

# SDG Data Revolution Roadmaps Toolbox: Open Data Module

A suite of open data for sustainable development resources  
curated by members of the Open Data Charter and Open Data for Development Network  
as Anchor Partners of the Global Partnership for Sustainable Development Data  
*Last Updated on July 16, 2016*

## **Purpose of Module**

The Open Data Module provides stakeholders with open data core principles and essential resources needed to prioritize, open, and use key datasets relevant to the achieving and monitoring the SDGs.

## **SDG Data Revolution Roadmaps Toolbox**

The SDG Data Revolution Roadmaps Toolbox is a public good inclusive of methods and tools developed by many partner organizations from around the world focused on various aspects of SDG implementation. In the context of the data revolution for sustainable development, the Toolbox fills gaps where needed to support real-time, dynamic, disaggregated data to achieve the sustainable development as well as monitor progress towards the SDGs. It considers the institutional, policy, regulatory and capacity building components, as well as the data and technology needs, issues and challenges for developing holistic roadmaps that are responsive to the local situation.

The Open Data Module is a joint project of the open data field including contributions from members of networks such as OD4D and the Open Data Charter. Individuals have assembled the content of this module as an input to the Global Partnership SDG Data Revolution Roadmaps Toolbox. In particular, the following organizations have participated in making this beta module possible: Center for Open Data Enterprise, Open Data Institute, Open Data Watch, and the World Bank.

*This is a beta version of the Open Data Module for comment and input. It will continue to be improved and enhanced in a transparent and inclusive manner.*

## **Global Partnership for Sustainable Development Data**

The Global Partnership for Sustainable Development Data (Partnership) was launched in September 2015 at the United Nations General Assembly to unite data champions, both traditional and new, around a common vision — to put data at the heart of sustainable development.

## **Copyright Statement**

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## I. WHAT IS OPEN DATA?

The concept of open data is relatively new. It originated with the belief that the enormous amount of information routinely collected by government entities should be available to all citizens. In the late 2000s, governments and entities began to allow a greater number of users access to these resources. The first government policies on open data appeared in 2009. Today, more than 250 governments at national, subnational and city levels; almost 50 developed and developing countries; and entities such as the World Bank and United Nations have launched open data initiatives—and more are launched every year.

**Data is considered to be “open” if anyone can freely use, re-use and redistribute it, for any purpose, without restrictions.** More specifically, there are two dimensions of data openness:

- The data must be **legally open**, which means it must be placed in the public domain or under liberal terms of use with minimal restrictions.
- The data must be **technically open**, which means it must be published in electronic formats that are machine readable and preferably non-proprietary, so that anyone can access and use the data using common, freely available software tools. Data must also be publicly available and accessible on a public server, without password or firewall restrictions. To make open data easier to find, most organizations create and manage open data catalogs and portals.

When data are made widely available and easy to use, the benefits can be significant: It can help streamline government services, stimulate economic opportunities, encourage innovation, improve public safety and reduce poverty. As the benefits of open data impact broader populations and additional useful options are discovered, governments and institutions worldwide are eager to launch new or expand existing open data programs. It will take time to fully understand the complexity and broad potential of open data, which is derived from the “open” environment of licensing. As open data is still in its early stages, best practices and communities are just beginning to emerge.<sup>1</sup> To learn more about the basics of open data visit the [European Data Portal e-Learning module: “What is Open Data?”](#)<sup>2</sup> The e-Learning module also contains the following sections:

Module	Summary	How does this module connect to SDGs?
<a href="#">What is open data?</a>	Open data is data that anyone can access, use and share. Governments, businesses and individuals can use open data to bring about social, economic and environmental benefits.	Open data is providing the basis for improving social, environmental and economic development outcomes. This module introduces the basics.
<a href="#">Unlocking value from open data</a>	Open data has the potential to help grow economies, transform societies and protect the environment.	This module starts to explore ways that open data is creating value. For example we look at ways open data is

<sup>1</sup> World Bank, Open Government Data Toolkit: Open Data in 60 Seconds <http://opendatatoolkit.worldbank.org/en/open-data-in-60-seconds.html>

<sup>2</sup> European Data Portal e-Learning Module - <http://www.europeandataportal.eu/elearning/en/module1/#/id/co-01>

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	In this module, we explore how governments, businesses and individuals are using open data to create new value.	driving greater transparency (SDG 10 & SDG 16) and helping small businesses thrive (SDG 1 & 8)
<u>Open data. Agent of change.</u>	The most successful open data initiatives share similar characteristics. Understanding these approaches can help those wishing to unlock the value of open data for themselves.	To have an impact on SDGs those involved in open data projects must lead change in their sectors - whether in government or Civil Society. And connections between publishers and users must be created. Effective, sustained change underpins all SDGs.
<u>Why do we need to license?</u>	For data to be open, it should be accessible (this usually means being published online) and licensed for anyone to access, use and share.	Anyone using or publishing data in development needs to understand licensing. Licensing gives you, or the people using data you publish, permission to reuse and drive innovation (SDG 9) with data. Better licensing also improves how partners work together by making the basis on which data can be shared clear (SDG 17)
<u>What makes quality open data?</u>	Assessing how usable open data is is not something that can be done quickly.  There are a number of community-based standards and quality marques that can help you assess the usability of data.	Understanding whether the data you publish or have access is fit for purpose is key to ensuring greater innovation (SDG 9) and more effective partnerships (SDG17)
<u>Measuring success for open data</u>	Successful open data initiatives do more than simply put data on the web.  The most data-savvy organisations also put in place frameworks and policies to support and incentivise innovation. Open data communities need to be built and success stories communicated. Together, these will help more people understand the benefits of open data.	Getting more people to use open data has a potential impact across all SDGs. Key to this is measuring impact and sharing success stories.

