

Government spending data

Government expenditure data, in particular its availability, accessibility and openness, scored highly in both the Open Data Index and the Open Data Barometer, receiving a score of 100 and 95 respectively. Table 22 summarizes the indicators of the availability, openness and usability of UK government spending data.

HM Treasury is the biggest publisher of national government spending data. As explained above, OSCAR expenditure data is made available by department, organization, function, and by economic group. Additionally, HM Treasury has published annual publications detailing UK receipts from the European Union Budget and expenditure of those funds. Such publications include an expenditure statement, a balance sheet and a cash flow statement. Though licensed under the OGL, these publications are only available in PDF format and no accompanying dataset is available on data.gov.uk.

As explained earlier, David Cameron set out key standard transparency requirements for reporting on departmental expenditure. For instance, government departments should monthly publish all expenditure over £25,000 and all expenditure over £500 on the government procurement card (Cameron, 2010). They should also quarterly publish on expenditure on travel and hospitality for ministries and senior officials. These standards are outlined in Table 7, p. 72. As previously mentioned, the government commissioned departments to quarterly report on progress made on these key standard requirements. According to these reports, called "Written Ministerial Statements on Transparency and Open Data", overall compliance with the key standard transparency requirements has slightly improved since the first report was published covering the time period between July and September 2012 (Cabinet Office, 2012). Of the seventeen central departments, ten were fully compliant in the last quarter of compared to nine departments between July and September 2012. Reported causes for delays include limited resources, chaff changes, internal departmental process, national security considerations, transitions to new management information system and inaccurate data (Cabinet office, 2014).

Table 22: UK spending data openness

Indicators	
ODI score (%) ODB score (out of 100)	100 95
Main publisher	HM Treasury
Data availability and accessibility	COINS/OSCAR database ✓ Quarterly and annually available for 2005-2013 ✓ Made available by department, organization, function, economic group × Does not allow for comparisons between departments Departmental expenditure ✓ Key transparency requirements ✓ Ten departments are fully compliant - Reported causes for delays: limited resources, staff changes, national security
Contextual information	✓ Project Oscar ✓ Understanding the Oscar Data Release ✓ Publication of In-year Spending Data from the OSCAR Database

Source: Author

National electoral data

Similarly, datasets relating to national election results scored relatively high in both OGD assessments. In the Open Data Barometer, national electoral data scored 95 out of 100. The data scored positively in all 10 aspects of data availability and openness, except for linked data (Web Foundation & Open Data Institute, 2013). National election results scored lower in the ODI receiving an overall score of 70 out of 100 (Open Knowledge Foundation, 2013). This divergence can be explained by the fact that the data received a different score in terms of the use of an open license. According to the ODI, such datasets were not openly licensed nor were they accompanied with an explicit statement allowing for open re-use. The Open Data Barometer shows however contrasting results. Having verified ourselves, we found that the Electoral Commission endorsed the UK OGL in 2013. Consequently, national election results data are free to use and reuse under the terms of the OGL. Table 23 summarizes the indicators of the availability and usability of UK national electoral.

National election results are published by the UK's independent Electoral Commission. The Commission makes the national elections data by constituency available for download is spreadsheet format and publishes reports in PDF format (Open Knowledge Foundation, 2013). Electoral data covers electorates, turnout, rejected ballot papers and post voting figures. These datasets are however not featured on data.gov.uk.

Table 23: UK national electoral data openness

Indicators		
ODI score (%)	70	
ODB score (out of 100)	95	
Main publisher	Electoral Commission	
Data availability and accessibility	✓	Data is made available by constituency
	✓	Electoral data covers electorates, turnout, rejected ballot papers, post voting figures
	×	Not available on data.gov.uk

Source: Author

Education data

The Department of Education is the main provider of public datasets relating to education. One of the biggest contributors to the portal, the Department of Education has published over 400 datasets. Only 10 percent of datasets are Three Stars and above, while nearly all datasets have been published under the OGL. By March 2013, the department had met all of their Open Data Strategy commitments as well as all four transparency commitments set out in the Prime Minister's letter on the release of sector-specific open data (*see Table 7, p.72*) (Cabinet Office, 2013e; Department for Education, 2012). Education data scored relatively high (95 out of 100) in the Open Data Barometer. Again, education data scored positively in all 10 aspects, except for linked data (Web Foundation & Open Data Institute, 2013). With respect to government data supporting individual choice, the department collects and reports appropriate information to support parents in choosing schools (National Audit Office, 2012). Key datasets pertaining to education include the following.

The department publishes School Performance Tables for primary and secondary schools bringing together annual information on attainment, school workforce, school finance, Ofsted reports[54] and pupil absence between 1994 and 2014 (Department for Education, 2012; National Audit Office, 2012). The tables also show the number and percentage of pupils in a cohort achieving the English Baccalaureate, and break this down for each prior attainment group and for disadvantage. The performance tables also include financial data showing school income and spend data. Additionally, the department has developed a specific schools performance web tool that brings together the above

[54] Ofsted is the Office for Standards in Education, Children's Services and Skills. Independent and impartial, Ofsted is the UK official body for inspecting schools. It reports directly to the Parliament.

described data on a dedicated website[55]. This website enables parents to compare the progress made by pupils with differing levels of prior attainment or to compare the attainment and progress of pupils from disadvantaged backgrounds with that of other pupils. It also allows drawing comparisons among schools' spending across key areas including teaching staff, back office and learning resources.

In March 2013, the department published the anonymised data from the National Pupil Database, which holds information on student characteristics linked with school attainment information for all children in nursery, primary, middle, secondary and special state schools in England (Department for Education, 2012). The longitudinal database includes, for example, information about pupils' test and exam results, prior attainment, and information about pupils' characteristics such as their gender, ethnicity, first language, and eligibility for free school meals.

To assist data interpretation, the department has also released A-Z terms, a list of controlled vocabulary used by the department to describe the data (Cabinet Office, 2012b). Additionally, the department has published a "User Guide and Resources"[56] to assist use and interpretation of the School Performance Tables. Other key datasets include Children in Care and Adoption Performance Tables, School Workforce Census, and Complaints to the Secretary of State about schools (Department for Education, 2012). Table 24 summarizes the indicators of the availability, openness and usability of UK education data.

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[55] http://www.education.gov.uk/schools/performance/index.html

[56] http://www.education.gov.uk/schools/performance/documents.html

Table 24: UK education data openness

Indicators		
ODB score (out of 100)	95	
Main publisher	Department of Education	
Descriptive information	✓	Data covers location, school type, gender and qualifications of teachers
Objective standardized activity & performance information	✓	Data covers attainment, pupil absence, student exam results
	✓	Web tool enabling to compare progress made by pupils with different levels of prior attainment
User satisfaction	✓	Ofsted reports
	✓	Complaints to the Secretary of State about Schools
Spending information	✓	Web tool allowing to draw comparisons among schools' spending across key areas
Contextual information	✓	A-Z terms
	✓	User Guide and Resources School Performance Tables

Source: Author

Health data

The main provider of health data is the Department of Health. The biggest data producer, the Department provided over 1,700 datasets since the launch of data.gov.uk. However only 492 datasets are Three Stars and above. On the contrary, nearly all datasets have been published under the OGL. It is however unclear to which extent the department has met its Open Data Strategy and the Prime Minister's letter commitments. Similar to education data, health data received a score of 95 out of 100 in the Open Data Barometer (Web Foundation & Open Data Institute, 2013). The current state of health data publishing is conducive for OGD to support informed choice. Table 25 summarizes the indicators of the availability and usability of UK health data.

Key datasets relating to health include the following (Department of Health, 2012):

- Data on comparative clinical outcomes of GP practices under five categories, including demographics, patient experience, quality outcomes, infrastructure and impact on National Health Service (NHS) Resources
- 30 additional GP practice data and indicators to better measure performance
- Annual complaints data by National Health Service (NHS) hospital enabling patients to see what issues have affect others and take better decisions about which hospital better suits them

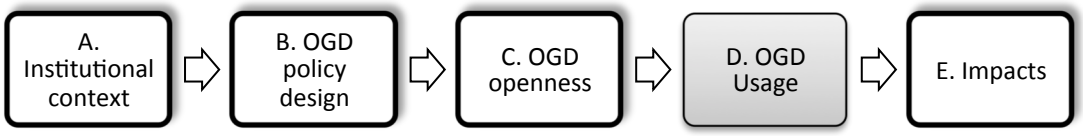
While each dataset provides a detailed description of the data it contains, to our knowledge, the Department of Health has not published a specific report, such as the Department of Education's A-Z terms, to assist interpretation.

Table 25: UK health data openness

Indicators		
ODB score (out of 100)	95	
Main publisher	Department of Health	
Descriptive information	✓	Data on comparative clinical outcomes of GP practices under 5 categories
	✓	30 GP practice data
Objective standardized activity & performance information	✓	Data on comparative clinical outcomes of GP practices under 5 categories
	✓	30 GP practice data
User satisfaction	✓	Annual complaints data by NHS
Spending information	×	Unsure
Contextual information	✓	Each dataset is accompanied with a short description

Source: Author

D. OGD usage



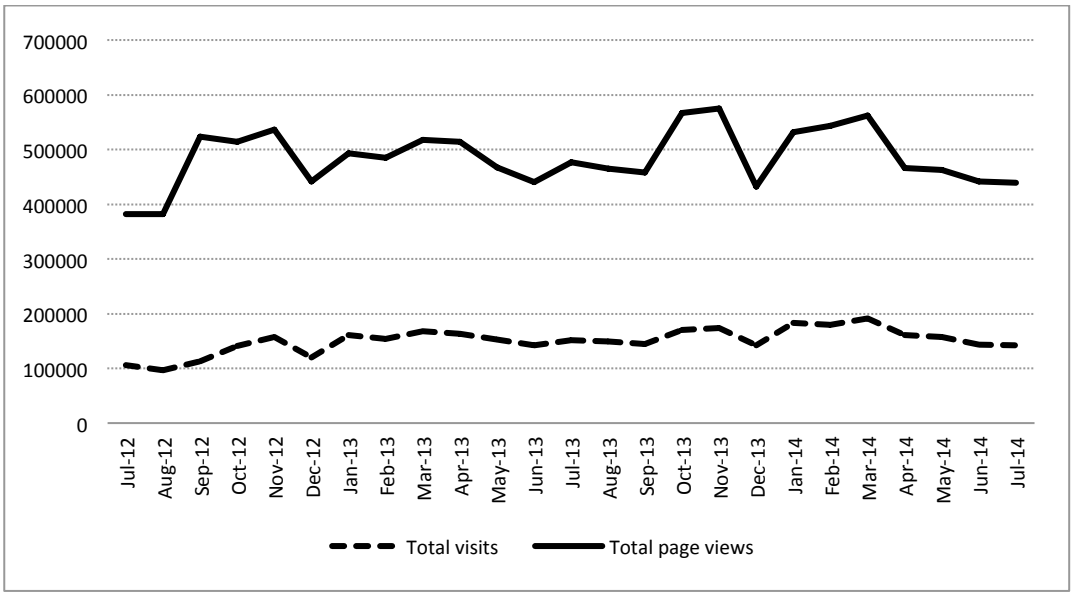
The fourth step in the OGD value chain is the analysis of OGD usage. This section first examines the trends of OGD use, including number of visits, datasets views, download patterns and most popular data publishers. We then analyze trends of OGD reuse, including the number of Apps and the field in which they were created. We also present several examples of how OGD has been put to use. Indicators of trends of OGD uptake and reuse are summarized in Table 26 and 27 respectively.

i. Trends of OGD uptake

Since July 2012, the number of visits has followed an upward trend as shown in Figure 9. Between July 2012 and July 2014, the number of visits to the national OGD portal increased by 34 percent, with new visits increasing by 76.47 percent. The number of page views[57] increased by only 15 percent. In 2013, a total of 5,891,215 pages were viewed and the site counted 1,873,706 visits. On average, a visitor spent 2 minutes (137 seconds) on the website, and viewed 3 pages per visit.

[57] « Views » is the number of times a page was loaded in users' browsers.

Figure 9: Usage patterns on data.gov.uk from July 2012 to July 2014

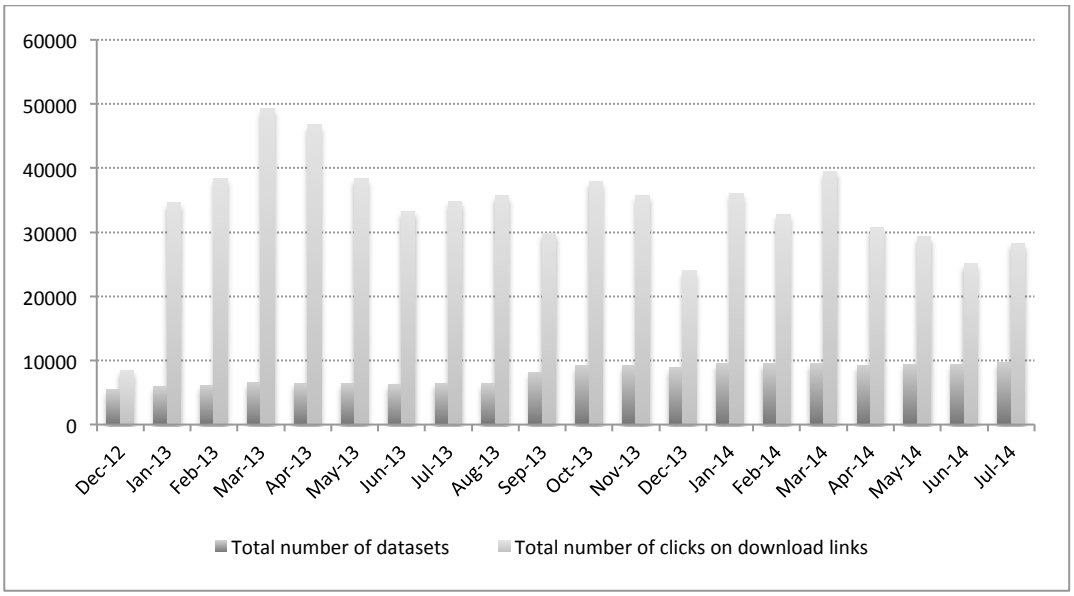


Source: data.gov.uk

Following a similar trend, the number of dataset downloads increased by 230 percent between December 2012 and July 2014[58]. Within this period, there were over 660,000 clicks on download links on data.gov.uk. As illustrated by Figure 10, the total number of data downloads largely exceed the total number of datasets uploaded on the portal suggesting that demand for open government data on data.gov.uk is relatively strong.

[58] Download information is only available from 2nd December 2012.

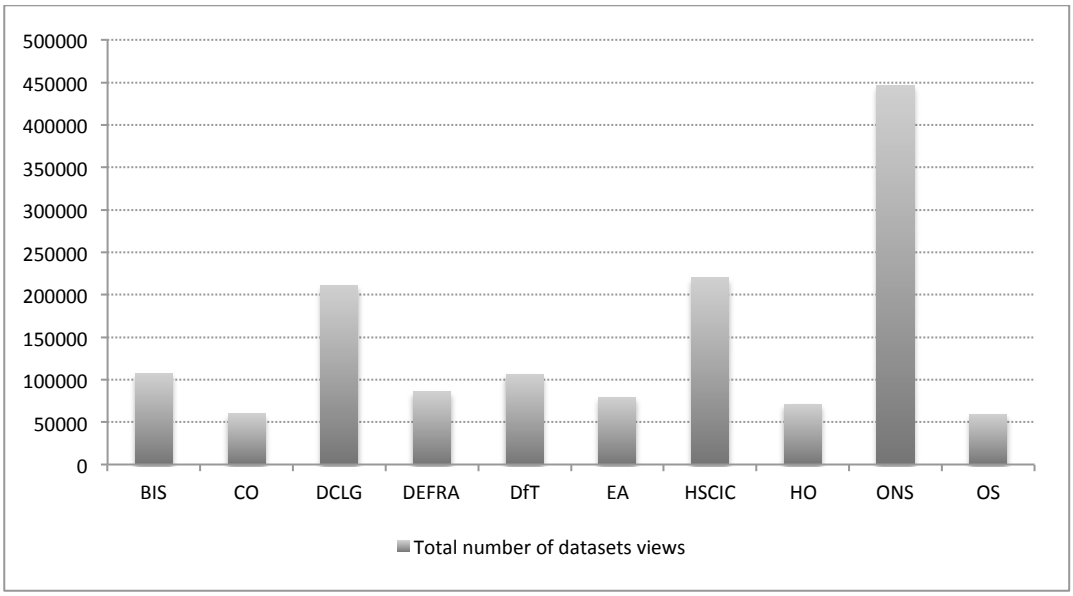
Figure 10: Download patterns and total number of datasets uploaded on data.gov.uk from December 2012 to July 2014



Source: data.gov.uk

Datasets views are dominated by the Office for National Statics whose data has been viewed more than 40,000 times. Other popular data publishers include the Health and Social Care Information Centre (HSCIC), Department for Communities and Local Government (DCLC), the Department for Business, Innovation and Skills (BIS), and the Department for Transport (DfT). Figure 11 presents the most popular data publishers on data.gov.uk between July 2012 and July 2014.

Figure 11: Most popular data publishers on data.gov.uk between July 2012 and July 2014



Source: data.gov.uk

As explained earlier, the portal enables developers to discuss ideas, applications, and using of the data through discussion forums. These forums are fairly active and participation is relatively high. Currently, 207 forums are active, having received a total of 646 replies. Forum categories range from general discussion to tools and applications, police.uk data, and food hygiene rating data. Popular forums discuss datasets relating to government, linked data and policy.

Table 26: Trends of OGD uptake on data.gov.uk between July 2012 and July 2014

Indicators	
Average time on site (average)	137 seconds
Pages per visits (average)	3
Total number of visits (2013)	1,873,706
Increase in total visits (%)	34
Total number of page views (2013)	5,891,215
Increase in total page views (%)	15
Most popular data publishers	HSCIC DCLC BIS DfT
Active forums	207
Total number of replies/comments received	646
Popular forums	Government Linked data Policy

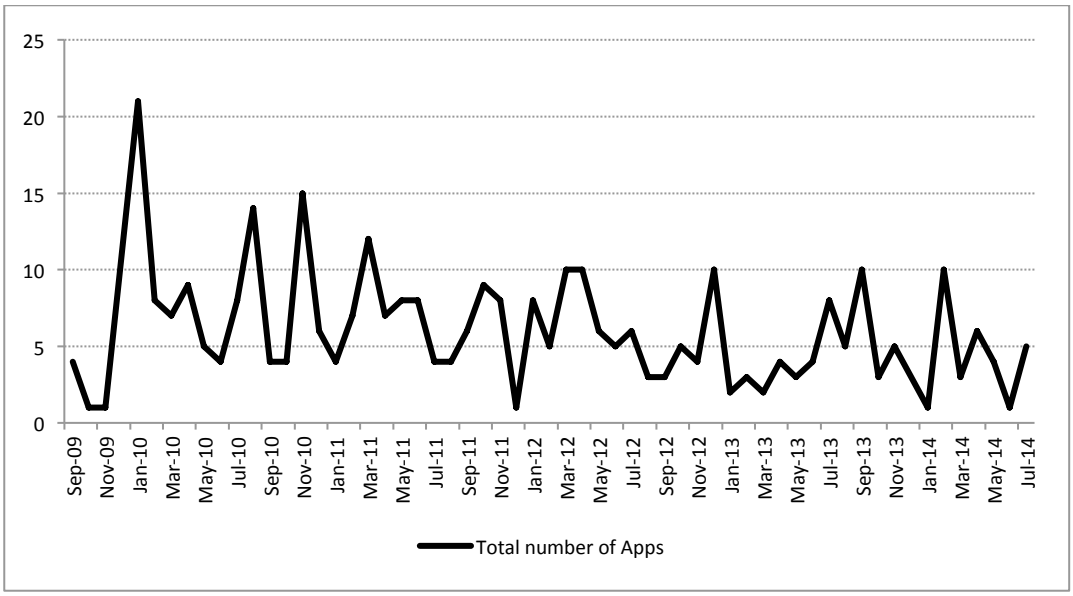
Source: Author

ii. Trends of OGD reuse

Reuse of open government data has been quite extensive. Currently, the portal features 349 Apps, ranging from transport to heath, finance and environment. Some of these Apps are chargeable. Between September 2009 and July 2014, these Apps received a total of 2,882 votes. On average, each App received 50 votes. The majority of Apps relate to transportation, location and society.