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<p><u>Why should we worry about sustainability?</u></p>	<p>Open data must be relevant, up-to-date and accessible in order to be useful. Together, these qualities help make a dataset sustainable.</p> <p>A sustainable programme is one that continues to regularly release data with at least the same or improving quality and quantity.</p> <p>For something to be sustainable it must be able to be maintained at a certain rate or level.</p> <p>For an open data release to be sustainable, it must maintain regular updates with at least the same level of quality and quantity.</p>	<p>Long term impact is the goal of the SDGs. For open data to have a long term impact on SDGs the data itself must be sustained. This module explains how.</p>
<p><u>Getting to grips with platforms</u></p>	<p>A platform is a major piece of software on which smaller pieces of software and content can be run. For open data, the largest platform is the web. However, lots of other purpose-built software helps simplify publishing open data and provides interactive tools for users to explore.</p>	<p>Platforms will often be the place that citizens, partners, government and businesses find the data and insights they need. Good platforms support <b>all SDGs</b> as they allow a range of actors to make better decisions when they find data to address their specific area of focus. Good platforms also enable new businesses to be built (SDG 8), drive innovation (SDG 9), and make partnering easier (SDG17)</p>
<p>The modules below introduce ways to work better with data. These modules are useful for anyone who needs to know the basis of finding, preparing and connecting data sets. Doing this well can support outcomes across SDGs by driving better decisions with data, making partnering more efficient, improving trust and engaging more widely.</p>		
<p><u>Choosing the right format for open data</u></p>	<p>The format of an open dataset is the way the data is structured and made available for humans and machines.</p> <p>Choosing the right format enables simpler management and reuse of the data. To maximise reuse of the data, it may be necessary for a publisher to use a number of formats and structures available across different platforms that suit a user's needs.</p>	

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<p><u>How useful is my data?</u></p>	<p>Assessing how useful open data is can vary depending on the domain and the content. To assist this process, there are a number of best practice guidelines publishers and users can follow.</p> <p>In this module we look at the 5-Stars of linked open data and discover how this can be used to measure the technical usability of data.</p>	
<p><u>How to clean your data</u></p>	<p>One of the biggest challenges when working with any data is errors. Often errors are not even noticed by data publishers because the data can change over many years. In other cases, errors can be the result of human mistakes in data entry, like mistyping or incorrect abbreviations.</p> <p>When working with any data, it is important to know how to find errors and correct them to make the data more useful.</p>	
<p><u>Finding hidden data on the web</u></p>	<p>'Open data' does not only mean datasets available to download. Downloadable open data represents only a small fraction of the available data on the web.</p> <p>The majority of data available on the web is hidden from the human eye. However, machines can find and read this data. In this module we look at techniques to unlock hidden data.</p>	
<p><u>Linking up the web of data</u></p>	<p>The current web is configured as a series of pages or 'documents'. While these documents draw on rich sources of data, they disguise it beneath pages designed for humans to view. In this module, we explore what would happen if all the pages or documents were removed from the web.</p> <p>Imagine you only had the raw data, all open, all usable and all linked together in a network or 'web' of data.</p> <p>This module also introduces the web of open linked data and look at how the 5-stars of linked</p>	

	open data provide a roadmap for achieving this vision.	
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## II. HOW OPEN DATA SUPPORTS THE SDGS

To help meet the goals, UN member states can draw on open data from governments. This kind of data is essential both to help **achieve** the SDGs and to **measure** progress in meeting them [across sectors and regions](#)<sup>3</sup>.

### **Achieving the SDGs**

Open Data can help achieve the SDGs by providing critical information on natural resources, government operations, public services, and population demographics. These insights can inform national priorities and help determine the most effective paths for action on national issues. Open Data is a key resource for:

- **Fostering economic growth and job creation.** Open Data can help launch new businesses, optimizing existing companies' operations, and improve the climate for foreign investment. According to McKinsey & Company, open data has the potential to create USD 3 trillion a year of value in seven sectors of the global economy.<sup>4</sup> It can also make the job market more efficient and serve as a resource in training for critical technological job skills.
  - [Open Data for Economic Growth](#)<sup>5</sup>
  - [Open Data for Business](#)<sup>6</sup>
  - [Open data: Unlocking innovation and performance with liquid information](#)
- **Improving efficiency and effectiveness of public services.** Open Data can help strengthen healthcare systems by connecting patients to providers; promote education and ongoing learning; and improve food security on both a large and small scale.
  - [Saludos - health and open data in Uruguay and Argentina](#)<sup>7</sup>
  - [Mexico's Mejora tu Escuela](#)<sup>8</sup>
- **Increasing transparency, accountability and citizen participation.** Open Data plays a critical role in improving governance by exposing and preventing mismanagement and corruption. It also helps ensure environmental sustainability through transparent data that can help reduce pollution, conserve natural resources and build resilience to climate change.

<sup>3</sup> Open Data Impact Map Report: <http://opendataenterprise.org/map/reports/May2016Report.pdf>

<sup>4</sup> Open data: Unlocking innovation with liquid information - <http://www.mckinsey.com/business-functions/business-technology/our-insights/open-data-unlocking-innovation-and-performance-with-liquid-information>

<sup>5</sup> Open Data for Economic Growth - <http://www.worldbank.org/content/dam/Worldbank/document/Open-Data-for-Economic-Growth.pdf>

<sup>6</sup> Open Data for Business - <http://openaidpartnership.org/publications/briefs/od4b/>

<sup>7</sup> Saludos - health and open data in Uruguay and Argentina - <http://opendatahandbook.org/value-stories/en/latam-health/>

<sup>8</sup> Mexico's Mejora Tu Escuela - <http://odimpact.org/case-mexicos-mejora-tu-escuela.html>

- [Extractives remediation & public health - open data advocacy in Nigeria](#)<sup>9</sup>
- [Brazil's Open Budget Transparency Portal](#)<sup>10</sup>
- **Facilitating better information-sharing within government.** Open Data can help improve cities and urban infrastructure. It can also improve resilience to disasters and ensure that essential resources will be deployed effectively in emergency situations.
  - [Hong Kong / China - sourcing genomes and crowdsourcing killer outbreaks](#)<sup>11</sup>
  - [Battling Ebola in Sierra Leone](#)<sup>12</sup>

## **Achieving and Measuring Progress on the SDGs**

Open Data can help ensure that plans to achieve the SDGs are evidence-based, and that their outcomes are measurable. The SDGs were launched with an emphasis on collecting data that is extensive and specific enough to serve these needs. The SDG Open Working Group proposed that “In order to monitor the implementation of the SDGs, it is important to improve the availability of and access to data and statistics disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts...”<sup>13</sup>

Open Data can help assess the SDGs in three main ways. It is a facilitator of **standards**, a tool for **accountability** and an evidence base for **impact assessment**.

- **Standards.** Open Data can help establish consistent definitions and units of measurement. Over time, as more adopt standards, collect and open data, this will result in improved data accuracy and completeness. By encouraging Open Data standards, development initiatives can build off of existing datasets, schemas, and databases and contribute to the broader evidence base.
  - [Making the Most of Extractive Industries Data](#)<sup>14</sup>
- **Impact assessment.** Facilitated by common units of measurement, Open Data can help gauge the impact of development initiatives over time, geographies and topical areas. For example, Open Data can help establish benchmarks to measure progress against the SDGs, both within each country and between countries. It can reveal inequalities and disparities in income, wealth and access to government services and provide a basis for assessing progress over time. On a global level, this shared data also makes it possible to measure progress on those SDGs that require international coordination.
  - [Tanzania Sectoral Performance Dashboards](#)<sup>15</sup>
  - [Mapping public sanitation facilities](#)<sup>16</sup>
  - [Tracking equality at work](#)<sup>17</sup>
- **Accountability.** By releasing Open Data about a full range of SDG initiatives, government institutions can show their commitment to the SDGs and hold themselves accountable for the results. This transparency and accountability can help engage citizens in working on the SDGs as well.<sup>18</sup>

<sup>9</sup> Extractives remediation & public health - open data advocacy in Nigeria - <http://opendatahandbook.org/value-stories/en/extractives-remediation/>

<sup>10</sup> Brazil's Open Budget Transparency Portal - <http://odimpact.org/case-brazils-open-budget-transparency-portal.html>

<sup>11</sup> Hong Kong / China - sourcing genomes and crowdsourcing killer outbreaks -

<http://opendatahandbook.org/value-stories/en/open-sourcing-genomes/>

<sup>12</sup> Battling Ebola in Sierra Leone - <http://odimpact.org/case-battling-ebola-in-sierra-leone.html>

<sup>13</sup> Proposal 17 - <https://sustainabledevelopment.un.org/focussdgs.html>

<sup>14</sup> Making the Most of Extractive Industries Data -

<http://www.worldbank.org/en/news/feature/2016/03/09/making-the-most-of-extractive-industries-data>

<sup>15</sup> Tanzania Sectoral Performance Dashboards - [http://www.takwimu.org/#/?\\_k=58gyjn](http://www.takwimu.org/#/?_k=58gyjn)

<sup>16</sup> Mapping public sanitation facilities - [http://www.akara.co.in/media/Financial\\_Express\\_june\\_02\\_2015.jpg](http://www.akara.co.in/media/Financial_Express_june_02_2015.jpg)

<sup>17</sup> Tracking equality at work - <http://tracking-equality.hrc.co.nz/#/>

<sup>18</sup> Sustainable Development Goals and Open Data - <http://blogs.worldbank.org/ic4d/sustainable-development-goals-and-open-data>



- [Making aid more effective in Nepal](#)<sup>19</sup>

### III. OPEN DATA & SDGs: GOAL BY GOAL

The test of Open Data's value is in how it can contribute to achieving specific SDGs in concrete ways. Here is an overview of how Open Data can help achieve each of the 17 Sustainable Development Goals from the [World Bank's Open Data for Sustainable Development paper](#)<sup>20</sup>.