However, an analysis of reuse patterns over this time period reveals significant fluctuations. As shown in Figure 12, the highest number of Apps created was recorded in January 2010 at the launch of data.gov.uk. Since then, the number of Apps created however decreased to its initial amount of 4 Apps created per month.

Figure 12: Trends of OGD reuse on data.gov.uk from September 2009 to July 2014



Source: data.gov.uk

There are several notable examples of how open government data has been reused. One of them is the interactive website, *Where Does My Money Go?*[59]. A winner of the UK Government's *Show Us A Better Way* competition, the online tool enables citizens to explore public spending through interactive visualizations. Based on the user's salary, it shows the users how his tax money is spent across different government functions, including for example defense, health, culture and education. Metrics about the use of

[59] http://wheredoesmymoneygo.org/

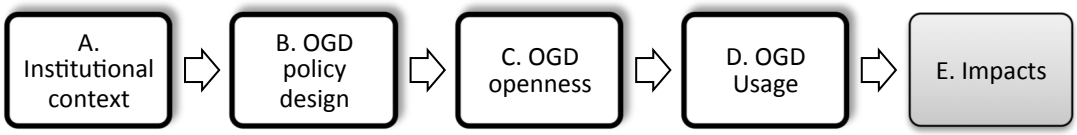
this website are however unavailable. Another example is *Openly Local*[60], a portal where citizens can access data about the workings of their Local Council. Furthermore, the portal allows citizens to compare and examine spending data for over 140 local authorities.

Table 27: Trends of OGD reuse on data.gov.uk between September 2009 and July 2014

Indicators	
Total number of Apps created	349
Total number of votes received	2,882
Popular categories	Transportation Location Society
Reuse patterns	High but inconsistent
Notable examples of reuse	Where Does My Money Go Openly Local

Source: Author

E. Impacts



The final step in the OGD value chain is the assessment of OGD impacts. As explained earlier, this study only focuses on the "socio-democratic" benefits of OGD. We first examine whether OGD has increased government transparency and accountability. We then analyze whether OGD has empowered citizens to express their voice and participate in policy making. Finally, we assess whether OGD has improved public service delivery. Given the infancy of OGD initiatives, analyzing the impacts of OGD is rather difficult. Therefore this study seeks to generate descriptive and explanatory accounts of how OGD influences change rather than making strong claims about causal links between OGD initiatives and their impacts.

Four goals were outlined as the drivers of the UK OGD agenda, including increasing transparency and accountability, encouraging citizen-led public sector reform, fostering economic and social innovation and gaining prominence in semantic-web (Cabinet Office, 2009). The Web Foundation and Open Data Institute (2013) developed the Open

[60] http://openlylocal.com/

Data Barometer, which impacts sub-index examines to which extent there is evidence of the political, social, environmental, and economic benefits of OGD initiatives (*refer to Chapter three for a detailed description of the methodology of the assessment*). According to this assessment, the UK ranks third among 77 countries, with an impacts sub-index of 79.91, with 100 being the highest score possible. Evidence of economic impacts were most apparent receiving a score of 90 out of 100. This can be explained by the fact that government has particularly emphasized economic reuse of government data and required economically-centered businesses cases to justify public data release (Web Foundation and Open Data Institute, 2013). Table 28 presents the Open Data Barometer impacts sub-index, including its components. Evidence of the socio-democratic impacts of OGD in the UK is however mixed and unclear as different indicators show contrasting results.

Table 28: Extent of OGD impacts in the UK in 2013

Impact rank	Impact sub-index	Political impacts	Economic impacts	Social impacts
3	79.91	80	90	52

Source: Open Data Barometer 2013 Global Report (Web Foundation & Open Data Institute, 2013)

i. Increased accountability and transparency

As explained earlier, OGD is expected to increase government transparency and accountability. To assess whether OGD has delivered on such promises, we examine whether OGD has restored public confidence in government and enabled citizens to identify and challenge corruption.

Ranked second behind New Zealand, evidence of political impacts of OGD scored 80 out of 100 in the Open Data Barometer. Such results may be due to the increased availability of government budget and spending data as a result of the COINS database release and David Cameron's key standard transparency requirements commissioning governmental departments to report on expenditure. As explained earlier, a well-known example of how government spending data has been put to use is the interactive website, *Where Does My Money Go?*. The online tool aims to promote transparency and citizen engagement through the analysis and visualization of information about UK public

spending[61]. It is however unclear whether and to which extent this tool enabled citizens to discover corruption scandals or reduce leakages.

Furthermore, according to the 2013 OECD Government at a Glance report, UK citizens have regained trust in their national government since the implementation of the OGD portal. Contrary to the general trend in OECD countries, the percentage of British people reporting that they have confidence in the government increased from 36 percent to 47 percent between 2007 and 2011. It is however unclear to which extent this increase can be attributed to OGD.

Analyzing general trends of government transparency and accountability, we observe however different results. For instance, it is unclear whether OGD has the potential to control more effectively for corruption. Created by the World Justice Project in 2009, the Rule of Law Index measures how the rule of law is experienced in everyday life in countries around the globe (World Justice Project, 2014). Conducted on a yearly basis, adherence to the law is assessed using 47 indicators organized around 8 dimensions, including constraints on government powers, absence of corruption, open government. The absence of corruption dimension measures several forms of corruption – such as bribery, extortion improper influence by public or private interests and misappropriation of public funds – with respect to government officers in the executive branch, the judiciary, the legislature and the police and the military. In terms of absence of corruption, the World Justice Project ranked the UK 15th in both its 2012-2013 and 2014 Rule of Law Index, gaining one place compared to 2011. However, its absence of corruption score (0.8 with 1 being the highest score possible) remained the same since data.gov.uk was implemented. The Corruption Perception Index (CPI) shows similar results. Initiated by Transparency International, the CPI measures the perceived levels of public sector corruption in countries around the world. A composite index, it aggregates corruption-related data from a number of different sources (opinion surveys and performance assessments) that provide perceptions of business people and country experts of the level of corruption in the public sector (Transparency International, 2013a). Ranked 14th out of 177 in the 2013 CPI, its CPI score slightly deteriorated from 74 to 76 between 2012 and 2013.

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[61] *About*, http://wheredoesmymoneygo.org/about.html

Table 29: Extent of corruption in the UK

WJP Rule of Law Index – Factor 2: Absence of Corruption			
Years	Factor score	Factor rank	Number of observations
2014	0.8	15	99
2012-2013	0.8	15	97
2011	0.8	16	66
2010	-	-	35

Source: WJP Rule of Law Index (2010, 2011, 2012-2013, 2014)

Similarly, the percentage of people in the UK reporting that they believe that corruption has increased in the last years rose from 53.4 percent to 65 percent between 2010 and 2013. According to the 2013 Global Corruption Barometer[62], 90 percent of the respondents reported that they believe the UK government is run by a few big interests (Transparency International, 2013b). Furthermore, 5 percent responded having paid a bribe to one of the 8 assessed public services, including the education system, judicial system, medical and health services, police, registry and permit services, utilities, tax, and land services. This is a significant increase since the 2010 Survey when only 1.7 percent of the respondents reported paying a bribe (Transparency International, 2010). In 2013, only 10 percent of the respondents believe that the UK government is effective in fighting against corruption. This is a sharp decline since the 2010 Survey when 26 percent shared such feeling. In 2013, political parties (66%) are seen to be the most corrupt institution, followed by the parliament (55%), the police (32%), and the judiciary (24%). These perceptions haven't changed since 2010, except for perceptions of corruption in the police and the judiciary, which were perceived as less corrupt in 2010 as only 28 percent and 19 percent of the respondents respectively perceived the police and the judiciary as corrupt.

Similarly, despite the increased availability of government budget and spending data, it is unclear whether OGD has the potential to enhance budget transparency. Ranked third in both the 2012 and 2010 Open Budget Survey, the UK received a slightly lower OBI score in 2012 (88) than in 2010 (87), and a similar score than in 2008 and 2006. Furthermore, it tumbled down two places compared to the 2008 Open Budget Survey when it ranked first.

[62] First issued in 2003 by Transparency International, the Global Corruption Barometer presents the main findings of a public opinion survey that explores the experiences of people confronting corruption and bribery across countries.

Table 30: Extent of budget transparency in the UK

Budget Transparency			
Years	OBI	Rank	Number of observations
2012	88	3	100
2010	87	3	94
2008	88	1	85
2006	88	2	59

Source: Open Budget Survey (2006, 2008, 2010, 2012)

ii. Citizen empowerment

Another claim is that OGD will empower citizens and enhance participatory governance. To assess whether OGD has led to citizen empowerment, we examine whether OGD has enabled citizens to express their voice, to meaningfully participate in policymaking and access government services.

Despite the government's significant efforts to make community and local government data available, the UK's weakest area in the Open Data Barometer ranking is in securing social impact from open government data, which received a score of 52 out of 100 (Web Foundation & Open Data Institute, 2013). According to Moss and Coleman (2013), such poor results are mainly due to the government's failure to educate ordinary citizens about OGD, which as a result undercuts their ability to interpret, understand and use the data.

On the contrary, we observe that general trends of e-participation increased since the implementation of the OGD portal. The UN E-Government Survey also includes an e-participation dimension, which focuses on e-information sharing, e-consultation and e-decision-making[63]. The e-participation index value reflects how useful these features are and how well they have been deployed by the government. In terms of e-participation, the UK is the fourth best performing country in the 2014 UN E-Government Survey. Its e-participation index increased from 0.4318 in 2008 to 0.9608 in 2014, with 1 being the highest score possible. Furthermore, the UK provides slightly more e-participation features in 2014 than in 2012, which is mainly due to an increase in the provision of e-consultation services. For instance, direct.gov.uk features an e-petition page where

[63] E-information sharing refers to tools that enable participation by providing citizens with public information and access to information without or upon demand. E-consultation services for their part refer to online tools that engage citizens in contributions to and deliberation on public policies and services. E-decision-making services refer to tools that empower citizens through co-design of policy options and co-production of services.

citizens can file online petitions on issues for the government to propose to parliament if enough signatures are signed. Table 31 presents the e-participation index and its components.

Table 31: Extent of e-participation in the UK between 2012 and 2014

	Rank	E-participation index value	E-information	E-consultation	E-decision making	Total
2014	4	0.9608	96.30	77.27	77.78	86.21
2012	3	0.9211	100	70	83	74

Source: United Nations (2012, 2014)

iii. Improved public service delivery

Finally, OGD is expected to improve public service delivery. To assess whether OGD has increased government efficiency, we examine whether OGD enabled government to better plan and target resources, enabled outside actors to build new services on top of OGD which deliver more effective public services and whether OGD has enabled government to improve the quality of public service delivery.

The Open Data Institute features two examples of how open government data has been used as a tool to improve government efficiency. A first example is Prescribing Analytics. A joint venture of a group of NHS doctors, academics and tech start-ups, Prescribing Analytics[64] aims to support health care professionals, managers, patients and the NHS by identifying and mapping prescribing variation against the National Institute of Clinical Excellence (NICE) guidance using open government data. Initially, the project looked at prescribing patterns of a class of drugs called statins, which are used to prevent cardiovascular problems. The current evidence shows that generics are equally safe and effective as the more expensive proprietary drugs. Since the NICE encourages health care professionals to prescribe the most cost effective treatments, the project examined how much money was spent on prescribing generics versus proprietary drugs. It found that over £200 million could have been saved due to unnecessary expenditure on proprietary drugs (Thwaites, 2012).

Another example is the partnership between the Open Data Institute and Telefonica Dynamic Insights. The two organizations developed tools using open government data to assess the potential impact of planned fire station closures in London in terms of fire

[64] http://www.prescribinganalytics.com/

service response times to incidents and number of people potentially affected measured through data relating to mobile phone activity (Thwaites, 2013). It is however unclear if and to which extent these tools have produced significant outputs and influenced public sector reform

Citizen satisfaction with public services has followed an upward trend since the launch of data.gov.uk and its accompanying policy. For instance, according to the 2013 OECD Government at a Glance report, confidence in local police rose from 69 percent to 76 percent between 2007 and 2012. Satisfaction with the education system increased the most, from 69 percent to 78 percent. The UK also experienced a sharp increase in satisfaction with health care, which rose from 84 percent to 92 percent between 2007 and 2012. Overall satisfaction with public services was higher than confidence in national government (47 percent in 2011).

4.3 Conclusion

Among the first to implement an OGD initiative alongside the United States, the UK government launched data.gov.uk in January 2010. A strong emphasis has been placed on the potential of OGD to increase political transparency and accountability, encourage citizen-led public reform, and foster economic and social innovation. Currently, 1,183 publishers have provided access to over 15,000 datasets ranging from crime figures to government spending data. In 2013, a total of 5,891,215 pages were viewed and the site counted 1,873,706 visits. The OGD initiative has received high-level broad-based political backing as David Cameron aims to make the UK « the most open and transparent government in the world »[65]. By setting out key standard transparency requirements and commissioning departments to create a departmental Open Data strategy, the Prime Minister successfully sustained and extended the initiative across government.

This has been complemented by the development of an enabling environment. To facilitate OGD accessibility and reuse, the government made a legislative change towards an enhanced right to data through the amendment of the FOIA and the establishment of

[65] PM Speech at Open Government Partnership 2013, https://www.gov.uk/government/topical-events/open-government-partnership-summit-2013

an Open Government License. Furthermore, to ensure the availability, openness and usability of OGD, the government implemented an overarching National Information Infrastructure convening government officials to release government data that corresponds to citizens' needs and enables economic and social impact. The government has also focused on building communities around OGD by establishing sector-specific transparency boards, inviting experts from business, academia, civil society to bring in feedback and input. Additionally, the government has made substantial efforts in harnessing OGD for economic and social progress, in particular through the establishment of the Open Data Institute.

As per the Open Data Barometer assessment, the UK is the most advanced country in terms of data availability and accessibility. In general, the data ensures ease of use and reuse. The government provides the public with extensive and comprehensive information of the national government's budget and spending activities. Furthermore, the current state of data generally supports citizens to make better-informed choices regarding the public services they consume and hold government officials to account. It has also released extensive contextual information, in the form of simple data descriptions as well as detailed user guides and resources, to assist data interpretation and use. There remain however several challenges to be addressed for the data to be considered as truly open. For instance, electoral data and spending information on health services are not made available on the portal. Furthermore, the current state of government budget and spending data does not allow for comparisons.

Demand for OGD has been relatively strong since the implementation of the national OGD portal. Both OGD uptake and reuse have followed an upward trend. Between July 2012 and July 2014, the number of visits to data.gov.uk increased by 34 percent, with new visits increasing by 76.47 percent. Forums are fairly active and participation is relatively high. While reuse of OGD has been quite extensive, reuse patterns reveal however significant fluctuations, suggesting that OGD reuse is rather inconsistent.

Despite the creation of an enabling environment, a continued focus on user needs, and a strong demand for OGD, evidence of the socio-democratic impacts of OGD in the UK is mixed. The Web Foundation and Open Data Institute (2013) ranked the UK third in the Open Data Barometer, with an impacts sub-index of 79.91 out of 100. Since the launch of

data.gov.uk and its accompanying policy, UK citizens regained trust in their national government, general trends of e-participation increased, and citizen satisfaction with public services has followed an upward trend. However, we observed no significant improvements in terms of government transparency and accountability. The UK even received slightly lower scores in terms of control for corruption and budget transparency over this same time period. Furthermore, it is unclear whether and to which extent OGD enabled UK citizens to influence public sector reform.

Chapter 5. Case study 2: Data.gov.in

We now turn to the case of India, which is one of the most active countries in the South Asian region in pushing for the release of government data. In February 2012, the Union Cabinet of the government of India approved the National Data Sharing and Accessibility Policy (NDSAP), which aims at increasing the availability and accessibility of non-sensitive government data generated by different governmental entities using public funds. As part of the NDSAP, the government launched data.gov.in, a publicly accessible online portal of government datasets that can be used by ordinary citizens for scientific, economic, and developmental purposes (Department of Science and Technology, 2012). Initiated in October 2012, the government has subsequently released 3215 data catalogs, including 10229 datasets and 25 applications.

Similar to the previous chapter, we first describe the politics, demographic and social background of India. We then characterize the institutional context in which India's OGD initiative unfolded and examine to which extent the contextual factors are conducive for OGD to achieve its expected benefits. Thirdly, we examine India's OGD policy design and assess in particular how the policy addresses the organizational, institutional, legal and social challenges that may derive from OGD implementation. Fourthly, we present a general overview of data publishing in India and analyze in particular the availability, usability legal and technical openness of government datasets. This chapter also provides insights into trends of OGD uptake and reuse. Finally, we examine whether data.gov.in has delivered on its promises.

5.1 Country profile: India

India is the second-most populous country with over 1.2 billion people and the most populous democracy in the world (Stephen, 2011). Situated in South Asia, India shares borders with China, Nepal, Afghanistan, Pakistan, Burma and Bangladesh. The country is divided into 29 States and 7 Union Territories. On 15th August 1947, India, officially the Republic of India (Bharat Ganrajya), gained independence from the British Colonial Rule after a struggle for independence that was marked by non-violent resistance led in particular by Mahatma Gandhi.

India is a liberal democratic federal republic governed under a parliamentary system comprising two Houses: the Rajya Sabha (Council of States) and Lok Sabha (House of the People). The head of state is the President and is elected for a five-year term. In July 2012, senior Congress Party leader Pranab Mukherjee was elected as the 13th president of India (Freedom House, 2014a). Universal suffrage is both a political and constitutional right in India. According to Freedom House (2014a), elections in India have generally been free and fair. Since May 2014, Marendra Modi is the 15th Prime Minister of India.

India is home to a diversity of religious beliefs and practices. According to the 2001 Census of India, the majority (80%) of the population identified themselves as Hindu. Islam (13.4%), Christianity (2.3%), Sikhism (1.9%), Buddhism (0.80%) and Jainism (0.4%) are the other major religions practiced by the people of India. While Hindi is the official language, there are 22 national languages that have been recognized by the Constitution of India (Stephen, 2011). English is widely spoken and is recognized by the Constitution as an associate national language for official purposes, including business and higher education.