Sustainable Development Goals (SDGs)	Open Data Solutions	Specific Examples
1. End poverty in all its forms everywhere	The government provides information about public goods and services so that people living in poverty will have access to basic care.	<a href="#">Transparent Chennai</a> provides data to help residents in poor areas make claims to government for rights and services they are entitled to.
	The use of Open Data drives business growth and thus the creation of new job opportunities.	Large numbers of examples on the <a href="#">Open Data Impact Map</a> and elsewhere, showing both the launch of new startups and business optimization for existing companies. <sup>21</sup>
	Open Data that can be used to match job-seekers with employers can help increase national employment overall.	<a href="#">Examples from private-sector companies</a> (LinkedIn, Monster), government programs in Australia and the U.S., and elsewhere. <sup>22</sup>
2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture	The release of agricultural and nutrition data promotes better education of farmers and ordinary consumers.	<a href="#">GODAN</a> - Global Open Data for Agriculture and Nutrition - has become a centralized resource for farming and food security.
		The <a href="#">Climate Corporation</a> in the U.S. is using sophisticated analysis of weather and satellite data to promote what has been called "precision agriculture."
		<a href="#">Farmerline</a> in Ghana sends farmers essential information on weather and agriculture by voice and text to their mobile phones.
	The use of Open Data can help counter local problems that interfere with agriculture like unfair subsidies, disease or theft.	In Mexico, the advocacy group Fundar developed an <a href="#">online database</a> showing that billions of dollars in government farm subsidies were going disproportionately to wealthy farmers, a fact that led to reform in the subsidy program.

<sup>19</sup> Making aid more effective in Nepal - <http://opendatahandbook.org/value-stories/en/effective-aid-in-nepal/>

<sup>20</sup> Open Data for Sustainable Development -

<http://pubdocs.worldbank.org/en/741081441230716917/Open-Data-for-Sustainable-development-PN-FINAL-ONLINE-September1.pdf>

<sup>21</sup> Open Data for Business - <http://openaidpartnership.org/publications/briefs/od4b/>

<sup>22</sup> Connecting Talent With Opportunity: Mapping US Veteran Skills and Employer Needs -

<https://blog.linkedin.com/2014/09/25/connecting-talent-with-opportunity-mapping-us-veteran-skills-and-employer-needs>

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		In Jamaica, a research project of the <a href="#">Caribbean Open Institute</a> is using Open Data to combat praedial larceny - the theft of crops and cattle.
	Open Data can help correct erratic food prices - a potentially serious problem in low-income countries where food can be scarce.	In Indonesia, the group Pulse Lab Jakarta worked with government agencies to <a href="#">track real-time commodity price information</a> on the Web and on Twitter.
3. Ensure healthy lives and promote well-being for all at all ages	Open Data can be structured into an effective tool for connecting potential patients to the optimal providers of healthcare.	In Brazil, <a href="#">Medicinia</a> uses open data to enhance communication platforms among patients and doctors.
	Practitioners can use Open Data to make healthcare more efficient and reduces the costs.	The <a href="#">Southern Africa Regional Programme on Access to Medicines and Diagnostics</a> (SARPAM) uses data "to improve efficiency and competition in the market for essential medicines in the Southern African Region and thereby meet the health needs of the poor."
	Open government data combined and supplemented with crowdsourced and other nongovernmental data can also be critical in tracking infectious disease.	The U.S. based company <a href="#">Metabiota</a> uses field studies to supplement government information on infectious disease.
4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	Many countries are now using open government data and other data to show the availability and improve the quality of public schools.	In Kenya, the national government and several NGOs are using a <a href="#">mapping platform</a> to show areas where educational resources are lacking.
		The company <a href="#">ENOVA</a> uses different kinds of data to develop innovative educational models.
	Open Data about basic school operations and facilities helps to inform policy makers about failures in schools and students' education.	<a href="#">CheckMySchool</a> in the Philippines uses open data to fight corruption in school funding.
5. Achieve gender equality and empower all women and girls	Analysis of Open Data can highlight disparities in the ways that education and health systems cater to women and girls.	<a href="#">Census, education, and health data from national statistical organizations</a> can be used to develop indicators of gender disparities in these areas. <sup>23</sup>
	Open Data on proper sanitation provision and the establishment of water points attached to or near schools will save many hours of time for young girls, who otherwise would not have had the opportunity to attend school/invest in a career.	In Kenya, <a href="#">data on toilets and sanitary facilities in public schools</a> increased attendance for female students. <sup>24</sup>

<sup>23</sup> Tracking Equality - <http://tracking-equality.hrc.co.nz/#/>

<sup>24</sup> The Health Assignment: Toilets and Grades - <http://www.icjf.org/videos/health-assignment-toilets-and-grades>

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	Open Data on healthcare and education facilities can provide young women and girls with resources (specifically in sexual and maternal health).	A number of programs on maternal health use <a href="#">openly available health data and information</a> to help pregnant women and young mothers. <sup>25</sup>
6. Ensure availability and sustainable management of water and sanitation for all	GPS and satellite imagery Open Data can be used to map out communities and infrastructure to plan the placement of water and sanitation points.	In the Mathare slum of Kenya, a team of 30 mappers, which included local residents, created a detailed map of the Mathare community. The team then started a comprehensive <a href="#">thematic mapping of Water and Sanitation points</a> , such as water points, toilets, open defecation areas, and open drainage. <sup>26</sup>
	Open Data on water quality can help for quicker clean-up/sanitation service responses.	In New Zealand, a partnership known as LAWA (Land, Air, Water Aotearoa) has launched a <a href="#">website</a> that provides data on water quality at more than 350 beaches in the country.
	Open Data can also be used to identify areas that are undergoing a water supply crisis.	In Kenya, MajiData created a <a href="#">dashboard</a> that facilitates data analysis on water availability, accessibility, reliability and quality. It also runs stories about individual slums and has functionality for citizen engagement and feedback encouraging citizens to contribute to the database or correct the existing information.
	Open Data about urban low income areas can be used to create sanitation programs aimed at the reduction of water and sanitation-related public health risks.	The <a href="#">Aqueduct Water Risk Atlas</a> of the US combines 12 key indicators of water risk to create global overall water risk maps, including water risks by sector, by location, or by indicator.
7. Ensure access to affordable, reliable, sustainable, and modern energy for all	Open Data on competing electric utility services can be used to provide the best price points to consumers.	<a href="#">CHECK24</a> is a German comparison portal that operates online price comparisons in energy. Portal users looking for the best vendor can indicate the size of their households, and CHECK24 presents them a list of local providers with best offerings.
	Open Data from household energy surveys, satellite imagery, and other sources can help governments and private companies prioritize investments in energy generation and grid extension.	The <a href="#">Ghana Energy Commission</a> , IBM Research-Africa, and others have used data-driven approaches to develop their energy plans. <sup>27</sup>
	Open Data can support the development of renewable energy sources strategically and efficiently.	The Indian company <a href="#">REConnect Energy</a> has built data-driven tools to forecast power output from wind and solar sources.