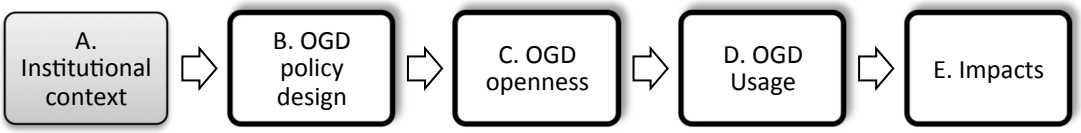
Progress on human development has been remarkable: life expectancy more than doubled from 31 years in 1947 to 66 years in 2012, and adult literacy more than quadrupled from 18 percent in 1951 to 74 percent in 2011 (World Bank, 2014). Despite the significant progress in reducing absolute poverty over the last two decades, it is still home to one-third of the world's poor people with 400 million people living in poverty as defined by an income of less than $1.25 a day.

Corruption is however rampant and affects each and every section of Indian society including politics, bureaucracy, police, judiciary and nongovernmental organizations (Rashid, 2009). Transparency International (2013) ranked India 94 out of 177 in its 2013 Corruption Perceptions Index. Corruption is extremely persistent in the case of public service delivery, affecting in particular the poor. While politicians and public officials regularly get caught, a great deal of corrupt behavior however goes unnoticed and unpunished (Freedom House, 2014a).

5.2 OGD value chain

In this section, we characterize India's OGD value chain and examine its different components, including institutional context, OGD policy design, OGD openness, OGD usage and impacts. Similar to the previous chapter, we apply the different assessment grids developed for each sub-component of the value chain to assess the expected benefits of open government data in India.

A. Institutional context



This section examines to which extent several institutional factors enable or impede India's OGD initiative to achieve its expected benefits. It also provides insights into the underlying drivers of India's OGD initiative and identifies the key actors that were instrumental to the development of the OGD movement.

Similar to the UK, the Indian OGD initiative was both supply and demand-side driven. Three groups of actors played an important role in the development of the OGD initiative, including high-level champions providing political commitment, supporting actors (the US government and NIC) delivering capacity building at an institutional level, and civil society advocating for increased government transparency though not necessarily demanding the release of open government data. Mid-level bureaucrats were however less engaged then their UK counterparts, due to reticence to provide government information.

i. Political leadership and commitment

In contrast to the UK, it is less evidently to trace back the origins of the OGD movement in India. The enactment of the OGD policy was a result of the confluence of a variety of factors. Table 32 presents the main indicators of political leadership and commitment for OGD in India.

Since 2011, the government had been under pressure from civil society (India Against Corruption campaign)[66] to establish strong legislation and enforcement against endemic and widespread political corruption. In particular, the movement demanded the enactment of Jan Lokpal Bill, an anti-corruption law. The movement resurged in 2012 and is currently still active[67].

The movement was also a protest against the 2010 Commonwealth Games controversies and the 2G-spectrum scam. The 2010 Commonwealth Games, which took place in New Delhi, were severely criticized because billions of dollars were spent on a 12-day sport event despite one in three Indians living below the poverty line (G. Pandey, 2010). Other concerns were financial irregularities, corruption, and child labor[68]. The 2G-spectrum[69] scam for its part was a scandal involving politicians and government officials underpricing mobile companies for bandwidth in return for bribes. It was estimated that the scandal had cost the Indian government around $7 billion[70].

According to Wright, Prakash, Abraham, Shah, and Thompson (2011), the current development of open government data in India is also driven by an influential right to information movement and a critically acclaimed Right To Information Act (RTIA). Analyzing the OGD movement in India, the authors interviewed several important OGD actors, including state and national government officials, transparency activists and civic hackers. The authors explain that high-level government officials felt empowered by the RTIA to push for more transparency and accountability. Government officials believed that the public was « hungry for more transparency and accountability and that the RTI Act was a harbinger of an even more open government to come » (p.8). According to the authors, mid-level government officials were less engaged and supportive of an OGD policy. They believed that an OGD initiative would be redundant given that the RTIA has already made government more transparent. Those interviewed in the study asserted that mid-level bureaucrats adopted opposing positions out of fear of losing authority.

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[66] This will be further examined in the next section *v. OGD demand*.

[67] http://www.indiaagainstcorruption.org.in/

[68] http://www.cnn.com/2010/WORLD/asiapcf/09/23/commonwealth.games.child.labor/

[69] 2G stands for second-generation wireless telephone technology.

[70] http://content.time.com/time/specials/packages/article/0,28804,2071839_2071844_2071866,00.html

The OGD initiative was essentially institutionalized in February 2012 when the Union Cabinet under leadership of former Prime Minister Manmohan Singh approved the National Data Sharing and Accessibility Police (NDSAP). The NDSAP aims to enable proactive and open access to data generated by Government of India entities. Building upon the provisions of the RTI Act, the NDSAP endorses the idea that citizens are entitled to access most data generated by public authorities using public funds and that such data can be used by ordinary citizens for scientific, economic and developmental purposes. The objective of the NDSAP is to:

> « facilitate the access to Government of India owned shareable data and information in both human readable and machine readable forms through a network all over the country in a proactive and periodically updatable manner, within the framework of various related policies, Acts and rules of Government of India, thereby permitting a wider accessibility and use of public data and information » (Government of India, 2012a, p. 12).

Other high-level commitments to open, transparent and accountable governance include the 12th Five Year plan. In order to strengthen governance, the Plan proposes setting up dedicated mechanisms to foster and reinforce state-civil society collaboration, making civil society groups partners in policy-making as well as programme implementation and evaluation. The Plan also recognizes the need for the government to communicate more effectively with citizens and disseminate information on existing policies and programmes. Emphasis is put on the use of ICTs, which will not only modernize the government's communication process but also make it more proactive (Planning Commission, 2013). India has however not joined the Open Government Partnership and thus has not endorsed an OGP National Action Plan.

The US government and the National Information Center (NIC) can be characterized as supporting actors providing technical and organizational capacity necessary in developing the OGD initiative. In 2010, President Barack Obama and former Prime Minister Manmohan Singh entered into a formal partnership on Open Government. The two countries established an Open Government Dialogue to exchange best practices in open governance and produce a joint action plan harnessing shared values to move forward the Open Government agenda in both countries (White House, 2010). As part of the joint action plan, designated senior officials developed mechanisms to share best practices as well as to develop organizational partnerships and co-creation type events

to encourage citizens to re-use the data and create applications and visualizations for better service delivery and citizen empowerment. A major component of the partnership was the development of a publicly accessible online portal of public sector datasets, data.gov.in. Jointly developed by the US Government and the NIC, the platform « aims to provide enhanced public access to government data and documents, and spur citizen engagement and interface with the Government » (Government of India, 2012b).

Though no regional or city OGD initiative exist, several state departments and city agencies have opened up their data to strengthen governance practices as well as the capacity of CSOs and citizens (Wright et al., 2011). Similar to the UK, several government departments have used OGD to improve or offer new services to citizens. For instance, the Department of Agriculture of the state of Maharashtra disseminates information collected and generated by the department to farmers across the state, both online and via SMS (Wright et al., 2011). The department's website gives access to data and statistics about the participation of farmers in the National Agricultural Insurance Scheme, features rainfall recording and analysis and hosts crop reports by various administrative divisions, crop type, and related pests and diseases. The Reserve Bank of India has also worked towards proactive disclosure of information. In 2004, the Bank opened up its database – Database on Indian Economy (DBIE) - consolidating data on the Indian economy and selected international economic indicators. The DBIE is arranged by subject area, including macroeconomic aggregate data, financial markets analyses and banking sector information. Users can view and download pre-formatted reports in these subject areas by time period. The DBIE also allows users to create their own reports based on selected variables and time periods. Some of these projects are however more organized e-governance and transparency initiatives than OGD programs.

Table 32: India political leadership and commitment for open government data

Indicators	India	United Kingdom
Publicly announced political promise or policy position on OGD or OG	✓ RTIA 2005 ✓ India – US Open Government Partnership (2010) ✓ NDSAP (2012) ✓ 12th Five Year Plan (2012)	✓ FOIA 2005 ✓ Power of Information Review (2007) ✓ Government commissioned cost-benefit analysis of the Trading Fund model (February, 2008) ✓ Power of information Taskforce (March, 2008) ✓ Show Us A Better Way competition (June, 2008) ✓ David Cameron Transparency Agenda (May 2010)
Endorsement of OGP National Action Plan with open data commitments	× India has not joined the OGP and thus not endorsed an OGP National Action Plan	✓ Founding member of the OGP (2011) ✓ Current lead-chair of the OGP ✓ Has published 2 OGP National Action Plans - **2011-2013 OGP National Action Plan** (mainly focused on open government data) - **2013-2015 OGP National Action Plan** (structured around 5 themes, including open government data)
OGD activities at the regional / city level	✓ Maharashtra Department of Agriculture ✓ Reserve Bank of India	✓ London Data Store

Source: Author

ii. Legal and regulatory context

As explained in the previous section, the Right to Information Act (RTIA) played an important role in the development of OGD in India. However, the implementation of the RTIA has been mixed. Compliance with the Act remains poor due to inadequate record management procedures within public authorities and non-cooperative public information officers. Furthermore, information requestors continue to be intimidated and harassed. Additionally, a number of RTI activists were killed in the last years. Since ATI legislation endorses the recognition that government information belongs to the public and regulates the legal obligations of government to provide such information, poor implementation and lack of enforcement of the RTIA can hence be an important barrier for the OGD initiative to be successful. Table 33 presents the indicators of the legal and regulatory context in India.

The Right to Information Act (RTIA) was adopted by India's Parliament in May 2005 and was notified in the Gazette of India in June 2005. The Act went into effect in October 2005. The RTIA enables citizens to access information held by the Central government, State governments, and Union Territories, with exception to Jammu and Kashmir, as well

as organizations and institutions that are funded, controlled or owned by government. The Act aims to improve the accountability and performance of public authorities, reduce corruption in government departments and assist the vulnerable groups of India to claim their rightful share of public services (Gatty, 2012; Moudgil, 2012; Rani, 2012).

Amongst other factors, the enactment of the RTIA was the result of successful advocacy movements for effective governance. The Mazdoor Kisan Shakti Sangathan (MKSS), a rural grassroots civil-society movement in India, is commonly cited as an example for influencing the coming into being of the RTI Act (Dubochet, 2011; Moudgil, 2012). In 1990s, the MKSS took up the issues of land distribution and the failure of enforcement of minimum wage laws in central Rajasthan, a region prone to drought where farmers largely depend on government subsidies. Local authorities refused to pay workers the minimum wage based on financial records of panchayats that stated they had not completed their work hours. The MKSS set out to obtain these records considered however as government property and therefore secret by the local authorities. Through a series of public meetings, the people discovered that local governments had manipulated the records that affected wages. It was these activities that led MKSS to the conclusion that access to government information could expose the corrupt practices of local authorities. Due to lack of legal basis for accessing government information, the MKSS as well as a nation-wide network of senior journalist, lawyers, bureaucrats, academics and social activists strongly campaigned for the enactment of a strong RTI legislation and the abolition of the 1923 Official Secrets Act[71]. This led to the passage of several state-level RTI Acts such as Goa and Tamil Nadu in 1997, Karnataka and Rajasthan in 2000, Delhi in 2001, Maharashtra and Assam in 2002, Madhya Pradesh in 2003 and Jammu and Kashmir in 2004.

In the first two and a half years of its implementation, Indian citizens filed about 2 million requests for information under the RTIA. In his review of major studies about the operation of the RTIA, Roberts (2010) however points out that when interpreting this number one should keep in mind that the law affects all levels of India's public sector.

[71] Enacted during the colonial rule, the 1923 Official Secrets Act gives authorities the power to censor national security-related articles.

Most requests are often filed with the aim of redressing grievances about the failure to deliver public services or complete public works.

Although both the UK FOI Act and the Indian RTI Act were enacted in 2005, there remain significant discrepancies, particularly in terms of compliance and enforcement. In contrast to the UK, compliance with the statutory deadline of the RTIA is relatively weak. A large-scale assessment of the RTIA completed by PricewaterhouseCoopers (PwC) for the Indian government's Department of Personnel and Training found that more than 50 percent of RTIA requestors said that it took more than 30 days to receive the information from the Public Information Officer (PIO). According to PwC (2009), this is mainly due to inadequate record management procedures within public authorities, and the non-availability of trained PIOs and the enabling infrastructure. In addition to provisions that allow citizens to make requests for government-held information, the RTIA presumes proactive publication of information (Roberts, 2010). However many public authorities fail to comply with these proactive disclosure rules. For instance, the 2009 PwC study found that 43 percent of the interviewed PIOs were not aware of the proactive disclosure requirements at all. The study also reported that, even when information was disclosed, it was often out of date or incomplete.

Though none of the studies reviewed by Roberts (2010) specifically reported on the usage of exemptions and refusals to information requests, there is substantial evidence of non-cooperative PIOs. For instance, a 2008 survey of RTI requesters conducted by the Society for Participation Research in India (PRIA) reported several cases of intimidation, harassment and reprisal. PIOs often deliberately ask for high fees and cause delays on one pretext or another. Beside these cases, a number of RTI activists have been killed in the recent years for requesting information presumably to uncover abuses and corrupt practices (Freedom House, 2013a).

Roberts (2010) points out that there are few complaints among requesters about RTIA fees in general. As stipulated by the RTIA, the RTI application fee is 10 rupees. The applicant may however be required to pay further fees for covering the costs of providing the requested information. A large majority (78 percent) of the respondents of PRIA's 2008 survey of RTIA requesters said that they found the rate of application and the additional fees to be reasonable. The 2009 PwC survey of both information providers

and seekers however calculates the true economic cost of pursuing an RTI request. Using average wage rates and transportation costs, the authors that the real economic cost is about 250 rupees in rural India, and nearly twice that in urban areas (485 rupees). According to the study, the real cost of filing an RTI request increases when citizens are required to make frequent follow-up visits. While the UK failed to specify exemptions for those with low income, under the RTIA, an applicant living below the poverty line is not required to pay any fee (Government of India, 2013).

Table 33: Legal and regulatory context in India

Indicators	India	United Kingdom
ATI legislation	RTIA came into force in 2005	FOIA came into force in 2005
Requested information is published in a short timeframe	In 2009, 50 percent of information requests were published within the statutory deadline of 30 days	In 2013, 91 percent of all resolvable requests were published within the statutory deadline of 20 days
Officials are obliged to publish documents proactively	RTIA presumes proactive publication of information × Failure to comply with proactive rules × Majority of PIOs are unaware of proactive requirements × Out of date and incomplete information	As per section 19, public officials have the duty to publish information and documents proactively ✓ Increase in the extent of proactive disclosure of information
The usage of exemptions and refusals to information requests is low	× Non-cooperative PIOs × Several cases of intimidation, harassment, reprisal × A number of RTI activists have been killed	In 2013, 30 % of all resolvable requests for information were rejected × Increase in refusals to information since 2005 ✓ Decrease in usage of exemptions
No (or low) fee for making requests	RTI application fee is 10 rupees × True economic cost ranges between 250 and 485 rupees	✓ Only 1.5 percent of all requests for information were subject to a fee ✓ The average value of fee paid in 2013 was £60
Exceptions for those with low income exist	✓ Yes	× No

Source: Author

iii. National technology infrastructure

The national technology infrastructure is still evolving in India and e-services are in their formative stage. Despite its relatively affordable ICT services and the governments' efforts to bridge the digital divide, a large segment of the population does not have access to a basic ICT infrastructure. Since the national technology infrastructure is the backbone of any OGD initiative, the success of India's OGD initiative will be significantly hampered if the government and infomediaries fail to address these gaps in both infrastructure and access to ICT.

The UN ranked India at the 58th place in its 2012 E-Government Survey, with an online service index of 0.5359, with 1 being the highest. Compared to the UK, provision of e-services in India is relatively low as the government provided only half of all online e-services assessed in 2012 (United Nations, 2012). According to the Survey, both countries provide all of the e-services in Stage I. However, the e-government initiatives significantly differ in scope as we move up the stages of e-government development. While nearly all UK government websites deliver one or two-way e-communication between the government and its citizens, only 64 percent of government websites offer such interactive features in India. Furthermore transactional and networked services are largely lacking. Table 34 presents the EDGI online service sub-index and its components.

In May 2006, the Indian government approved the National E-Governance Plan (NeGP), which aims at making all government services accessible, efficient, transparent and reliable at affordable costs to raise the living standards of the common man in his locality (Chauhan, 2009). As part of the NeGP, the government launched the National Portal of India, which was implemented by the National Informatics Centre (NIC) (Hirwade, 2010; United Nations, 2012). The portal seeks to provide a single window for access to government information and services. The NIC has also developed portals for each of the 29 states, all seven union territories and 566 out of the 626 union territories districts.

In addition to the National Portal, the government has implemented the India Development Gateway (United Nations, 2012). Specifically targeted towards the un-reached rural communities of India, this site provides a single-window access to information, services and products on thematic areas (agriculture, primary education, health, social welfare, rural energy and e-governance) for the rural poor and women. The government's main objective is to facilitate rural empowerment through the use of ICT tools by stimulating women, the poor and people living in remote areas to use technology to their own advantage. The site also features value-added services such as forum discussions and an ask-an-expert section. The site is available in English and in eight local dialects.

Table 34: Extent of service delivery in India in 2012

Country	Rank	Online service index value	Stage I: Emerging presence	Stage II: Interactive presence	Stage III: Transactional presence	Stage IV: Networked presence	Total
India	58	0.5359	100	64	33	38	47
UK	4	0.9739	100	95	79	81	85

Source: United Nations (2012)

Despite its strong ICT industry, the ITU ranked India 119th out of 155 in the 2012 ICT Development Index. Classified among the Least Connected Countries, India has a very low access sub-index value, which only slightly increased from 2.33 in 2010 to 2.48 in 2011. Broadband penetration rates remain below 2 percent and only 6 percent of households have their own computer and Internet access. Furthermore, broadband speed remains slow compared to international standards. India however experienced enormous subscription growth, as mobile cellular subscriptions almost doubled between 2002-2007 and 2007-2010. In 2012, India hit the 1 billion mobile cellular subscriptions (ITU, 2012). This rise in the subscriber base was mainly due to investments made by operators to provide telephone access in rural areas. According to TRAI (2008), 91 percent of all Indian villages had telephone access by December 2008.

While Internet usage continues to increase, with tens of million of new users getting online each year, Internet penetration rates remain relatively low at 10 percent in 2012. A pronounced rural/urban divide persists as many rural households access the Internet via cybercafés. According to the 2013 Freedom of the Net report, such low penetration rates are also due to a lack of local language content and applications as well as infrastructural limitations and high costs (Freedom House, 2013b). Table 35 presents the IDI access and use sub-indicators, including their different components.

Table 35: ICT access and use in India in 2011

Indicators	Access		Use	
	India	UK	India	UK
Fixed-telephone subscriptions per 100 inhabitants	2.6	53.2	-	-
Mobile-cellular subscriptions	72.0	130.8	-	-
International Internet Bi/s per Internet users	5'423	166'073	-	-
Percentage of household with computer	6.9	84.0	-	-
Percentage of household with internet access	6.0	85.1	-	-
Percentage of individuals using the Internet	-	-	10.1	82.0
Fixed broadband subscriptions per 100 inhabitants	-	-	1.0	32.7
Mobile-broadband subscriptions per 100 inhabitants	-	-	1.9	62.3

Source: ITU (2012)

India is known for its relatively affordable ICT services. This can be explained by the fact that a large number of operators increasingly compete for low-income, rural and semi-urban customers. Furthermore, the Telecommunication Regulatory Authority of India has recently made commitments to increase transparency commissioning operators to publicly make available their price plans and packages so that customers can easily make comparisons.