<sup>25</sup> For instance, Mamnadzor - <https://play.google.com/store/apps/details?id=com.gaikagroup.mamnadzor>

<sup>26</sup> In Kenya, Using Tech To Put An 'Invisible' Slum On The Map -

<http://www.npr.org/sections/parallels/2013/07/17/202656235/in-kenya-using-tech-to-put-an-invisible-slum-on-the-map>

<sup>27</sup> Exploring Open Energy Data in Urban Areas-

<http://www.worldbank.org/en/news/feature/2015/06/03/exploring-open-energy-data-in-urban-areas>

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8. Promote sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all	Open Data can be used as a tool for training young people in the technology skills that can lead to successful employment	<a href="#">TuvaLabs</a> uses a wide variety of datasets to train young professionals and has helped promote data skills in the U.S., in India, and elsewhere, including through a partnership with the World Bank in Sudan.
	The provision of Open Data can be the raw material for innovative new data-driven businesses	A large number of case studies, and examples from the <a href="#">Open Data Impact Map</a> and elsewhere, show how Open Data on health, environment, energy, finance, education, and many other areas can fuel startup businesses in those sectors.
	Open Data helps existing companies optimize their businesses	Many <a href="#">companies</a> use GPS data to improve shipping and transportation; use weather data to plan their product inventories; use census data to improve their marketing; or use open data in other areas to build their business in other ways. <sup>28</sup>
	Open Data can also be a means to helping individuals receive the initial financing needed to launch a company	The Mexican companies <a href="#">Aspiria</a> and <a href="#">Konfio</a> , and Columbia's <a href="#">Lenddo</a> engage in micro-lending and use market and other data sources to provide loans to people with no credit history.
9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	Open Data is the prospect of rethinking urban infrastructure through "smart cities." The concept of smart cities involves combining government-provided Open Data with extensive, diverse, and timely data collected from sensors around the city that measure traffic, air quality, and other factors.	Initiatives like the <a href="#">IBM Smarter Cities program</a> have helped develop the concept of smart cities around the world.
	Open Data is being used to understand urban issues and improve urban planning.	In Beijing, the <a href="#">City Lab</a> at the Tsinghua Urban Planning and Design Institute focuses on Beijing's Xicheng district, the largest part of the old city, and provides demographic, socioeconomic, and mapping data for research analysis.
	Open Data can improve transportation systems/infrastructure.	In China, where the Open Data movement has grown city by city, <a href="#">Shanghai</a> and <a href="#">Beijing</a> have launched Open Data portals that each have hundreds of datasets on weather, air and water quality, commerce, transportation, and more.
10. Reduce inequality within and among countries	Open Data promotes greater transparency in governance to reveal inequality and support action to correct it.	The U.S. website <a href="#">AllJobOpenings</a> includes data on income disparities between men and women and advice for women on securing equal pay.
	Open Data informs domestic economic regulations to best provide for those living	<a href="#">Data from national statistical organizations and other sources</a> is used to calculate poverty levels, eligibility for

<sup>28</sup> Open Data for Business - <http://openaidpartnership.org/publications/briefs/od4b/>

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	on social welfare or for those living near or below the poverty line.	nutrition and health programs, and a wide range of other social services. <sup>29</sup>
11. Make cities and human settlements inclusive, safe, resilient, and sustainable	Some of the most effective applications of Open Data - not only government data, but also data gathered from citizens - have been in managing disaster risk and relief efforts.	The organization <a href="#">Ushahidi</a> was launched in Kenya during a period of political violence, and used data gathered by cellphone to track violent events and target law enforcement to them. Over the last several years, it has used the same approach in disaster management as well, most notably in directing relief efforts during the 2010 earthquake in Haiti.
12. Ensure suitable consumption and production patterns	Open Data can be used to track consumer prices on a global scale, and in real-time, spot early signs of food shortages, inflationary pressures, and detecting other important trends and anomalies for better decision-making.	<a href="#">Premise</a> , a US company with applications in India and globally, developed an <a href="#">app</a> that essentially turned smartphones into mobile data-entry terminals. It is designed for pattern recognition of prices of goods, kinds of goods, etc. from the pictures taken/sent in to the central server.
13. Take urgent action to combat climate change and its impacts	Open Data programs are designed to help cities and countries become more resilient in the face of climate change, and the floods, droughts, and other extreme events that may ensue.	Data from environmental agencies is being used to <a href="#">predict changes in flood risk</a> caused by climate change, and facilitate planning to deal with it. <sup>30</sup>
14. Conserve and sustainably use the oceans, seas, and marine resources for sustainable development	Open Data can prove to be a useful way to monitor volume of fishing intake in national/supranational waters to ensure proper compliance with sustainable sourcing	NOAA in the U.S. and other government agencies around the world <a href="#">regularly monitor fishing in ocean waters</a> . <sup>31</sup>
	Open Data on various marine activities can potentially lead to the discovery and usage of marine energy sources such as geothermal vents etc.	The U.S. company <a href="#">Liquid Robotics</a> does hydrocarbon detection and seismic surveys for oil and gas, as well as other kinds of environmental monitoring.
15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	Major national and international data programs are now addressing climate change and other fundamental environmental issues.	The U.S. <a href="#">Climate Data Initiative</a> is a cross-governmental effort to make data from a wide range of federal agencies available for analysis.
	Open Data on mining, drilling, and energy industry practices help promote transparency that will prevent bad practices out of fear of public reaction.	The World Resources Institute runs a <a href="#">Global Forest Watch site</a> that the governments of Indonesia and Singapore are using to crack down on illegal burning by pulp and paper companies.