The government has however made substantial efforts in bridging the digital divide, in particular challenges of connectivity. In 2004, the government approved a nationwide initiative to establish 100,000 Common Service Centers (CSCs) serving 600,000 villages of India (Wright et al., 2011). The Community Service Centers are part of the NeGp and serve as front-end delivery points of e-services to rural citizens of India. They are devised as ICT-enabled kiosks having PCs and basic support equipment (printers and scanners) and are linked to a national data network. Each CSC is designed to serve a cluster of five to six villages.

Additionally, in September 2012, the government approved the National Policy on Information Technology, which seeks to leverage ICTs to address the nation's economic and development challenges (Department of Information Technology, 2012b). To do so, the Policy aims to make at least one individual in every household e-literate, leverage ICT for key social sector initiatives, enable access of content and ICT applications by differently-able people to foster inclusive development and to enhance transparency, accountability and efficiency in Government and particularly in public service delivery. As pointed out by Krishna (2011), it is however unclear how the government will execute

the policy, which public authorities are responsible for its implementation and how the government will ensure enforcement.

iv. Media

In general, India enjoys a free press and strong protections of free speech. The media was a powerful tool for raising awareness and educating citizens about the RTI Act. However, Internet surveillance and censorship have substantially increased over the last years. On multiple occasions, the government has blocked social media and political content, which could impede OGD initiatives from achieving their expected benefits. Table 37 summarizes the indicators of the degree of media independence in India.

The media sector in India has enjoyed substantial levels of growth in the past two decades. Previously dominated by state-owned broadcaster Doordarshan, the broadcasting sector now counts over 500 satellite channels (Biswas, 2012). Radio broadcasting remains largely dominated by state-owned enterprises (Freedom House, 2013a). With more than 70,000 newspapers and over 100 million copies sold each day, India is the biggest newspaper market in the world. Newspapers and magazines cater to each of the eighteen languages and ten different scripts of India. Linguistic variety has ensured a highly competitive newspaper industry (Kasbekar, 2006).

Despite its plurality and diversity, there are serious concerns of growing consolidation and corporatization of the industry (Biswas, 2012; Freedom House, 2013a). Deregulation and privatization have led to the increasing concentration of media ownership in the hands of large corporate groups as well as old business families who today have substantial consolidated interests in the telecommunication and media sector (Banaji, 2013; Thomas, 2004). Furthermore, there is the scourge of cash for coverage: highly influential businessmen and politicians pay journalists, newspapers and news channels for positive media coverage (Biswas, 2012; Freedom House, 2013a). This practice remains highly entrenched in Indian politics, especially during elections. Moreover, some print and media outlets engage in self-censoring out of fear of losing state government advertising, which is a key source of revenue.

In general, India enjoys a free press and strong protections of free speech. In 2014, Freedom House ranked India 78th out of 197 in its Freedom of the Press report, with a

press freedom score of 38 out 100 (worst). Reporters Without Borders for its part ranked India 140 out of 180 in its 2014 Freedom of the Press Index. The constitution provides for freedoms of speech and expression, generally interpreted to include freedom of the press, through Article 19 (1). Government may however restrict free speech through the Official Secrets Acts of 1923, the Press and Registration Books Act of 1987, and the Law of Defamation of 1988 if it judges that such restrictions are in the interest of the sovereignty and integrity of India, the security of the State, friendly relations with foreign states, public order, decency or morality, or in relation to contempt of court, defamation or incitement to an offence. According to the 2013 Freedom of the Press report, these restrictions are however not consistently upheld (Freedom House, 2013).

Since 2002, India ranks however at its lowest in both freedom of the press indicators. Although political censorship is by no means pervasive in India, journalists and citizens face a number of constraints, especially with regards to their freedom on the net. Like the UK, Reporters without Borders has classified India as a potential Internet enemy. Likewise, Freedom of House reported that social media, ICT applications, political and social content have been blocked on multiple occasions by the government. Internet surveillance has substantially increased since the 2008 Bombay attacks (Freedom House, 2013b; Reporters Without Borders, 2012).

In contrast to other media forms, ICT usage is primarily governed by the 2000 Information Technology (IT) Act (Freedom House, 2013b). The 2008 amendments to the IT Act give public agencies the authority to block material that endangers public order, national security, and friendly relations with foreign states. These laws have often been used by the government to curb critical voices on social media.[72] As a supplement to the 2008 amendments, the parliament adopted the 2011 IT (Intermediaries Guidelines) Rules. These Rules require that Internet and mobile service providers, web hosts, search engines and social networks remove objectionable content within 36 hours of receiving an official notice. Such legislation can however impede OGD from achieving its benefits

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[72] For instance, in September 2012, the police arrested Aseem Trivedi for his website *Cartoons Against Corruption*, under charges of violating laws against insulting national honor. Another example includes the arrest of two women for complaining on social media about traffic and service disruptions in her town due to funeral services of the leader of a right-wing Hindu nationalist party.

as it hinders the media from disseminating findings, hampers the development of India's social networks, and harms freedoms of speech and expression, which are all fundamental conditions for OGD to flourish. Table 36 presents both freedom of the press and freedom of the net indicators in India.

Table 36: Freedom of the press and the net in India

Indicators	Source	India	United Kingdom
Freedom of the Press	Reporters Without Borders (2014)	World Press Freedom Index: 40,34 Rank: 140 Difference in rank (2013): +1	World Press Freedom Index: 19.93 Rank: 33 Difference in rank (2013): -4
	Freedom House (2014)	Press status: Partly Free Press Freedom score: 39 Rank: 78 Difference in rank (2013): +1	Press status: Free Press Freedom score: 23 Rank: 36 Difference in rank (2013): -5
Freedom of the Net	Reporters Without Borders (2014)	Enemy of the Internet: Yes	Enemy of the Internet: Yes
	Freedom House (2013)	Internet Freedom score: 47 Internet Freedom status: Partly Free Social media/ICT Apps blocked: Yes Political/social content blocked: Yes Bloggers/ICT users arrested: Yes	Internet Freedom score: 24 Internet Freedom status: Free Social media/ICT Apps blocked: No Political/social content blocked: No Bloggers/ICT users arrested: No

Source: Freedom House (2013b, 2014b) and Reporters Without Borders (2014)

Despite these constraints, the media has been a powerful tool for sharing information and raising awareness about the RTI Act. The media, in particular the television, was the primary channel of RTI education in India (RAAG & NCPRI, 2009; Wright et al., 2011). Nearly one fourth of the applicants said they heard about the RTI Act through the media. For example, the national broadcaster, Doordarshan, has a weekly half-hour show devoted entirely to the RTI, which aims to inform how common people have used it. The media has thus the potential to be a powerful means to raise awareness and educate citizens about OGD.

Table 37: Media in India

Media	India	United Kingdom
Media coverage reflects a diversity of viewpoints	✓ Media are diverse and competitive ✓ Linguistic variety	✓ Newspapers span political spectrum
Media ownership is pluralistic	× Consolidation of media ownership in hands of large corporate groups and old business families	× Consolidation of media ownership × 3 companies control 70% of national newspaper circulation
Presence of editorial independence	× Scourge of cash for coverage × Self-censoring out of fear of losing state government advertising	✓ British media are free and largely independent from government interference
The constitution and basic laws contain provisions designed to protect freedom of the press and expression	✓ Article 19 (1) of the Constitution × Several laws that restrict free speech remain in place - 1923 Official Secrets Act - 1987 Press and Registration Books Act - 1988 Law of Defamation	✓ Human Rights Act of 1998 × Several laws that weaken press freedom remain in place: - 1984 Police and Criminal Evidence Act - 2006 Prevention of Terrorism Act
Absence of censorship	× Laws authorizing Internet censorship - 2000 Information Technology Act - 2011 IT rules × Increased Internet surveillance × Social media and content are often blocked	✓ No general law authorizing Internet censorship

Source: Author

v. OGD demand

From its independence, civil society has played a significant role in India's democracy (Singh, 2013). Traditionally, many development NGOs have provided basic services in villages or groups of villages were government schools, hospitals or basic infrastructures were lacking (Dubochet, 2011; Singh, 2013). However, the roles of CSOs are evolving in India. Over the last decades, CSOs have played a major role in promoting participatory governance. These groups have played a crucial role in the endorsements of a number of pioneering reforms including the RTI and Rural Employment Guarantee Act. Transparency and accountability is another area where CSOs have played an important role. According to Dubochet (2011), civil society groups have developed an array of tools to monitor and hold the government accountable. These include social audits of government records and services. Table 38 summarizes the indicators of demand for OGD in India.

Similar to the UK, civil society was a critical demand-side driver of OGD in India. Since 2011, the government had been under pressure from civil society, in particular the India Against Corruption campaign. Spearheaded by anti-corruption activist Anna Hazare who began a hunger strike, the movement was a series of demonstrations and protests against corruption across India. In particular, the movement demanded the enactment of the long-pending anti-corruption law, the Jan Lokpal Bill. It was also a protest against the above described corruption scandals, the 2010 Commonwealth Games fiasco and 2G Spectrum scam. In contrast to the UK, these groups pressured government for increased transparency and accountability, but were not specifically targeted towards opening up government data such as the UK Free our Data Campaign.

According to Wright et al. (2011), India's civil society is not very technically literate. While there are some civil society groups that use data in sectors such as health, education, elections and budgets, robust data usage practices among civil society groups are considerably lacking. The majority of Indian civil society organizations do not make significant use of ICTs and civic hackers, while present, are not very numerous. There are however a few notable examples of CSOs that have made significant progress in using data in the course of carrying out their respective missions. These organizations may serve as infomediaries for citizens to access and use open government data. It is unclear though if and to which extent they have pushed the government to open up its data.

For instance, IndiaGoverns Research Institute works with development data (education, health, water, roads, agriculture, transport and general information on population) directly sourced from the government of Karnataka. Acting as an infomediary, the organization reorganizes and redesigns the extracted data, which it then presents with helpful comparisons (interactively between individual constituencies, as well as with averages) to policy makers, researchers, CSOs, journalists and ordinary citizens. Through data gathering, data analysis and dissemination of research, it seeks to act as a facilitator of political dialogue, « making the development discourse between elected representatives and citizens better informed and backed by specific data ». Furthermore, IndiaGoverns seeks to « enable citizen groups and elected representatives to use such government data to strengthen their demands for greater government intervention on development issues relevant to them ».

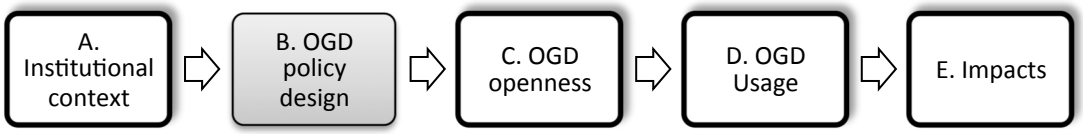
Another example of tech savvy civil society groups includes Transparent Chennai. Launched in October 2010 by the Centre for Development Finance, the organization « aggregates, creates and disseminates data and research about important civic issues facing Chennai ». Through the use of interactive maps and research, the organization seeks to enable citizens, especially the poor, to have a greater voice in planning and city governance. They also work closely with citizens to create their own data.

Table 38: Demand for open government data in India

Indicators	India	United Kingdom
Presence of social audit movement	✓ India Against Corruption	✓ TheyWorkForYou.com ✓ PublicWhip.org.uk ✓ DowningStreetSays.com
Existence of OGD civil society champions	× Civic hackers are not very numerous × Robust data usage practices are lacking ✓ Few examples - IndiaGoverns - Transparent Chennai	✓ MySociety ✓ Open Knowledge Foundation

Source: Author

B. OGD policy design



The second step in the OGD value chain is the analysis of the OGD policy design. In India, the OGD policy design is mainly governed by the NDSAP. In contrast to the UK, the implementation and coordination of India's OGD initiative is less articulated, leaving important gaps for each department to take individual action on how to address the different challenges that may derive from OGD implementation.

i. Organizational structures

Despite its efforts in addressing the organizational challenges that may derive from the initial stages of OGD implementation, the NDSAP failed to specify mechanisms that could ensure the long-term sustainability of such policy. As opposed to the UK transparency agenda and key standard transparency requirements, it is unclear how the government drives forward the OGD agenda. Furthermore, it failed to incorporate mechanisms to drive culture change like the UK Public Sector Transparency Board and sector-specific

transparency boards, which challenge government agencies to publish more data and bring in feedback from experts to overcome barriers. If government fails to address these gaps, there may be a risk that the quality and availability of open government data diminishes over time. Table 39 presents the indicators of the organizational structures of the OGD policy design in India.

The Department of Science and Technology is the central inter-agency body responsible for the coordination, implementation and monitoring of the NDSAP policy. It is however unclear how the department seeks to accomplish this mission. Unlike the Cabinet Office, it failed to specify a clearly articulated mandate to set the vision of the OGD transparency agenda and formulate next steps.

The implementation of data.gov.in is headed by the National Informatics Centre (NIC), which manages the data portal and develops standards for data and metadata. In particular, its Project Management Unit (PMU) is responsible for providing technical advice to government departments in publishing datasets and managing feedback (National Informatics Centre, 2014). It also offers capacity building through training modules and raises awareness across agencies. As opposed to the mix of data specialists that leads the UK Public Sector Transparency Board, members of the NIC are mainly government officials. While these may have the technical capacity and skills to implement and manage such initiative, they may however lack the political will to challenge public sector bodies in the implementation of transparency and open data standards as they are not some loosely affiliated open data specialists but members of the government.

The NSDAP policy stipulates that all government departments should establish a NDSAP Cell. Each Cell is responsible for monitoring and managing the departmental open data initiative as well as for developing an open data strategy to promote and institutionalize proactive dissemination of datasets (National Informatics Centre, 2014). In contrast to the UK, these departmental open data strategies are not made available on the portal nor on the departments' website, making it difficult to analyze compliance. Additionally, the strategies failed to specify a time frame for their commitments for proactively publishing public sector data.

As per the NDSAP, each department should appoint a Data Controller or Nodal officer, who is the head of the departmental Cell and leads the open data initiative. Besides monitoring the release of datasets, they are also responsible for taking relevant action on citizen feedback or requests for datasets. Finally, the Data Controller can also decide to nominate Data Contributors who could assist in preparing and contributing datasets, catalogs and resources on the OGD platform (National Informatics Centre, 2014).

Table 39: India OGD policy design: Organizational structures

Indicators	India		United Kingdom	
Inter-agency body to coordinate OGD	✓ ×	Department of Science and Technology Unclear how it seeks to achieve this mission	✓	Cabinet Office defines the scope of the OGD agenda and formulates next steps
Agency responsible for OGD portal	✓	NIC	✓	Transparency and Open Data in the Cabinet Office
Central government open data strategy	✓	NDSAP	✓	Open Data White Paper
Departmental open data strategy	✓ × ×	Each department develops an open data strategy Not made published No time period is specified	✓	14 departmental open data strategies making commitments for proactively publishing government data between 2012-2014
OGD managers, CIO, CTO among key stakeholder agencies	✓ ✓	Each department establishes a NDSAP Cell Data controller is head of Cell	✓ ✓	Public Sector Transparency Board Sector-specific transparency boards

Source: Author

ii. Institutional framework

In contrast to the UK which has build an overarching framework convening government officials to release government data that corresponds to citizen's needs and enables both economic and social impact, data publishing in India happens in an ad hoc manner, leaving important gaps for each department to take individual action on which datasets to release, in which formats, and under which license. As a result, the current state of data publishing risks undercutting the availability, openness and usability of open government data, and ultimately impeding the OGD initiative to be successful. Table 40 presents the indicators of the OGD institutional framework in India.

The NDSAP provides the overarching framework for government data sharing. The NDSAP policy is applicable to all sharable data available in either digital and analog forms created, generated, collected and archived using public funds provided by government entities (National Informatics Centre, 2014). The policy mandates each department to

prepare its Negative list, which includes datasets that are confidential in nature and in the interest of the country's security. Personal information is also included in this list. All other datasets would fall in the Open list. Sharable data is data that is not covered under the scope of the negative list and non-sensitive in nature. Each department should then prioritize all sharable data into high value and non-high value datasets. While the UK National Information Infrastructure provides an overarching framework to identify high-level categories of data, in India, each government department has its own criteria for identifying and prioritizing the release of high-value datasets.

Similar to the UK Public Data Principles, data publishing in India is governed by the updated version of the eight Sebastopol Open Government Data Principles (*see Box 1 p.14*). The expanded version, updated by the Sunlight Foundation, now includes ten principles. As stipulated by these OGD Principles, government data should be published in open formats, in a timely manner, be machine-readable, and openly licensed. In contrast to the Five Star Open-Data scheme used by the UK government to measure the openness of public datasets, the government of India has not developed mechanisms to rate its datasets in terms of accessibility and usability. Box 4 outlines the expanded version of the Open Government principles that govern data publishing in India.

Box 4: India Open Government Data Principles

Government data shall be considered open and accessible to the public if it is made public in a way that complies with the principles below:
1. Completeness: Datasets released by the government should be as complete as possible, reflecting the entirety of what is recorded about a particular subject, except to the extent necessary to comply with federal law regarding the release of personally identifiable information. Metadata that defines and explains the raw data should be included as well, along with formulas and explanations for how derived data was calculated.
2. Primacy: Datasets released by the government should be primary source data. This includes the original information collected by the government, details on how the data was collected and the original source documents recording the collection of the data.
3. Timeliness: Datasets released by the government should be available to the public in a timely fashion. Priority should be given to data whose utility is time sensitive.
4. Ease of physical and electronic access: Datasets released by the government should be as accessible as possible, with accessibility defined as the ease with which information can be obtained, whether through physical and electronic means.
5. Machine readability: Information should be stored in widely used file formats that easily lend themselves to machine processing.
6. Non-discrimination: At its broadest, non-discriminatory access to data means that any person can access the data at any time without having to identify him/herself or provide any justification for doing so.
7. Use of commonly owned standards: Data is stored using freely available formats that enable users to access the data without the need for a software license.
8. Licensing: Maximal openness includes clearly labeling public information as a work of the government and available without restrictions on use as part of the public domain.

9. Permanence: Information made available online should remain online, with appropriate version tracking and archiving over time. 10. Usage costs: Data is available for free.

Source: National Informatics Centre (2014)

A recently circulated office memo of the Department of Personnel and Training commissions government departments to provide a detailed list of all the datasets they manage. They are also required to identify all the datasets that are available on data.gov.in and those who are not (Chattapadhyay, 2013). It is however unclear how the government will develop such inventory and if it will provide information to those outside government about what data is not available and when such data may become available as is the case in the UK.

Table 40: India OGD policy design: Institutional framework

Indicators	India		United Kingdom	
Adoption of open government data principles	✓	India Open Government Data Principles	✓ ✓	UK Public Data Principles Five Star Deployment Scheme
Inventory of unpublished datasets	✓ ×	Office memo of the Department of Personnel & Training Unclear how such inventory will be developed and communicated to those outside government	✓ ✓ ✓	NII Identifies all datasets not published on portal and when they might be available Inventory is communicated to those outside government
Mechanisms to prioritize release of high-value datasets	×	Each department has its own criteria for identifying and prioritizing release of high-value datasets	✓ ✓ ✓ ✓	NII Assesses datasets for their potential to enable impact Identify high-value datasets Supports organizations to release such datasets
Effective enforcement mechanisms of compliance	×	Not required to report on compliance	✓ ✓	Quarterly Written Ministerial Statement on progress Spend Reports page

Source: Author

iii. Legal framework

An important challenge for the OGD initiative in India is the lack of a consistent legal framework facilitating OGD accessibility and reuse. If OGD is to realize its claims, policy makers must address these gaps in the form of robust legislation and regulatory frameworks that provide an enhanced right to data made available in machine-readable and reusable formats, incorporate guidelines for proactive disclosure of information into

an accompanying Code of Practice, and delineate clear and open licensing standards. Table 41 presents the indicators of the legal framework of the Indian OGD policy design.

While the UK government amended the FOIA in 2012 by providing an enhanced right to data, the Indian RTI Act is unclear about who owns government information. According to the present Registrar of Copyright, Dr. G.R. Raghavendar, all public information provided under the Act is copyrighted since the Act does not exempt responses from copyright law (Wright et al., 2011). This assertion is however based on Dr. Raghavendar's own reading of the law. Others believe that by virtue of sections 8 and 9 of the Act all RTI responses are rightfully in the public domain. Wright et al. (2011) note that there were a few cases where the RTI applicant was ordered not to share the provided information. They point out that copyright infringement was however never cited as a reason for not sharing information in these instances.

A step in the right direction is the recently circulated office memo of the Department of Personnel and Training (Chattapadhyay, 2013). While the Act endorses proactive disclosure, it failed to specify how it was to be operationalized. As pointed out earlier, compliance with the positive obligation is mainly lacking, and the quality and quantity of proactive disclosure is generally weak. In order to address these challenges, the government issued guidelines for implementation of proactive disclosure of information as well as to ensure its compliance (Department of Personnel and Training, 2013). A major component of these guidelines is the mandate to adopt open data standards for sharing information in electronic, human- and machine-readable formats. Furthermore, public authorities should also provide a detailed list of all the datasets they manage on their website and indicate which of them are available publicly over the Internet and which are not. Nevertheless, these guidelines fail to specify the license under which the data can be used as well as the technical requirements of the content/data management system required for hosting and distributing data (Chattapadhyay, 2013). They neither require a centralized web-infrastructure for digital proactive disclosure of information and data under the RTI Act, which is left at the expense of each individual agency.

In contrast to the UK Open Government License which permits free, permanent, and non-exclusive access to material made available under the license, the NDSAP fails to prescribe an open license for sharing and re-using open government data. According to

data.gov.in, the content available on the portal is the intellectual property of NIC and its various content providers. Furthermore, the NDSAP stipulates that the data will remain the property of the agency, department, ministry or entity that collected them (Government of India, 2012a). According to Wright et al. (2011), the government has however rarely asserted its copyright against any individual or group.

Table 41: India OGD policy design: Legal framework

Indicators	India	United Kingdom
Amendments to ATI	Office memo of the Department of Personnel and Training	2012 Protection of Freedoms Act amends the 2000 FOIA
ATI requires OGD release in electronic, open and machine-readable formats	✓ Guidelines mandate to adopt open data standards for sharing information and data in electronic, human- and machine-readable formats.	✓ Amended Section 19 of the FOIA by embedding the release of datasets in a public authority's publication scheme ✓ Public authorities now have a responsibility to release the requested datasets in a machine-readable and reusable format
ATI law is accompanied with a Code of Practice	× Failed to specify technical requirements of the content/data management system required for hosting and distributing data	✓ Amended Section 45 of the FOIA in April 2012 ✓ Extend the FOIA accompanying Code of Practice to provide guidance to applicants and public authorities to make datasets available for reuse
Endorsement of open license for sharing and reusing OGD	× NDSAP failed to prescribe open data license × Data remains the property of the NIC and the agency, department, ministry or entity that collected them	✓ Open Government License

Source: Author

iv. Organizational partnerships

The government has made substantial efforts in engaging OGD users in the continued development of OGD in India. Data.gov.in has a fairly rich mechanism for citizen engagement and government has empowered citizens to use and reuse the datasets on multiple occasions. However, the government failed to implement institutionalized mechanisms for citizen engagement, such as the UK formally affiliated ODUG and the Open Data Institute. Table 42 presents the indicators of the organizational partnerships designed to engage OGD users.

In 2011, the Department of Information and Technology notified two important frameworks to facilitate citizen engagement with the government through e-governance projects and the social media (Press Information Bureau, 2012). For instance, the *Framework for Citizen Engagement for E-Governance Projects* illustrates a citizen engagement process containing six consecutive steps perceived as critical for ensuring smooth and meaningful citizen engagement (Department of Information Technology, 2012a). The *Framework and Guidelines for use of Social Media by Government Agencies* for its part enables various agencies to develop and implement their own strategy for the use of social media. Through a seven-step process, the guidelines help them to make an informed choice about the objectives, platforms, resources, etc. to effectively engage with citizens and voice their concerns (Department of Information Technology, 2011). Unlike the UK Developer Engagement Strategy, these frameworks were not specifically designed for the OGD initiative and may thus fail to focus on OGD users' needs undercutting the effectiveness of the initiative.

The OGD platform has a fairly rich mechanism for citizen engagement. The mechanisms are fairly similar to the ones featured on the UK OGD portal. Like data.gov.uk, the portal enables users to rate the quality, accessibility and usability of datasets on a scale of five. It also enables users to directly contact the departmental Data Controllers by email or phone. The data controller contact information is provided through a specific *Data Controller* page[73]. Similar to the UK "Data Requests Section", users can express their needs for specific datasets or Apps through the suggestions module. Data requests are displayed in the "suggestions" list[74] and someone looking for the same dataset can endorse an already-made suggestion. In contrast to the UK Open Data Request Roadmap, the search engine for finding data requests is less developed making it difficult to make a comprehensive overview of the evolution of data requests in India. Additionally, the portal does not feature an explanatory guide summarizing how the data requests are processed making it difficult for citizens to identify non-compliance and challenge data controllers.

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[73] *Data Controllers*, http://data.gov.in/datacontrollers

[74] *Recent Suggestions,* http://data.gov.in/suggested-datasets-list

Similar to data.gov.uk, the portal encourages users to build communities[75], create forums and blogs, and engage around a specific topic or various datasets. Its purpose is to provide a platform where users and developers can express, discuss, and suggest the kind of datasets and/or applications in which they are interested. This shall give inputs to departments as to what kind of datasets is more useful and accordingly prioritize the release of such data (Satpathy & Chanana, 2014). Each community has a home page, a discussion feature, and a Blogs component. The portal also has a social media connect feature allowing anyone to share the information about any dataset published with his/her social media pages. The datasets and Apps can also be embedded in citizens' blogs or web sites.

Since the implementation of data.gov.in, the government has hosted several Hackathons and OGD Apps Challenges encouraging citizens to create short films, web and mobile applications as well as data visualizations using government data. The first hackathon was launched in April 2013 when the Planning Commission and the National Innovation Council organized the 12th Five Year Plan Hackathon[76]. The two-day event encouraged citizens to create innovative visualizations and software applications that either visualized and communicated the benefits of the Plan or supported the Plan through more utility-based apps. The event, which took place at 10 educational institutions across the country, was open to all and participants ranged from students to data miners, from coders to graphic designers. Participants could win up to Rs. 25,000 for their projects in several public sectors including health and urban development, agriculture and environment. There were approximately 1,900 participants (Arora, 2013).

The first OpenDataApps Challenge[77] was launched in August 2013 by NIC. The objectives of the Challenge were to create awareness and provide understanding of OGD as well as to spur data-driven innovation. An important condition was that applications would have to build primarily on datasets published on data.gov.in. More than ten of the applications developed during the Challenge are now featured on the portal. Participants including entrepreneurs, start-ups, developers and civil society could win Rs. 100,000 for

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[75] http://data.gov.in/communities
[76] http://data.gov.in/hackathon
[77] http://data.gov.in/event/opendataapps-challenge

the first prize (Ramachandran, 2014). In total, the portal launched five co-creation type events as well as a workshop on inclusive web programming. The media played an important role in advertising the Hackathons and Apps Challenges, including their results.

Table 42: India OGD policy design: Organizational partnerships

Indicators	India	United Kingdom
Institutionalized mechanisms for citizen engagement	The government failed to implement institutionalized mechanisms for citizen engagement	Open Data User Group Open Data Institute
Endorsement of citizen engagement policies	✓ Framework for Citizen Engagement for E-Governance Projects ✓ Framework and Guidelines for use of Social Media by Government Agencies × Do not specifically focus on OGD	✓ Commitment to publish a Developer Engagement Strategy
OGD platform has a rich mechanisms for citizen engagement	✓ Ratings of datasets ✓ Direct contact with data provider ✓ Data requests section ✓ Apps page ✓ Discussion forum ✓ Social media connect feature × Open Data Request Roadmap × Explanatory guide summarizing data requests process × Feedback mechanisms to comment on the architecture of the website and get in touch with web designers × Wiki where developers can work together to share techniques, ideas, problems and tools, using government data	✓ Ratings of datasets ✓ Direct contact with data provider ✓ Data requests section ✓ Open Data Request Roadmap ✓ Explanatory guide summarizing data requests process ✓ Apps page ✓ Feedback mechanisms to comment on the architecture of the website ✓ Discussion forum ✓ Wiki where developers can work together to share techniques, ideas, problems and tools, using OGD ✓ Blogs page where government members blog about themes relating to government, policy and society
Existence of co-creation type events	✓ 2 hackathons ✓ 3 Apps Challenges	✓ ODI has run several hackathons

Source: Author

C. OGD openness

The third step in the OGD value chain is the assessments of the availability, openness and usability of government data. Similar to the previous chapter, this section first presents a general overview of data publishing on data.gov.in and describes the trends of data requests since its launch. Then, we examine in greater detail the degree of openness of five high-value datasets.

i. Trends of data publishing on data.gov.in

The Indian government launched data.gov.in in October 2012, initially releasing to the public 13 datasets provided by seven departments, including the Ministry of Agriculture, the Ministry of Science and Technology, and the Ministry of Rural Development. Since its launch, the number of datasets featured on the portal has steadily increased. Currently, the government has provided access to 3,215 data catalogs, including 10,229 datasets and 25 applications. This is relatively similar to the amount of data published on data.gov.uk, which currently features 15,045 datasets. The number of data publishers is however extensively lower in India where only 71 government entities have provided access to public data, compared to over 1,000 data publishers in the UK. This number however also includes academics and private sector entities.

Data catalogs have been classified by Ministry/Department, sector, file format, resource category (dataset or application), group, frequency, asset jurisdiction, keywords, visualization (yes or no) and by application (yes or no). While the portal is only available in English, some departments have published their data in both English and Hindi. However, this represents only a very small percentage of all published datasets. Table 43 summarizes the general trends of data publishing on data.gov.in in 2014.

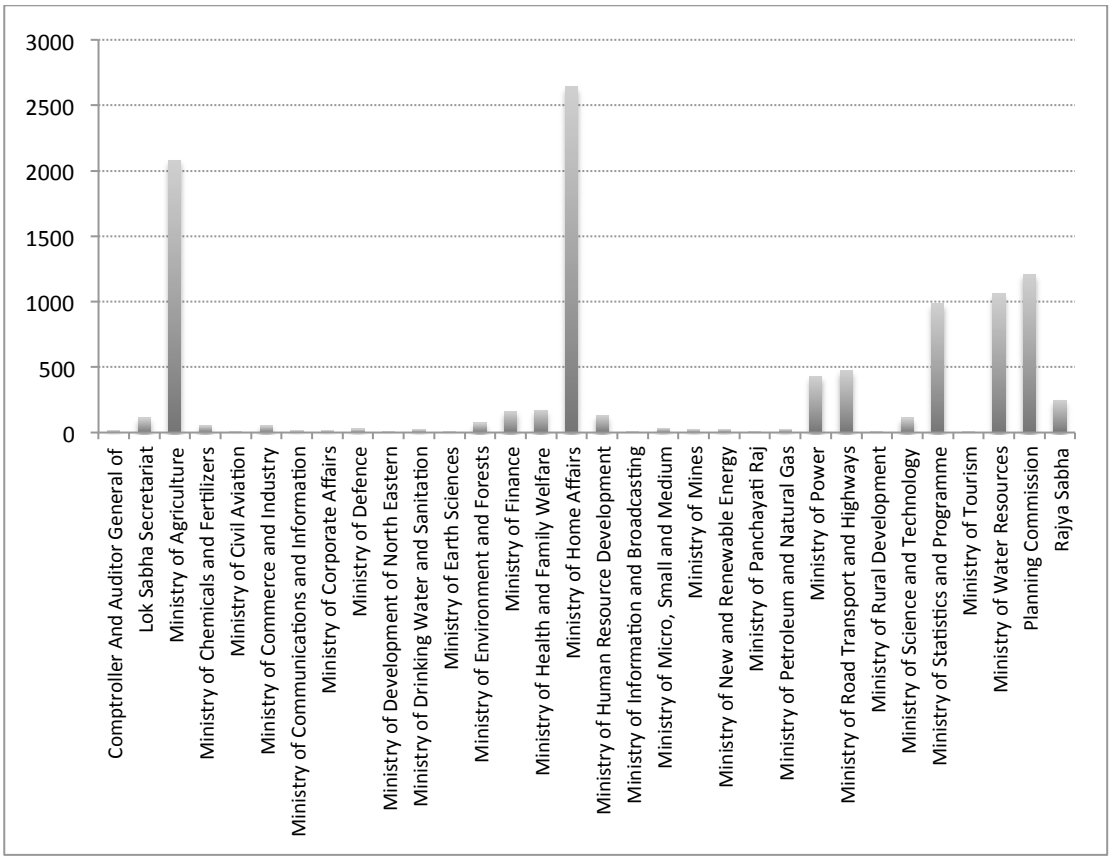
Table 43: Trends of data publishing on data.gov.in in 2014

Indicators	India	United Kingdom
Number of datasets	10,229	15,045
Number of data publishers	71	1,183
Biggest data producers	- Ministry of Home Affairs - Ministry of Agriculture - Planning Commission - Ministry of Water Resources - Ministry of Statistics and Programme Implementation	- Department of Health - Department for Communities and Local Government - Department for Business, Innovation and Skills - Department for Environment, Food and Rural Affairs

Source: data.gov.in & data.gov.uk

At present, both central and state departments publish government data, including the Rajya Sabha, the Lok Sabha Secretariat, 28 ministries, the Planning Commission, Comptroller and Auditor General (CAG), and four state departments (Tamil Nadu, Meghalaya, Chhattisgarh, Karnataka). Given the magnitude of a country like India, the number of publishing government agencies is however extensively low. Only half of India's ministries and one tenth of its state departments are releasing public data. Furthermore, as illustrated by Figure 13, nearly 80 percent of all central government datasets have been published by five central departments, including the Ministry of Home Affairs, Ministry of Agriculture, Planning Commission, Ministry of Water Resources and the Ministry of Statistics and Programme Implementation.

Figure 13: Total number of central government data catalogs published on data.gov.in in 2014

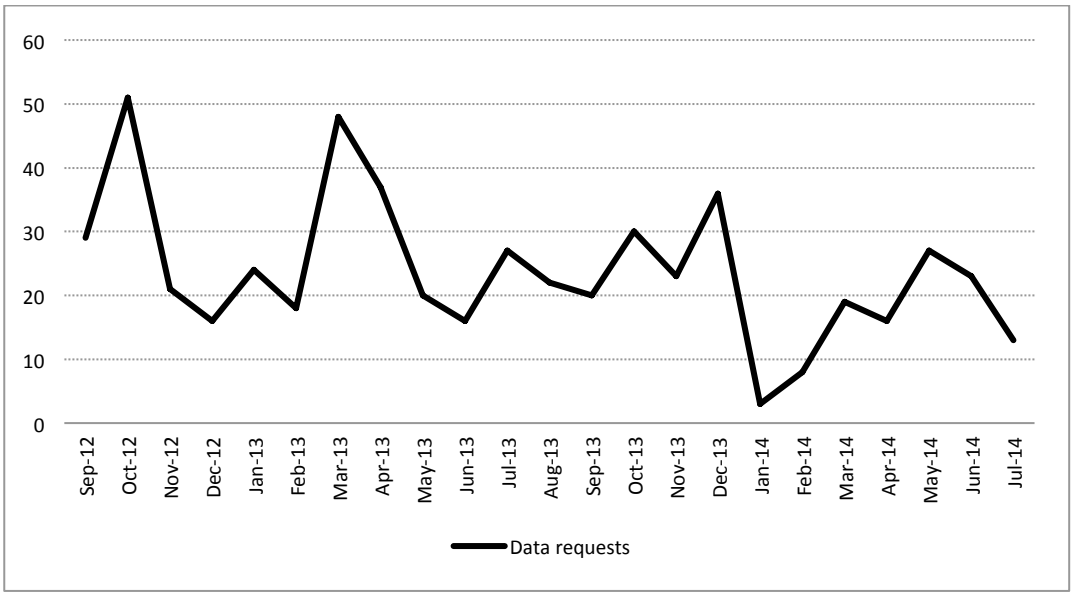


Source: data.gov.in

ii. Trends of data requests

As explained in the previous section, users can express their needs for specific datasets through the suggestion module featured on the portal. Between September 2012 and July 2014, the portal received 547 data requests. As shown by Figure 14, requests for data have significantly fluctuated over this same time period. The highest number of data requests received was recorded at its launch in October 2012. Requests however significantly declined in the months thereafter. The lowest number of requests was documented in January 2014, receiving only 3 data requests. Since its launch, data requests have dropped by 50 percent. In contrast to data.gov.uk which data requests decreased by 90 percent over this same time period, the decline in requests for data on data.gov.in is more likely to be due to decreasing OGD uptake trends and less engaged OGD users.

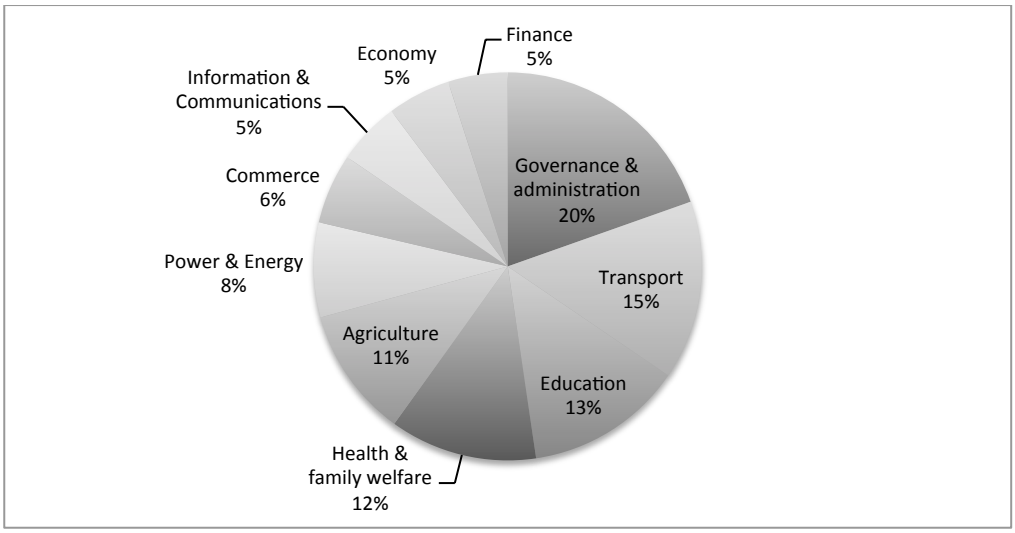
Figure 14: Data requests on data.gov.in from September 2012 to July 2014



Source: data.gov.in

Datasets relating to governance and administration, transport, education, health and family welfare, and agriculture were requested more frequently compared to datasets relating to biotechnology, art and culture. Figure 15 presents the datasets most frequently requested on data.gov.in in 2014.