<sup>29</sup> UK Office of National Statistics - Why we have a census - <https://www.ons.gov.uk/census/2011census/whywehaveacensus>

<sup>30</sup> Fundamentals of Environmental Measurements -

<http://www.fondriest.com/environmental-measurements/environmental-monitoring-applications/flood-warning-systems/>

<sup>31</sup> Commercial Fisheries Statistics - [https://www.st.nmfs.noaa.gov/st1/commercial/landings/annual\\_landings.html](https://www.st.nmfs.noaa.gov/st1/commercial/landings/annual_landings.html)

## Beta: Draft For Consultation and Input

<p>16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels</p>	<p>Open data has helped several countries to launch spending transparency initiatives - often for their own internal controls and at least as much for their international reputation.</p>	<p>Brazil's <a href="#">Transparency Portal</a> launched in 2004 with the initial goal of documenting the transfer of federal money to cities and states. A decade later, the Portal had a much wider portfolio and was tracking more than \$12 trillion in government funds.</p>
	<p>Open Data on budgeting and elections promote greater transparency in political institutions and can consequently encourage greater political involvement.</p>	<p>The <a href="#">Participatory Budgeting project</a> now active in more than 1500 cities worldwide, involves citizens directly in local budget allocation.</p>
	<p>Open contracting - making government contracts available for public review - deters favoritism and hidden deals, and simultaneously benefits government, businesses, and investors.</p>	<p>In Russia, a website called <a href="#">Clearspending</a>, which monitors over 12 million contracts with open government data, has helped to identify more than 4 million procurement violations to date.</p>
		<p>The <a href="#">Open Contracting Partnership</a> is developing standards for contracting data and supports efforts to make contracting more transparent worldwide.</p>
<p>17. Strengthen the means of implementation and revitalize the global partnership for sustainable development</p>	<p>Open Data can be used by sovereign nations to collaborate on and implement solutions that have global benefits.</p>	<p>The <a href="#">Open Data Charter</a>, which originated at a meeting of the G8 and which was put forward as part of the Open Government Partnership, is an international mechanism for supporting the work of Open Data throughout all of the UN sectors.</p>
	<p>Open Aid Data on developing countries can allow for more efficient allocation of foreign aid resources and support for sustainable development in less developed countries.</p>	<p>Open Data is widely used by the World Bank, USAID, the Millennium Challenge Corporation, and other lenders to <a href="#">help guide their aid activities</a>.<sup>32</sup></p>

## IV. STEP-BY-STEP RESOURCES

### **Essential Datasets for Sustainable Development**

Certain government datasets are often considered “high value” in terms of their ability to either achieve or measure the sustainable development goals. The following list of datasets have been cited as some of the most frequently used datasets in low-middle income countries according to data from the [Open Data Impact Map](#), a global mapping of the uses of open government data<sup>33</sup>, the [World Bank](#), [Open Data Index](#), and [G8 Open Data Charter](#)<sup>34</sup>:

- Demographics (eg. census data such as age, gender, education level, household income level)
- Geospatial/Mapping (eg. satellite imagery; administrative, legal and postal boundaries; topography)
- Government operations (eg. budgets and spending; procurement and contracting; electoral results; laws and statutes)
- Business (eg. company/business registries; industry classifications; real estate listings and prices)

<sup>32</sup> For instance, World Bank Technical Assistance and Funding - <http://toolkit.dev.zognet.net/en/technical-assistance.html>

<sup>33</sup> Open Data Impact Map - <http://opendataenterprise.org/map>

<sup>34</sup> Key Types of Datasets from Previous Experience, World Bank Open Data Readiness Assessment Methodology Part B (v.3) - [http://opendatatoolkit.worldbank.org/docs/odra/odra\\_v3\\_methodology-en.pdf](http://opendatatoolkit.worldbank.org/docs/odra/odra_v3_methodology-en.pdf)

- Economic statistics (eg. macro and microeconomic data; trade statistics)
- Environment and climate (eg. meteorological, natural hazards, water availability and quality, pollution levels, energy consumption)
- Sector Specific
  - Agriculture (eg. market prices; production statistics)
  - Health (eg. public facilities; health performance; prescription and drug information)
  - Education (eg. school listings; school performance; attendance)
  - Transportation (eg. public transport timetables and routes; traffic data; transport infrastructure)

## **Assessing Your Open Data Readiness**

### **Conducting an Open Data Readiness Assessment**

The World Bank's Open Government Data Working Group developed an [Open Data Readiness Assessment \(ODRA\)](#) methodological tool that can be used to conduct an action-oriented assessment of the readiness of a government or individual agency to evaluate, design and implement an Open Data initiative. As part of the Open Government Data Toolkit, this tool is freely available for others to adapt and use.