Figure 15: Datasets most frequently requested on data.gov.in in 2014



Source: data.gov.in

Table 44 summarizes the trends of requests for datasets on data.gov.in from September 2012 to July 2014 compared to those on data.gov.uk. When comparing trends, one

needs to keep in mind that data requests on data.gov.uk cover the period between September 2012 and June 2014.

Table 44: Trends of data requests on data.gov.in

Indicators	India	United Kingdom
Number of data requests	547	789
Data requests pattern	Fluctuations 50 percent decrease	Downward trend 90 percent decrease
Most requested data	Governance and administration Transport Education Health Family welfare	Government Environment Location Society Health

Source: data.gov.in & data.gov.uk

iii. High-value datasets

In this sub-section we analyze the availability and usability as well as the legal and technical openness of five high-value datasets, including government budget and spending data, national electoral data, and education and health data. To assess their degree of openness, we rely on several indicators, including the Open Data Index (ODI), the Open Data Barometer implementation sub-index and the Open Budget Index (OBI). Table 45 and Table 46 summarize the results of the Open Data Index and the Open Data Barometer assessments of OGD in India.

Ranked 63rd out of 70, India scored a poor 215 in the Open Data Index with all datasets scoring 35 percent or below (Open Knowledge Foundation, 2013). According to the assessment, all high-value datasets, except datasets relating to postcodes, are publicly available in a digital form. However only a small number of the datasets are available free of charge, online and in bulk, machine readable and provided on a timely basis. More alarming, none of the datasets is openly licensed. India scored relatively better in the Open Data Barometer. Ranked 32nd out of 77, nearly half of the assessed datasets scored 65 out of 100 (Web Foundation & Open Data Institute, 2013). The remaining scored 15 and below. However, none of the datasets were considered to be open. Table 33 and 34 present the results of both assessments.

Table 45: India Open Data Index 2013

Dataset	Score (%)	Exists	Digital form	Publicly available	Available for free	Available online	Machine readable	Available in bulk	Openly licensed	Timely and updated
Transport timetables	15	Yes	Yes	Yes	Unsure	Unsure	Unsure	**No**	**No**	**No**
Government budget	25	Yes	Yes	Yes	Unsure	Unsure	**No**	Yes	**No**	**No**
Government spending	15	Yes	Yes	Yes	Unsure	Unsure	**No**	**No**	**No**	**No**
Election results	35	Yes	Yes	Yes	Yes	Yes	**No**	**No**	Unsure	Unsure
Company register	15	Yes	Yes	Yes	Unsure	Unsure	**No**	Unsure	**No**	**No**
National map	15	Yes	Yes	Yes	Unsure	Unsure	**No**	Unsure	**No**	**No**
National statistics	35	Yes	Yes	Yes	Unsure	Unsure	**No**	Yes	**No**	Yes
Legislation	25	Yes	Yes	Yes	Unsure	Unsure	**No**	Yes	**No**	**No**
Postcodes – zipcodes	0	Unsure	Unsure	Unsure	Unsure	Unsure	Unsure	Unsure	Unsure	Unsure
Emissions of pollutants	35	Yes	Yes	Yes	Yes	Yes	**No**	**No**	**No**	**No**

Source: Open Knowledge Foundation (2013)

Table 46: India Open Data Barometer 2013

Dataset	Score	Exists	Available online	Machine readable	Available in bulk	Free	Openly licensed	Updated	Sustainable	Discoverable	Linked
Map	5	Yes	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Land	0	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Census	65	Yes	Yes	Yes	**No**	Yes	**No**	Yes	Yes	Yes	**No**
Budget	65	Yes	Yes	Yes	**No**	Yes	**No**	Yes	Yes	Yes	**No**
Spend	15	Yes	Yes	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Company	15	Yes	Yes	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Legislation	15	Yes	Yes	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Transport	15	Yes	Yes	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Trade	65	Yes	Yes	Yes	**No**	Yes	**No**	Yes	Yes	Yes	**No**
Health	65	Yes	Yes	Yes	**No**	Yes	**No**	Yes	Yes	Yes	**No**
Education	65	Yes	Yes	Yes	**No**	Yes	**No**	Yes	Yes	Yes	**No**
Crime	15	Yes	Yes	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Environment	65	Yes	Yes	Yes	**No**	Yes	**No**	Yes	Yes	Yes	**No**
Elections	15	Yes	Yes	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Source: Web Foundation and Open Data Institute (2013)

Government budget data

Since the first launch of the Open Budget Survey, India has enjoyed high ratings in terms of budget transparency. The International Budget Partnership (2012) ranked India fourteenth in its 2012 Open Budget Survey, and was attributed an OBI score of 68 out of 100. India's score is much higher than the average score of 43 for all the 100 countries that were surveyed and is the highest in the South Asia region. According to the IBP, India's current score indicates that the government provides significant, comprehensive, timely and useful information on its budget and financial activities during the year, enabling citizens to hold the government accountable for the management of public funds. Likewise, datasets relating to government budget information scored highly in the Open Data Barometer, receiving a score of 65 out of 100. According to the assessment, government budget data is made available online and for free, updated, sustainable, as well as discoverable. The ODI however showed different results, scoring a poor 25 percent. India performed significantly worse than the UK, which scored positively in nearly all aspects of data availability and openness assessed in both Open Data assessments. The main publishers of government budget data via the portal are the Planning Commission and the Ministry of Finance. Table 47 summarizes the indicators of India government budget data availability and usability.

According to the International Budget Partnership (2012), the Government publishes all key budget documents, except for the pre-budget statement. The majority of these documents, including supporting documents, are available on a decided website, indiabudget.nic.in. However, most government budget data published through this site is available in non-machine readable formats. Excel formats are only available for data between 2011 and 2015.

At present, the Ministry of Finance has released over 150 data catalogs, of which only 29 relate to the Union Budget. While OSCAR data is available from 2005 to 2013, India budget data is only available for the time period 2013-2014. Given that the website indiabudget.nic.in has published Union Budgets from 1996-1997 onwards, supply of budget data via the portal is arguably incredibly low. The majority of these datasets refer to Volume I of the Expenditure Budget published in support of the Executive's Budget Proposal. All budget data contained in this document is made available on data.gov.in,

including for example public expenditure, revised and budget estimates, and non-plan expenditure. Data is made available by ministry, department, function (such as fisheries, power, housing, social security and welfare), and by economic classification (such as interest payments, subsidies and pensions). Other key budget data include the gender budget, schemes for developed of scheduled tribes and castes and budget provisions for the Welfare of Children. Most of the data is made available by ministry, department and by scheme. In contrast to the UK government, which has published several documents to assist interpretation, contextual information about India government budget data is however lacking. The accompanying explanations do not describe the sources of the datasets nor do they provide adequate information to assist interpretation.

Despite the significant efforts, there are still several concerns about the timeliness, reliability and usability of government budget data. In his interview for the *Open Government Data Study: India* conducted by Wright et al. (2011), Subrat Das, executive director of the Centre for Budget and Governance Accountability (CBGA)[78] identified four key problems that the NGO encounters in working with government budget data. First, data sources are widely dispersed. There is a lack of effort on behalf of government departments to coordinate and present the data in an organized manner. Second, most budget data is not updated in a timely manner. For example, actual figures, as opposed to estimates, for a specific fiscal year will only be available two years later. While central government departments have begun to make current data available through the office of the Comptroller and Auditor General (CAG), state governments have not yet made serious efforts to present their data in a timely manner. Third, terminologies and methodologies to collect and present data often vary across government agencies, even when they are reporting the same variables, making it difficult or impossible to compare datasets. Finally, government budget data is often unreliable.

[78] Founded in 2002, the Centre for Budget and Governance Accountability (CBGA) is a NGO located in New Delhi that advocates for « transparent, accountable and participatory governance, and a people-centered perspective in preparation and implementation of budgets ». In particular, the organization analyses national and state budgets from the perspective of the poor and the marginalized.

Table 47: India government budget data openness

Indicators	India	United Kingdom
OBI (%)	68	88
ODI score (%)	25	90
ODB score (out of 100)	65	95
Main publisher	Ministry of Finance Planning Commission	HM Treasury
Data availability and accessibility	Government publishes only seven key budget documents × Does not publish pre-budget statement ✓ Union Budgets from 1996-1997 onwards × Government data is only available in PDF Ministry of Finance ✓ Covers public expenditure, revised and budget estimates, non-plan expenditure × Budget data only available for 2013-2014 ✓ Available by ministry, department, function, economic group	Government publishes all eight key budget documents ✓ Made available online in PDF format and reusable under OGL ✓ Some raw data available on data.gov.uk COINS/OSCAR database ✓ Holds public sector budgets, outturns, forecasts ✓ Quarterly and annually available for 2005-2013 ✓ Made available by department, organization, function, economic group × Does not allow for comparisons between departments
Contextual information	✓ Each dataset is accompanied with a short description × No specific guidance notes	✓ Project Oscar ✓ Understanding the Oscar Data Release ✓ Publication of In-year Spending Data from the OSCAR Database

Source: Author

Government spending data

Government spending data scored a mere 15 per cent in both the ODI and the Open Data Barometer. According to the studies, the data is not available in bulk or for free, machine-readable, openly licensed, updated, sustainable, and not discoverable (Open Knowledge Foundation, 2013; Web Foundation & Open Data Institute, 2013). In contrast to the UK, the government of India failed to set out standard transparency requirements for reporting on departmental expenditure. Further compounded by the lack of enforcement mechanisms, Indian government data publishers can choose what they report as well as the detail at which they report spending. Table 48 summarizes the indicators of India government spending data availability, openness and usability.

The primary sources of government expenditure data include the Indian Public Finance Statistics and the Economic Survey, both produced by the Ministry of Finance, and the

Combined Finance and Revenue Accounts of Union and State Governments, produced by the CAG. Currently, the CAG has published 16 data catalogs of which the majority refers to the Finance Accounts. Key datasets include public account disbursements, revenue expenditure, and plan expenditure. The data is available for 2000 to 2011 and is represented by state and major head (function of government). In contrast to the CAG, the Ministry of Finance has only released a limited number of spending government data on the portal, including total expenditure of the central government since the first Five-Year Plan, 1950-1955.

In addition to the scarce amount of spending data, there are several concerns about the reliability and usefulness of government spending data. First, contextual information about spending data is often unclear and incomplete. For instance, major heads are represented by four digit numbers. The data description however fails to explain what each specific number stands for making it difficult both to understand and compare the flow of funds across states and functions. Second, spending data is often inconsistent. Subrat Das explains that the three sources employ different methodologies for computing spending data, leaving the researcher often guessing at to the actual amount of spending. Third, expenditure data is not always reliable. Central government ministries often bypass state budgets in order to facilitate implementation of national flagship schemes. Funding for the schemes is directly sent to the autonomous bank accounts of their implementing agencies. Since the CAG is not mandated to audit these funds, central government often does not know how much of the funds has actually been spent as opposed to disbursed.

Table 48: India government spending data openness

Indicators	India	United Kingdom
ODI score (%)	15	100
ODB score (out of 100)	15	95
Main publisher	Ministry of Finance Comptroller and Auditor General (CAG)	HM Treasury
Data availability and accessibility	CAG & Ministry of Finance × Data is scarce, inconsistent, unreliable × Data is only represented by state and function Departmental expenditure data × No transparency requirements × Departments can choose what they report and the detail at which they report	COINS/OSCAR database ✓ Quarterly and annually available for 2005-2013 ✓ Made available by department, organization, function, economic group × Does not allow for comparisons between departments Departmental expenditure data ✓ Key transparency requirements ✓ Ten departments are fully compliant × Reported causes for delays: limited resources, staff changes, national security
Contextual information	× No specific guidance notes × Contextual information is unclear and incomplete	✓ Project Oscar ✓ Understanding the Oscar Data Release ✓ Publication of In-year Spending Data from the OSCAR Database

Source: Author

National electoral data

Datasets relating to national election results perform very poorly in both the ODI and the Open Data Barometer, scoring a poor 35 percent and 15 out of 100 respectively. This is significantly lower than the UK which national electoral data scored 70 percent and 95 out of 100 in the ODI and the Open Data Barometer respectively. According to the assessments, Indian national electoral data is not available in bulk, machine-readable, openly licensed and not provided in a timely fashion. Table 49 summarizes the indicators of the availability and usability of India national electoral data.

National election results are made public by the Election Commission of India via its website[79]. The data is fully available in PDF format and is mainly presented state-wise. For instance, the documents provide information on the participating political parties, women candidates, voter turnout, successful candidates, and seats won in states (Open

[79] *Election Commission of India*, http://eci.nic.in/eci_main1/ElectionStatistics.aspx

Knowledge Foundation, 2013). While UK national electoral data is only available since 2005, the Election Commission of India has released general election results since 1951.

While national electoral data is not made available on data.gov.uk, India's OGD portal presently features 4 data catalogs, including 8 datasets, detailing national election results. These are published by the Ministry of Statistics and Programme Implementation. Two datasets provide information about the number of electors, number of votes polled and number of valid vote for all India for the 1951 – 2009 elections. Data about the status of political parties and women's participation (constituencies, electors and voters polled) is made available for 1999, 2004 and 2009. Only the data for the 2009 national elections are presented state-wise. The remaining datasets provide state-wise information on the expenditure incurred during the organization of the 2012-2013 elections. Given that India is the most populous democracy, these datasets represent only a tiny part of the picture and are hence not meaningful, and ultimately undermine their usability.

Table 49: India national electoral data openness

Indicators	India	United Kingdom
ODI score (%)	35	70
ODB score (out of 100)	15	95
Main publisher	Election Commission Ministry of Statistics and Programme Implementation	Electoral Commission
Data availability and accessibility	✓ Available since 1951 ✓ Data is made available state-wise ✓ Provide information on participating political parties, women candidates, turnout, seats won ✓ Data is available on the portal ✓ Data covers electors, votes polled, status of political parties, women's participation, expenditure × Not presented state-wise × Not available in bulk	✓ Available since 2005 ✓ Data is made available by constituency ✓ Electoral data covers electorates, turnout, rejected ballot papers, post voting figures × Not available on data.gov.uk

Source: Author

Education data

Datasets relating to education scored 65 out of 100 in the Open Data Barometer, performing relatively less well than their UK counterpart, which scored 95 out of 100

(Web Foundation & Open Data Institute, 2013). According to the Open Data Barometer, the data were available online and for free, machine readable, updated, sustainable and discoverable. None of the datasets were however available in bulk, openly licensed or linked. The main providers of datasets relating to education are the Planning Commission (142 data catalogs) and the Ministry of Human Resource Development, in particular its Department of Higher Education (58 data catalogs). Table 50 summarizes the indicators of India education data availability and usability.

One of the biggest contributors to the portal, the Planning Commission has released over 140 data catalogs relating to education. More than half of these datasets relate to two major evaluation reports of governmental schemes implemented with the aim of achieving universalization of elementary education, including the Sarva Shisksha Abhiyan[80] and the Cooked Mid Day Meal Scheme[81]. Initiated by the Programme Evaluation Organisation, a field level organization of the Planning Commission, both studies sought to assess the extent to which the schemes had succeeded in achieving their objectives and related targets. The released datasets referencing to these studies were fairly appropriate to support individual choice and public scrutiny. For instance, the Planning Commission released a fair amount of descriptive datasets providing information about the assessed schools, including location (rural or urban), school type (local body, government aided and private schools), gender and education of teachers. In addition to this, the Planning Commission published data about the availability and adequacy of the assessed schools' infrastructural facilities for providing universal education, including the availability of boundary walls, black board, drinking water

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[80] Sarva Shiskha Abhiyan (SSA) is a governmental flagship programme implemented in partnerships with all the State Governments with the aim of providing universal access, enrolment of all children in relevant age group and universal retention to be achieved by 2010. The SSA mainly focuses on access to education, social and gender equity and quality of education. The study covered eleven states, both rural and urban, and thirteen towns. The reference period was from 2003 to 2007.

[81] Introduced in all government and government-aided primary schools in 2002, the Cooked Mid-Day Meal (CMDM) scheme proposed to supply meal containing 450 calories and 12 grams of protein with adequate quantities of micro-nutrients like iron, folic acid, and vitamin-A to all children studying in classes I to V in government and government-aided schools as well as Education Guarantee Scheme (AIE) and Alternative and Innovative Education (EGS) centers. The CMDM scheme seeks to increase enrolment, attendance and retention and simultaneously boosting the nutritional status of students in primary classes. The study covered 48 districts and 480 schools across 17 states. The reference period was from 2000 to 2006.

facilities, common toilets, electricity, computer center, manpower, store room and kitchen sheds. Objective, standardized activity and performance information as well as user satisfaction information were also made available on the portal. For example, the data referred to student and parent responses on teacher's attendance and punishment, and quality of the meals. Moreover, the Planning Commission also released information on the requirement, allotment, and utilization of funds and school grants received by the States as part of the schemes. Finally, each dataset is accompanied with a short description to assist interpretation. The Planning Commission has however not released a list of controlled vocabulary similar to the A-Z terms published by the UK Department of Education.

Although these major publications allow the public to view more detailed information about the quality and performance of both educational institutions and government schemes to achieve universalization of education, there are several concerns about the availability, quality and usability of the data.

- In contrast to the UK School Performance Tables that allow drawing comparisons across schools, the majority of the Planning Commission's datasets are presented state-wise. However, for the data to support individual choice and enable citizens to hold government, and in particular local service providers, to account, this information should also have been presented school-wise.
- Several datasets referring to expenditure of received funds and grants failed to provide detailed spending information, meaning they did not specify spending categories such as textbooks, teacher learning, equipment, community training and management. On the contrary, datasets that did specify such categories presented expenditure as a percentage of allocation and total funds received. They however fail to provide information on the total amount of allocated funds and expenditure. Additionally, some of this information was not presented state-wise or school-wise, making it even more difficult for the data user to understand the flow of funds.

Table 50: India education data openness

Indicators	India	United Kingdom
ODB score (out of 100)	65	95
Main publisher	Planning Commission Department of Higher Education	Department of Education
Descriptive information	✓ Data covers location, school type, gender and qualifications of teachers	✓ Data covers location, school type, gender and qualifications of teachers
Objective standardized activity & performance information	✓ Data covers enrollment, dropout, literacy rates × Presented state-wise	✓ Data covers attainment, pupil absence, student exam results ✓ Web tool enabling to compare progress made by pupils with different levels of prior attainment
User satisfaction	✓ Student and parent responses on teacher's attendance and punishment × Presented state-wise	✓ Ofsted reports ✓ Complaints to the Secretary of State about Schools
Spending information	✓ Data covers allotment and utilization of funds × Presented state-wise × Failed to provide detailed spending information	✓ Web tool allowing to draw comparisons among schools' spending across key areas
Contextual information	✓ Each dataset is accompanied with a short description	✓ A-Z terms

Source: Author

Health data

Likewise, health datasets scored fairly high (65 out of 100) in the Open Data Barometer. According to the assessment, health data was available online and for free, machine readable, updated, sustainable and discoverable (Web Foundation & Open Data Institute, 2013). Compared to UK health data which received a score of 95 out of 100, there remains however room for improvement. Major producers of health data include the Ministry of Health and Family Welfare and the Planning Commission, having released over 120 and 110 data catalogs respectively. Indicators of the availability and usability of India health data are summarized in Table 51.