## **Adopting the International Open Data Charter**

The principles of the [International Open Data Charter](#) provide governments with a common foundation upon which to realise the full potential of open data. For governments that have already established open data initiatives, the Charter provides continuing guidance for maximising the release of data. For countries that are just getting started with their open data activities, the Charter can serve as a statement of commitment and the means to pursue political support for the fundamental principles of openness.

### **Core Principles**

- 1. Open Data by Default** means that the public information available proactively and that they'll put that information is proactively put within reach of the public, without barriers to reuse. In order to achieve sustainable development, citizens need access to government data as a default. The Open by Default principle includes the following:
  - Develop and adopt policies & practices
  - Provide justifications for why certain data cannot be released
  - Establish culture of openness
  - Support culture of openness in all departments & agencies
  - Observe domestic laws & internationally recognized standards
  - Anonymize data when necessary

### **Resources**

- [Guidelines for Open Data Policies](#)<sup>35</sup>
- [Addressing Data Privacy Concerns](#)<sup>36</sup>
- [Anonymization and microdata](#)<sup>37</sup>

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<sup>35</sup> Open Data Policy Guidelines - <http://sunlightfoundation.com/opendataguidelines/>

<sup>36</sup> Addressing Data Privacy Concerns - <http://www.opendataenterprise.org/reports/BriefingPaperonOpenDataandPrivacy.pdf>

<sup>37</sup> Anonymization and Microdata -

<https://sunlightfoundation.com/blog/2014/10/28/anonymization-and-microdata-can-we-open-up-granular-info-without-invading-privacy/>



- [Why “set the default to open”? Because information is a public good](#)<sup>38</sup>

**2. Timely and Comprehensive** - In order to be valuable to governments, citizens, and civil society and private sector organizations, data must be comprehensive, accurate, and of high quality. More specifically, it needs to be provided in a timely manner with enough detail and context. The Timely and Comprehensive principles includes the following:

- Share lists of data holdings for prioritization, publication, & release
- Release data in timely manner
- Release data in original, unmodified form & provide links
- Release data disaggregated to lowest level of administration
- Allow feedback and continue to improve data quality
- Apply information lifestyle management practices
- Consult data users on changes to structure or supply of data
- Document processes online

#### Resources

- [Data Catalogs: Guidance on the selection and implementation of various technologies](#)<sup>39</sup>
- [Implementation Guide \(Enterprise Data Inventories\)](#)<sup>40</sup>
- [European Data Portal e-Learning Programme: What makes quality open data?](#)<sup>41</sup>
- [Open Data and Improving Data Quality](#)<sup>42</sup>
- [Data Management Plans](#)<sup>43</sup>

**3. Accessible and Usable** - When open data is released, it should be easily discoverable and accessible, and made available without bureaucratic or administrative barriers, which can deter people from accessing the data. The Accessible and Usable principle includes the following:

- Publish data on central portal
- Release data in open & standardized formats
- Release data free of charge under open & unrestricted license
- Release data without mandatory registration to access data
- Ensure data can be accessed & used efficiently by range of users
- Support initiatives to raise awareness of open data

#### Resources

- [European Data Portal e-Learning Programme: Choosing the right format for open data](#)<sup>44</sup>
- [European Data Portal e-Learning Programme: Why do we need to license?](#)<sup>45</sup>
- [European Data Portal e-Learning Programme: How useful is my data?](#)<sup>46</sup>

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<sup>38</sup> Why “set the default to open”? Because information is a public good -

<https://sunlightfoundation.com/blog/2014/01/29/why-set-the-default-to-open-because-information-is-a-public-good/>

<sup>39</sup> Open Data Toolkit, Technology Options - <http://opendatatoolkit.worldbank.org/en/technology.html#characteristics>

<sup>40</sup> <https://project-open-data.cio.gov/implementation-guide/>

<sup>41</sup> European Data Portal e-Learning Programme: What makes quality open data? -

<http://www.europeandataportal.eu/elearning/en/module5/#/id/co-01>

<sup>42</sup> Open Data and Improving Data Quality - <http://www.opendataenterprise.org/reports/BriefingPaperonOpenDataandImprovingDataQuality.pdf>

<sup>43</sup> <https://www2.usgs.gov/datamanagement/plan/dmplans.php>

<sup>44</sup> European Data Portal e-Learning Programme - <http://www.europeandataportal.eu/elearning/en/module9/#/id/co-01>

<sup>45</sup> European Data Portal e-Learning Programme: Why do we need to license? -

<http://www.europeandataportal.eu/elearning/en/module4/#/id/co-01>

<sup>46</sup> European Data Portal e-Learning Programme - <http://www.europeandataportal.eu/elearning/en/module10/#/id/co-01>



**4. Comparable and Interoperable** - In order to be most effective and useful, data should be easy to compare within and between sectors, across geographic locations, and over time. In addition, data should be presented in structured and standardized formats to support interoperability, traceability, and effective reuse. The Comparable and Interoperable principle includes the following:

- Implement consistent open standards
- Ensure data includes metadata & is available in human & machine-readable formats
- Provide clear & comprehensive documentation
- Engage with domestic & international standards bodies
- Map local standards & engage with emerging global standards

Resources

- [Metadata Standards](#)<sup>47</sup>
- [Primer on Machine Readability for Online Documents and Data](#)<sup>48</sup>