The majority of datasets released by the Ministry of Health and Family Welfare provide information on objective, standardized activity including specific health indicators (fertility, mortality and HIV indicators). Datasets providing objective information about performance are the second most highly published dataset category. These datasets include information on achievements and outcomes in respect to, for example, pill users, condom users, immunization, and vitamins intake. Other key datasets provide more descriptive information about providers, including location, provider type, number of

health workers, nurses and midwifes at health centers. Each dataset is accompanied with a short description to assist interpretation.

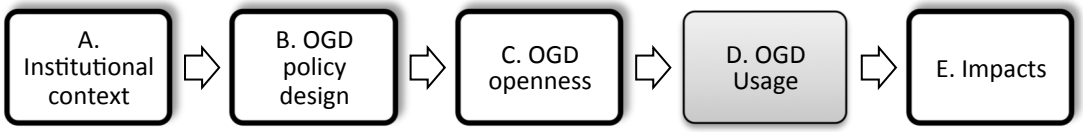
However, information about performance based on people's experiences and data on public health expenditure are mainly missing, undercutting the ability of citizens to make informed choices and scrutinize use of public funds and public service delivery. Additionally, as highlighted by the Open Data Barometer, the majority of health data is not made available in bulk. Given the magnitude of a nation like India, the data should be at least made available state-wise, union-territory-wise and district-wise for the data to be representative, meaningful and hence useful.

Table 51: India health data openness

Indicators	India	United Kingdom
ODB score (out of 100)	65	95
Main publisher	Ministry of Health and Family Welfare Planning Commission	Department of Health
Descriptive information	✓ Data covers provider type, location, number of health workers, nurses and midwifes × Not presented state-wise, hospital-wise	✓ Data on comparative clinical outcomes of GP practices under 5 categories ✓ 30 GP practice data
Objective standardized activity & performance information	✓ Health indicators ✓ Pill users, immunization and vitamin intake × Not presented state-wise, hospital-wise	✓ Data on comparative clinical outcomes of GP practices under 5 categories ✓ 30 GP practice data
User satisfaction	× Not available	✓ Annual complaints data by NHS
Spending information	× Not available	× Unsure
Contextual information	✓ Each dataset is accompanied with a short description	✓ Each dataset is accompanied with a short description

Source: Author

D. OGD usage



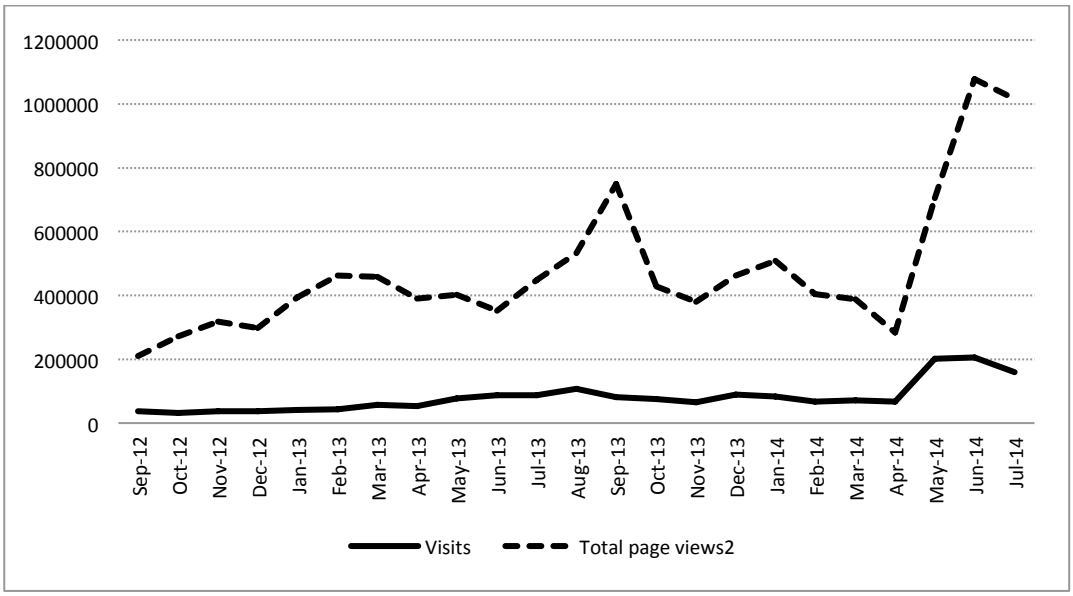
The fourth step in the OGD value chain is the analysis of OGD usage. This section first examines trends of OGD uptake, including total number of visits, views and visitors. When then analyze trends of OGD reuse, including the number of Apps developed using OGD, and the field in which they were created. We also present several examples of how

open government data has been put to use. In contrast to the UK, OGD usage is rather erratic. Usage patterns significantly fluctuated between September 2012 and July 2014, and OGD reuse is relatively low not to say inexistent. Indicators of trends of OGD uptake and reuse are summarized in Table 52 and 53 respectively.

i. Trends of OGD uptake

During the three months following its launch in October 2012, the Indian OGD portal received 104,763 visits from 164,195 visitors. The site was viewed 886,720 times. Since its inception to July 2014, total visits increased by 404 percent and total page views by 274 percent. However, an analysis of usage patterns over this time period reveals significant fluctuations (see Figure 16). Between its launch and September 2013, page views increased by 176 per cent, reaching a peak at 749,920 page views per month. The highest number of views was recorded in June 2014, following a two-month sharp increase. These rising usage patterns can be explained by the launch of the Code for Honor Awards 2014, an apps challenge launched by NIC in collaboration with Microsoft, which took place on 18 and 19 June 2014. Another peak was registered in August-September 2013 when the government launched its OpenDataApps Challenge. As explained earlier, the Challenge sought to raise awareness and spur data-driven innovations. An important condition was that applications had to build primarily on datasets published on data.gov.in, which consequently explains the sharp increase in page views. In 2013, a total of 5,464,621 pages were viewed and the site counted 863,887 visits.

Figure 16: Usage patterns on data.gov.in from September 2012 to July 2014



Source: data.gov.in

As explained in the previous section, data.gov.in facilitates citizens to build communities about a specific topic and discuss online various datasets and available apps through online forums, blogs and discussions. The number of communities is however incredibly low. While there are currently 207 forums active on data.gov.uk, the India OGD portal features only four communities, including India statistics, agriculture, health, and developer community.

These communities are however not very active. Participation on these forums is inexistent as opposed to the UK OGD forums, which received a total of 646 replies. There are no active topics on the discussions pages and none of the communities feature more than 2 blog posts. The health community doesn't even have a home page. Furthermore, authors of the blog posts are mainly government officials and website administrators.

Table 52: Trends of OGD uptake on data.gov.in between July 2012 and July 2014

Indicators	India	United Kingdom
Average time on site (average)	-	137 seconds
Pages per visits (average)	-	3
Total number of visits (2013)	863,887	1,873,706
Increase in total visits (%)	404	34
Total number of page views (2013)	5,464,621	5,891,215
Increase in total page views (%)	274	15
Most popular data publishers	-	HSCIC DCLC BIS DfT
Active forums	4	207
Total number of replies/comments received	0	646
Popular forums	India statistics[82] Agriculture Health Developer	Government Linked data Policy

Source: Author

ii. Trends of OGD reuse

In contrast to the increasing OGD reuse patterns in the UK, OGD reuse on data.gov.in is relatively low. While there are currently 349 Apps on data.gov.uk, the India OGD portal features only 14 Apps. Furthermore, the majority of these applications were developed during the co-creation events (*OpenDataApps Challenge* and *Code for Honor Awards 2014*) hosted by the government suggesting that there is a lack of an independent developer community that has the will and capacity to reuse OGD outside the co-creation type events. Nearly half of the apps were created in the field of agriculture. For instance, *Market Watch* provides price updates of commodities from various markets across India. Despite these Apps, there are no notable examples of how open government data has been reused such as *Where Does My Money Go?* or *Openly Local*.

Table 53: Trends of OGD reuse on data.gov.in between October 2012 and July 2014

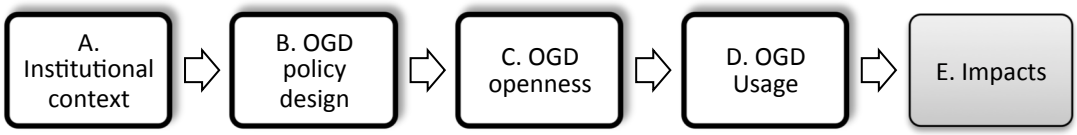
Indicators	India	United Kingdom
Total number of Apps created	14	349
Total number of votes received	0	2,882
Popular categories	Agriculture	Transportation Location Society
Reuse patterns	Low (inexistent)	High but inconsistent
Notable examples of reuse	None	Where Does My Money Go Openly Local

Source: Author

[82] These are the only forums featured on the portal.

These patterns of low OGD usage may be due to several reasons. First, the current state of open government data in India does not allow for OGD users to make meaningful analyses and comparisons. As explained in the previous section, the current types of government data are mainly descriptive, providing information on objective and standardized activity. Information of user satisfaction and spending is largely missing. Furthermore, most datasets are not made available state-wise, district-wise or service provider-wise. Secondly, OGD intermediaries are still in their infancy. As previously explained, these organizations can be important intercessors for ordinary citizens to translate the data into « information, knowledge and action » (Davies, 2014, p.15). Finally, some societal segments still face important barriers to access and use ICTs resulting in their OGD exclusion. Internet penetration rates remain relatively low and only 6 percent of households have their own computer and access to the Internet. Most of rural households access the Internet via cybercafés due to infrastructural limitations and high costs. According to the 2013 Freedom of the Net report, such low penetration rates are also due to a lack of local language content and applications (Freedom House, 2013b).

E. Impacts



The final step in the OGD value chain is the assessment of OGD impacts. Similarly to the previous chapter, we first examine whether OGD has increased government transparency and accountability. We then analyze whether OGD has empowered citizens to express their voice and participate in policymaking. Finally, we assess whether OGD has improved public service delivery. Likewise, this study seeks to generate descriptive and explanatory accounts of how OGD influences change rather than making strong claims about causal links between OGD initiatives and their impacts. However, analyzing the impacts of OGD initiatives in India is all the more difficult since the NDSAP and data.gov.in were implemented only two years ago. Our descriptive and explanatory accounts should therefore be considered as preliminary.

The NDSAP aims at increasing the availability and accessibility of non-sensitive government data that can be used by ordinary citizens for scientific, economic and developmental purposes. The idea of Open Government Data in India was that increased access to government data could be a democratizing force for "the common man" (Wright et al., 2011). The Web Foundation and Open Data Institute (2013) ranked India 40th in the Open Data Barometer along with the Philippines and South Africa, with an impact sub-index of 9 out of 100. Compared to the UK impacts sub-index of 79.91, evidence of OGD impacts in India is rather scare. Table 54 presents the Open Data Barometer impacts sub-index, including its components.

Table 54: Extent of OGD impacts in India in 2013

Country	Impact rank	Impact sub-index	Political impacts	Economic impacts	Social impacts
India	40	9	22	7	0
UK	3	79.91	80	90	52

Source: Open Data Barometer 2013 Global Report (Web Foundation & Open Data Institute, 2013)

i. Increased accountability and transparency

As explained earlier, OGD is expected to increase government transparency and accountability. Similarly to the previous chapter, to assess whether OGD has delivered on such promises, we examine whether OGD has restored public confidence in government and enabled citizens to identify and challenge corruption.

In contrast to the UK, evidence of political impacts were most apparent in India. Nonetheless, while the UK received a score of 80 out of 100, evidence of political impacts in India scored a poor 22 out of 100 in the Open Data Barometer (Web Foundation & Open Data Institute, 2013). Evidence of political impacts is thus scarce.

In terms of absence of corruption, the World Justice Project ranked India 72nd in its 2014 Rule of Law Index, jumping nearly 10 places since the 2012-2013 Rule of Law Index. Furthermore, its absence of corruption score increased from 0.32 to 0.39 between 2012 and 2014 (World Justice Project, 2012-2013, 2014). On the contrary, India's CPI score (36 out of 100) remained the same between 2012 and 2013. However, the percentage of people in India reporting that they believe that corruption has increased slightly decreased from 74 percent to 71 percent between 2010 and 2013. According to the 2013 Global Corruption Barometer, 86 percent of the respondents believe that government is

run by a few big entities acting in their own interest. This is slightly smaller than in the UK where 90 percent reported that they believe the UK government is run by a few big interests (Transparency International, 2013b). On the contrary, 97 percent believe that corruption is a problem in the public sector. In 2013, 54 percent responded having paid a bribe to one of the 8 assessed public services. This is a significant increase since the 2010 Survey when only 9 percent of the respondents reported paying a bribe. Similarly to the UK, in 2013, political parties (86%) are seen to be the most corrupt institution, followed by the police (75%), the parliament (65%), education systems (61%) and health (56%).

Table 55: Extent of corruption in India

WJP Rule of Law Index – Factor 2: Absence of Corruption					
Years	India Factor score	India Factor rank	UK Factor score	UK Factor rank	Number of observations
2014	0.39	72	0.8	15	99
2012-2013	0.32	83	0.8	15	97
2011	0.42	51	0.8	16	66
2010	0.46	25	-	-	35

Source: WJP Rule of Law Index (2010, 2011, 2012-2013, 2014)

ii. Citizen empowerment

Another claim is that OGD will empower citizens and enhance participatory governance. To assess whether OGD has led to citizen empowerment, we examine whether OGD has enabled citizens to express their voice, to meaningfully participate in policymaking and access government services.

According to the Open Data Barometer, evidence of social impacts in India is inexistent, scoring 0 out of 100 (Web Foundation & Open Data Institute, 2013). On the contrary, we observe that general trends of e-participation have been on the rise in India. In its 2014 E-Government Survey, the UN ranked India 40th in terms of e-participation. Between 2012 and 2014, its e-participation index significantly increased from 0.1842 to 0.6275. Such upward trend is mainly due to a sharp increase in the provision of e-information services. Furthermore, the provision of e-consultation services nearly doubled between 2012 and 2014. According to the 2014 Survey, India is among the top 50 performers on e-participation. For instance, the government regularly engages its citizens through online surveys and feedback forms. E-participation is however low in comparison to the UK. Of all the services assessed in the survey, the UK and India provide 96.30 and 92.59 percent respectively in e-information, 77.27 and 36.36 percent respectively in e-

consultation, and 77.78 and 0 percent respectively in e-decision making (United Nations, 2014).

Table 56: Extent of e-participation in India

	Country	Rank	E-participation index value	E-information	E-consultation	E-decision making	Total
2014	India	40	0.6275	92.59	36.36	0	56.90
	UK	4	0.9608	96.30	77.27	77.78	86.21
2012	India	25	0.1842	25	14	17	15
	UK	3	0.9211	100	70	83	74

Source: (United Nations, 2012, 2014)

iii. Improved public service delivery

Finally, OGD is expected to improve public service delivery. To assess whether OGD has increased government efficiency, we examine whether OGD enabled government to better plan and target resources, enabled outside actors to build new services on top of open data which deliver more effective public services and whether OGD has enabled government to improve the quality of public service delivery.

However, it appears to be too early to assess the developmental benefits of OGD, as most indicators are not yet available for the time period between 2013 and 2014. Furthermore, besides the apps featured on the portal, there are no examples of outside actors having build new services on top of open data as was the case in the UK (Prescribing Analytics and Open Data Institute – Telefonica Dynamic Insights partnership).

Despite the differences in approach and focus, the OGD movement is closely tied to the RTIA movement making assessments of the RTIA arguably useful in providing evidence of the future trends OGD could take. For instance, in his review of major studies about the operation of the RTIA, Roberts (2010) found that most RTI requests were filed with the aim of redressing grievances about the failure to deliver public services or complete public works. RAAG and NCPRI (2009)[83] for their part found that the RTI regime widely mobilized communities to use public sector information for developmental purposes.

[83] RAAG and NCPRI refer to the Right to Information Assessment and Analysis Group, and the National Campaign for People's Right to Information respectively. The study covered 10 states across the country. In each state, the state capital, three districts and 8 villages were surveyed. In total 19,000 participations were polled, including citizens, RTI applicants, government officials, public authorities and information commissioners.

The findings indicate that some of the participants used the RTIA to assert their right to food by making ration-related RTI requests. Others used it to address environmental issues such as closing down a polluting factory. Still others used the Act to get school admissions for their children and supposed beneficiaries of the Indira Awas Yojna (a housing scheme) to enforce their rights.

However the study also found that demographics, socio-economic inequality and gender inequality were important barriers to the use of ATI. For instance, there are important differences between the urban and rural profiles of information applicants, especially in terms of their age, occupation and education level. The study also showed that women and those classified as tribal, scheduled castes or other backward castes account for a minority of ATI requestors. More than 90 percent of rural applicants and 85 percent of urban applicants were males.

Furthermore, Benjamin, Bhuvaneswari, and Rajan (2007) found that increased access to government information may further empower and enrich the already empowered. The authors analyzed the impact of a project called Bhoomi that was launched by the Government of Karnataka in 2002 to digitize land records and titles made available through Citizen Service Centers. Bhoomi seeks to enable farmers and landowners in rural areas to prove their land ownership, which in turn allows them to benefit from several government schemes, subsidies and other public services. However, the study found that the digitization of land records led to increased corruption. According to the authors, land surveyors, lawyers and other used the newly digitized and openly accessible data to « challenge land titles, exploit gasps in title, take advantage of mistakes in documentation, and identify opportunities and targets for bribery, among others ».

5.3 Conclusion

In October 2012, the Indian government launched data.gov.in, following the endorsement of the NDSAP, which aimed at increasing the availability and accessibility of government data that can be used by ordinary citizens for scientific, economic and developmental purposes. Currently, the government has provided access to 3,215 data catalogs, including 10,229 datasets. In 2013, a total of 5,464,621 pages were viewed and the site counted 863,887 visits. There are however many gaps to overcome before OGD

can lead to widespread use and its acclaimed benefits. Currently, evidence of the expected benefits of OGD in India is scarce. One reason may be that it may be too early to observe change as the OGD initiative was launched only two years ago. However we believe that the main raison for such lack of evidence is that important elements in the OGD value chain are still in their infancy or remain missing.

First, several institutional features necessary to secure and sustain the benefits of OGD are either in their formative stage or absent. Lack of evidence of OGD impacts is impacted by poor implementation and lack of enforcement of the RTIA, evolving national technology infrastructure and limited Internet penetration, and limits on freedom of speech and expression. While civil society was a critical demand-side driver of OGD in India, robust data usage practices are considerably lacking among civil society groups, who as shown by MySociety and the OKF in the UK often act as key intermediaries for ordinary citizens to access and use OGD.

Secondly, while the UK government has implemented an enabling environment to institutionalize and ensure the long-term sustainability of the OGD initiative, India has rather focused on prioritizing short-term objectives needed to build political will and necessary for the initial takeoff of the initiative (Gigler et al., 2011), such as establishing departmental NDSAP Cells, appointing data controllers, adopting OGD principles, and hosting hackathons and other public awareness events. In contrast to the UK which has build an overarching framework convening government officials to release government data that corresponds to citizens' needs and enables economic and social impact, the implementation and coordination of India's OGD initiative is less articulated, leaving important gaps for each department to take individual action on which datasets to release and in which formats. An important challenge for the OGD initiative to deliver on its promises is the lack of a consistent legal framework facilitating OGD accessibility and reuse. While the UK government made a legislative change towards an enhanced right to data and created the OGL, the NDSAP stipulates that government data remains the property of the government.

Furthermore, the current supply of open government data is limited. Only half of India's ministries and one tenth of its state departments are releasing public data via data.gov.in, and nearly 80 percent of these datasets have been published by only five

departments. Government data is mainly available for only a small number of time periods and are thus not representative. Furthermore, compliance with the Open Government Data Principles is patchy. Most of the data is not machine-readable, openly licensed, discoverable or linked. This substantially impedes sustainable and ongoing data reuse (Davies, 2014). Additionally, the current state of open government data does not support citizens in making informed choices and holding government officials to account thus undercutting the initiative's ability to trigger its expected benefits. The majority of the data provides only neutral, descriptive and objective information about government spending and public service providers. The data is often not available in bulk making it difficult for citizens to compare performance and spending across states, local authorities and service providers. There are also still several concerns about the timeliness, reliability and usability of government data.

Finally, trends of OGD usage are relatively low and show important fluctuations since the launch of data.gov.in. OGD intermediaries are still in their infancy and many lack the capabilities to translate the data into « information, knowledge and action » (Davies, 2014, p.15). Furthermore, despite the government's significant efforts to bridge the digital divide, large segments of the population still face important barriers to access and use ICTs, resulting thus in their OGD exclusion.

Similar to the experience of other countries such as Moldova and Kenya, if India is to achieve long-term impacts, it must transition from its initial take-of stage to « a second phase of institutionalization necessary to sustain the initiative for the long-term » (Rahemtulla et al., 2012, p. 26). This transition will require strengthening open data legislation towards an enhanced right to data and incorporating clear enforcement mechanisms. It also requires developing data management practices to ensure that data publishing doesn't happen in an ad hoc manner. The following chapter outlines a series of six recommendations that collectively set the vision for moving forward, mainly targeting the Indian OGD initiative.

Chapter 6. Discussion and recommendations

This chapter outlines a series of six recommendations that collectively set a vision for moving forward describing principal barriers and supportive factors that need to be addressed for OGD initiatives to be sustained and institutionalized in the long term (Rahemtulla et al., 2011). The first five recommendations specifically target the Indian OGD initiative while the last recommendation applies to both countries.

6.1 Strengthen open data legislation and regulatory legal framework

India is making progress on creating a legal framework conducive for open government data. In the NDSAP of February 2012, the government set out expectations for government departments to priorities the release of high-value datasets, which had to be published within a year from October 2012. Furthermore, the government has recently circulated an office memo specifying guidelines for implementation of proactive disclosure of information under Section 4 of the RTIA. These guidelines commission departments to proactively release government data in open, electronic, human- and machine- readable formats. Additionally, the government set out overarching open government data principles, which provide guidance and best practice recommendations to public agencies on how to publish high-value datasets in open, machine-readable formats.

There are however still areas for improvement. At present there is lack of clear enforcement mechanisms. This had led to considerable discrepancy between highly publishing government departments and other less committed departments. Furthermore, the government failed to prescribe an open license for sharing and re-using open government data.

Therefore, this study recommends that:

1) The Government of India endorses a legislative change towards an enhanced right to government data to ensure continuity of reforms regardless of changes in political leadership (Rahemtulla et al., 2012). The amended FOIA should also include an accompanying Code of Practice providing guidelines for proactive disclosure of information and data made available in machine-readable and re-usable formats.

2) The NDSAP delineates clear and open licensing standards similar to the UK OGL for using and re-using open government data.

3) The NDSAP incorporates clear enforcement mechanisms that clearly define rewards and punishment for agencies and civil servants to compel progressive progress or minimum compliance.

6.2 Develop data management practices and targeted open data strategies

At present, both central and state departments release public data through the portal, including the Rajya Sabha, the Lok Sabha Secretariat, 28 ministries (including ministerial departments), the Planning Commission, Comptroller and Auditor General (CAG), and four state departments (Tamil Nadu, Meghalaya, Chhattisgarh, Karnataka). However, departments have unique practices for collecting, storing, digitizing and disseminating data. As previously explained, each department has its own criteria for prioritizing all sharable data into high value and non-high value datasets. Furthermore, most of the datasets do not support informed choice and accountability. Additionally, some departments face certain barriers to releasing government information, including lack of consistency in the various terminologies and methodologies employed by different authorities, lack of institutional awareness about collecting, arranging and disseminating data, bureaucratic secrecy, and lack of digital records of data (Gigler et al., 2011).

Consequently, this study recommends that

1) Government sets out key standard transparency requirements in order to foster greater transparency and support citizens to hold government, in particular local service providers, to account. Similar to the transparency requirements prescribed by David Cameron, such standards should commission public authorities to publish data on departmental expenditures.

2) Government sets out sector-specific data requirements in order to foster greater accountability and support citizens in making informed choices regarding public service providers. Such data should include all five types of information identified by the UK National Audit Office, including descriptive information about providers, objective standardized activity and performance information, information about performance

based on people's experiences, information on spending and contextual information to assist interpretation.

3) Each department sets out a departmental open data strategy similar to the ones developed by UK governmental departments. These strategies should address gaps in existing information and data management practices and enforce departments' will and capacity to release public data (Rahemtulla et al., 2012).

4) Public authorities provide a detailed list of all the datasets they manage and indicate which of them are published on the portal and which not. This list should be available both on their individual websites and on the portal.

5) The Government creates a consistent and transparent framework to guide the prioritization of high-value datasets for release across all public agencies. Similar to the National Information Infrastructure developed by the UK government, such framework should prioritize the release of those datasets, which are likely to have the broadest, and most significant economic and social impact if made available and accessible.

6.3 Enhance accessibility and usability of OGD by creating partnerships

Since the value of OGD is in its use, enhancing the capabilities of citizens, civil society organizations, the media and the private sector to use and reuse OGD should be a top priority. For instance, to engage users in the continued development of OGD, the UK government created the ODUG, which acts as a proxy for businesses and the civil society to advise the government on public data that should be prioritized for release. Similarly, in 2012, the Moldovan government with help from the World Bank instituted a Civil Society Fund aimed at stimulating innovations through providing grants to civil society organizations developing data-driven applications to enhance transparency and social accountability (Rahemtulla et al., 2012).

Despite the portal's fairly rich mechanisms for citizen engagement, at present, there is a mismatch between OGD supply and demand in India. Given the amount of government data available online via data.gov.in, OGD usage patterns and participation levels remain considerably low. As explained earlier, this is mainly due to a limited supply of government data in terms of openness and usability as well as infant infomediaries that

currently lack the capacity to translate the data into « information, knowledge and action » (Davies, 2014, p.15).

Hence this study recommends that:

1) Government advertises, increases awareness and educates citizens about the OGD initiative through the media.

2) Government engages with the developer community to develop tools that enable users to visualize and mash up government.

3) In addition to the co-creation type events, the Government implements similar initiatives to the Civil Society Fund in order to enhance the capability of civil society, the media and the private sector to use and re-use OGD.

4) Government implements an OGD-specific framework and accompanying guidelines to focus on OGD users' needs similar to its *Framework for Citizen Engagement for E-Governance Projects* and *Framework and Guidelines for use of Social Media by Government Agencies*.

5) Government engages with members of the data user community through establishing a formally affiliated stakeholder group similar to the ODUG.

6.4 Reinforce technological capabilities

Another reason for low OGD usage patterns is a persistent digital divide excluding large segments of the population due to linguistic, spatial, income, age and socio-cultural barriers. Furthermore, as illustrated by the digitization of land records projects in Bangalore, the OGD initiative may risk further exacerbating inequities for marginalized groups.

This study recommends that:

1) Government prioritizes « data-driven applications for mobile phones » given the substantial increase in mobile cellular penetration rates, especially in rural areas. The government could build upon existing projects such as the ones led by the Maharashtra Department of Agriculture and the KSITM that disseminate information on agriculture, weather and ocean observations through SMS.

2) Government develops a data catalogue specifically targeted towards marginalized groups similar to its India Development Gateway. Such initiative should prioritize the release of public data relating to thematic areas for the rural poor and women. It is also recommended that such website is available in several local dialects.

6.5 Expand to local government

Alongside the Public Sector Transparency Board, the UK government set up a Local Data Panel to advise government on issues relating to the release and use of local public data. Additionally, the Department for Communities and Local Government (DCLG) published a Local Authority Data Transparency Code that commissions public authorities to release local public data that meets the citizens' needs, and is made available in open formats and in a timely manner. As illustrated by the UK example, OGD should not only be a central government issue. However, at present, only 4 out of 29 state departments make their data available via data.gov.in. Thus, there is a huge untapped potential to engage with state governments and local districts. Furthermore, local public authorities are more likely to have access to granular data on both the performance and spending of local public services. Such data is especially important for marginalized groups to secure the "empowerment" benefits of OGD.

Therefore, this study recommends that

1) Government commissions the remaining state departments to release state public data via data.gov.in.

2) Government coordinates with state departments around a common framework for publishing state public data to ensure that all departments are brought on board.

3) Government (including state departments) holds preliminary awareness meetings with local district officers to pilot local OGD initiatives (Rahemtulla et al., 2012).

6.6 Enhance data literacy by « targeting youth as early adopters of OGD »

According to Eaves (2010), governments need to reach beyond the developer community for OGD to empower citizens and trigger its impacts. This is especially important as infomediaries may misuse their power to translate the data into one-dimensional and subjective information. However such vision depends on the ability of citizens to use, visualize and act upon the data to secure their needs (Rahemtulla et al., 2011). More

specifically, citizens must be able to « recognize the value of information to solve or address a certain task; […] know where to search for the required information and evaluate the quality of information for accuracy, credibility and reliability » (Tilvawala et al., 2009, p.5). Furthermore, they must be able to use open government data optimally in problem solving, understand the ethical use of public sector information and be able to create knowledge out of the data.

Therefore, this study recommends that government provides education and training programs to enhance the data capabilities of citizens (Rahemtulla et al., 2011). Such programs should specifically target the youth as « they are more likely to be technological-savvy, skeptical of established norms and rules and will be prospective future leaders in government, civil society and the private sectors » (Rahemtulla et al., 2012, p.31). Therefore, such programs should be introduced in the national educational curriculum.

Chapter 7. Conclusion

The OGD movement rose to prominence in 2008 when the Chief Technology Officer of the District of Colombia launched the first OGD initiative, releasing to the Internet more than 400 datasets ranging from crime statistics to government budget data. The movement gained quickly momentum under the influence of high-level OGD champions in the United States and the UK, and gained support from grassroots civil society groups, government, and international organizations such as the World Bank and the United Nations (Gigler et al., 2011). Since the first initiative, hundreds of national and local governments have developed OGD initiatives, proactively releasing public sector information that can be reused by multiple stakeholders for a broad range of political, economic and social purposes. Although the majority of these initiatives are from developed countries, this is currently changing. Therefore, one needs a better understanding of how such initiatives can generate their acclaimed benefits and influence change.

This study sought to analyze the mechanisms that influence OGD initiatives to achieve their expected socio-democratic benefits, including increased government transparency and accountability, improved public service delivery and citizen empowerment. Because evidence of the impacts of OGD initiatives is relatively limited, we have focused on a case study approach, examining the development of OGD in two contrasting countries, the United Kingdom and India, which are both pioneers in the OGD movement. Among the first to initiate an OGD portal, the UK government officially launched data.gov.uk in January 2010 and has currently released over 15,000 datasets. Most countries seek to emulate the UK example, considered by many as the default model for public data release, thereby making this experience particularly instructive (Gigler et al., 2011). India for its part launched data.gov.in in October 2012 and has currently provided access to 3,215 data catalogs, including 10,229 datasets. The launch of the national OGD portal was preceded by the endorsement of the National Data Sharing and Accessibility Policy (NDSAP), which aims at increasing the availability and accessibility of government data considered to be a potential democratizing force for the common man (Wright et al., 2011).

Building upon the current literature, we constructed a conceptual framework that illustrates the OGD value chain and identified the different factors that influence the success of OGD initiatives. Using a case study approach, we then developed the UK and India's OGD value chain and characterized its components. This study cuts across all three aspects of OGD research as we i) assessed to which extent the contextual factors are conducive for the UK and India's OGD initiatives to be effective, ii) examined how their OGD policy design addresses the challenges that may derive from OGD implementation, iii) analyzed the availability, openness and usability of government datasets, iv) and examined whether OGD has delivered on its promises in both countries.

In general, evidence of the impacts of OGD is limited. Despite the creation of an enabling environment, a continued focus on user needs, high degree of OGD openness, and increasing trends of OGD uptake and reuse, evidence of the socio-democratic benefits of OGD in the UK is mixed. For instance, we found that UK citizens regained trust in their national government as the percentage of British people reporting that they have confidence in the government significantly increased since the launch of the national OGD portal and its accompanying policy. We also observed that general trends of e-participation and citizen satisfaction with public services followed an upward trend. However, it is unclear whether OGD enabled UK citizens to discover corruption scandals, enhance budget transparency, or influence public sector reform.

On the contrary, there are many gaps to overcome before OGD can lead to widespread use and its acclaimed benefits in India. Currently, the evidence of the expected benefits of OGD in India is scarce since important elements in the OGD value chain are still in their infancy or remain missing. More specifically, lack of evidence of OGD impact is impacted by poor implementation and lack of enforcement of the RTIA, evolving national technology infrastructure and limited Internet penetration, and a lack of robust data usage practices among civil society groups. Furthermore, while the UK government has implemented an enabling environment to institutionalize and ensure the long-term sustainability of OGD, the Indian government has rather focused on prioritizing short-term objectives needed for the initial takeoff of the OGD initiative (Gigler et al., 2011). In contrast to the UK, the implementation and coordination of India's OGD initiative is less articulated, leaving important gaps for each department to take individual action on how

to address the different challenges that may derive from OGD implementation. An important challenge for India's OGD initiative to achieve its expected benefits is the lack of a consistent legal framework facilitating OGD accessibility and reuse. While the UK government has made a legislative change towards an enhanced right to data and adopted the Open Government License, the NDSAP stipulates that public sector data will remain the property of the Indian government. Furthermore, the current supply of open government data is limited. In contrast to the UK which ranks first in terms of data availability and accessibility in the Open Data Barometer, most of the data in India does not comply with the OGD principles, which substantially impedes sustainable and ongoing data reuse. Finally, trends of OGD usage are relatively low and significantly fluctuated since the launch of the national OGD portal.

There is thus more to securing impacts of OGD than only datasets, portals and policies. One also needs to take into account the political, legal, organizational, institutional, social, and technical dimensions of OGD publication and reuse (Davies et al., 2013). For instance, a consistent legal framework is critical to facilitate OGD accessibility and reuse. Furthermore, to ensure that data publishing does not happen in an ad hoc manner, the government should also implement an overarching institutional framework that clearly defines which data to share, in which formats, and under which license. Technological capacity and infomediaries that have the will and capacity to translate the date into « information, knowledge and action » are also vital to the use and impacts of OGD. However, as pointed out by Davies (2014), there is no one-size-fits-all approach to open government data. While open data standards are important, it is equally important to consider the local context in which the OGD initiative is embedded in order to find « the best fit between open data tools, technologies and practices and the geographical, institutional, political and cultural setting where they are being introduced » (Davies, 2014, p.22).

Providing insights into the trends of OGD uptake and reuse, we were able to gain a better understanding of the intermediary outputs of OGD initiatives. However, our analysis remains constrained by the lack of strong evidence on the final outputs of OGD. Few OGD initiatives have yet been evaluated and most research of OGD impacts includes ad-hoc isolated case studies or anecdotes (Davies et al., 2013). The infancy of most OGD

initiatives further compounds analyzing whether OGD initiatives delivered on their promises. The current research on OGD initiatives would therefore benefit from rigorous research approaches and comprehensive large-scale studies that provide clear evidence on both the intermediary and long-term benefits of OGD initiatives. Future research should in particular focus on exploring the social impacts of OGD, in particular its ability to increase social inclusion and empower marginalized groups, which have currently been underexplored.

Analyzing the mechanisms that influence OGD initiatives to achieve their expected benefits would also greatly benefit from a greater focus on privacy issues that may derive from the release of government data, which our case studies failed to address. While government agencies generate and collect enormous quantities of data as part of their day-to-day activities, an important number of such datasets are derived from information about individual citizens (Davies, 2014; Gigler et al., 2011). However, the boundaries between personal and non-personal data are not always straightforward. OGD policies should therefore provide a careful balance between releasing suitable disaggregated census data, and releasing data that could jeopardize the privacy of individuals, communities or groups.

Finally, our analysis of the trends of OGD uptake and reuse was compounded by the lack of data about download trends for each category of OGD. This was particularly the case for the Indian OGD portal, which in contrast to data.gov.uk has not been instrumented with analytics to measure the total number of clicks on download links as well as the number of download clicks for each dataset. Future research should therefore make an attempt to rigorously measure the demand for different categories of OGD.

Although the development of OGD initiatives remains still in its infancy, Open Government Data represents an historic occasion to rethink the State, how the government operates, and which services it provides. Ultimately, it represents the ability for citizens to redefine how they relate and engage with government, which cedes being the information gatekeeper and direct provider of growth, taking on a new role as a partner, catalyst and facilitator.

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ANNEX 1 – High-value dataset details

Data category	Details
Government budget	National government budget at a high level (e.g. spending by sector, department etc.). This category is about budgets, which are government plans for expenditure (not actual expenditure in the past).
Government spending	National government budget at a high level (e.g. spending by sector, department etc.). This category is about budgets, which are government plans for expenditure (not actual expenditure in the past).
Election results	Results by constituency / district for all major national electoral contests
Education	Examples of education data include: • Test scores for pupils in national examinations • School attendance rates • Teacher attendance rates
Health	Examples of health data include: • Levels of vaccination • Levels of access to health care • Health care outcomes for particular groups • Patient satisfaction with health services

Source: Open Knowledge Foundation (2013), and Web Foundation and Open Data Institute (2013)

Eight key budget documents	Description of the document
Pre-Budget Statement	Provides information that links government policies and budgets and typically sets forth the broad parameters that will define the budget proposal that is presented to the legislature
Executive's Budget Proposal	Presents the government plans to raise revenues through taxes and other sources and spend these monies to support its priorities, thus transforming policy goals into action
Enacted Budget	The legal instrument authorizing the executive to raise revenues, make expenditures and incur debt
Citizens Budget	A nontechnical presentation to enable broad public understanding of a government's plans for raising revenues and spending public funds in order to achieve policy goals
In-year reports	Periodic (monthly or quarterly) measures of the trends in actual revenues, expenditures, and debt, which allow for comparisons with the budget figures and adjustments
Mid-year review	An overview of the budget's effects that the midpoint of a budget year and discusses any changes in economic assumptions that affect approved budget policies
Year-End report	Information comparing the actual budget execution relative to the Enacted Budget
Audit report	Independent evaluation of the governments' accounts by the country's supreme audit institution. It typically assesses whether the executive has raised revenues and spent monies in lien with the authorized budget, and whether the government's accounts of its revenues and expenses are accurate and provide a reliable picture of the fiscal situation

Source: International Budget Partnership (2012)