**5. For Improved Governance and Citizen Engagement** - Engagement and consultation with citizens and civil society and private sector organizations can help governments understand which types of data are in high demand, and, in turn, can lead to improved data prioritization, release, and standardization practices. The Improved Governance and Citizen Engagement principle includes the following:

- Report regularly to the public
- Release transparency or anticorruption information as open data
- Training, tools & guidelines to support government employees
- Engage with Freedom of Information/Access to Information/Right to Information community
- Engage with non-state actors to identify data needs
- Respect citizens' right to freedom
- Encourage open data policy solutions

Resources

- [Engaging Reusers Guide](#)<sup>49</sup>
- See "Section V" for Open Data Learning Resources

**6. For Inclusive Development and Innovation** - Governments must also play an active role in supporting the effective and innovative reuse of open data, and ensuring government employees, citizens, and civil society and private sector organizations have the data they need and the tools and resources to understand and use that data effectively. The inclusive development and innovation principle includes the following:

- Support creation of rich open data ecosystem
- Create/explore partnerships
- Create/support programs & initiatives fostering development or co-creation of datasets
- Engage with schools & post-secondary education
- Conduct/support research on impacts of open data
- Build capacity & share technical expertise & experience
- Empower future generation of data innovators

Resources

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<sup>47</sup> Metadata Standards - <http://knowhow.opendatamonitor.eu/odresearch/metadata-standards/>

<sup>48</sup> Primer on Machine Readability for Online Documents and Data - <http://www.data.gov/developers/blog/primer-machine-readability-online-documents-and-data>

<sup>49</sup> Engaging with Reusers: Guide - <https://theodi.org/guides/engaging-reusers>

- [Open Data for Development \(OD4D\) Network<sup>50</sup>](#) - The Open Data for Development (OD4D) is a global network of leaders in the Open Data community, working together to develop open data solutions around the world.
- [European Open Data e-Learning Module - Unlocking Value from Open Data<sup>51</sup>](#)
- [Briefing Paper: Sharing and Applying Research Data<sup>52</sup>](#)

## **Understanding Open Data Demand**

Meaningful user engagement is essential to develop and maintain successful open data programs. The demand for government data, provides a compelling rationale for growing these programs and helping prioritize the most important datasets based on a user perspective. The following resources can be used to assess the demand for government data:

- [Open Data Impact Map<sup>53</sup>](#) - The first public database of open data use cases from around the world.
- [Engaging Re-users Guide<sup>54</sup>](#) - A guide including strategies to help maximise reuse by engaging with users.
- [Open Data for Business Tool<sup>55</sup>](#) - An assessment methodology to understand the current and potential private sector demand for government data.

## **Developing User-Centered Open Data Portals**

To learn about the various options for open data platform, refer to the European Data Portal's e-Learning Programme, "[Getting Grips with Platforms](#)"<sup>56</sup>. Commonly used open data platforms include the following<sup>57</sup>:

### **CKAN**

**CKAN** is an open-source data catalog formally supported by the [Open Knowledge Foundation](#), and can be installed on any Linux server, including cloud-hosted configurations. The Open Knowledge Foundation also offers hosting services for a monthly fee. CKAN is written in the Python programming language and designed for publishing and managing data either through a user interface or an API. CKAN has a modular architecture through which additional or custom features may be added.

### **DKAN**

**DKAN** is designed to be "feature compatible" with CKAN. This means that its underlying API is identical, so systems designed to be compatible with CKAN's API should work equally well with DKAN. DKAN is also open source, but it is based on Drupal, a popular content management system written in PHP instead of Python. This may be more appealing to organizations that have already invested in Drupal-based websites. Drupal has its own modular architecture with thousands of modules available for download. It also has an option to customize modules and a large developer community.

### **Junar**

**Junar** is a cloud-based SaaS Open Data platform, so data is typically managed within Junar's infrastructure (the "all-in-one" model). Junar can provide either a complete data catalog or data via an API to a separate user catalog.

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<sup>50</sup> Open Data for Development Network - <http://od4d.com/>

<sup>51</sup> Unlocking value from open data - <http://www.europeandataportal.eu/elearning/en/module2/#/id/co-01>

<sup>52</sup> <http://www.opendataenterprise.org/reports/BriefingPaperonOpenDataforSharingandApplyingResearchData.pdf>

<sup>53</sup> Open Data Impact Map - <http://opendataenterprise.org/map>

<sup>54</sup> Engaging with Reusers: Guide - <https://theodi.org/guides/engaging-reusers>

<sup>55</sup> Open Data for Business Tool - [http://opendatatoolkit.worldbank.org/docs/odra/od4b\\_v2.8-en.pdf](http://opendatatoolkit.worldbank.org/docs/odra/od4b_v2.8-en.pdf)

<sup>56</sup> European Data Portal e-Learning Programme - <http://www.europeandataportal.eu/elearning/en/module8/#/id/co-01>

<sup>57</sup> Open Government Data Toolkit, Commonly Used Platforms - <http://opendatatoolkit.worldbank.org/en/technology.html#platforms>

### OpenDataSoft

[OpenDataSoft](#) is a cloud-based SaaS platform that offers a comprehensive suite of Open Data and visualization tools. The platform supports common Open Data formats such as CSV, JSON and XML, as well as many geospatial formats such as KML, OSM and SHP. Search functionality is very straightforward and easy to use.

### Semantic Media Wiki

[Semantic MediaWiki](#) is an extension of [MediaWiki](#) – the wiki application best known for powering [Wikipedia](#). While traditional wikis contain only text, Semantic MediaWiki adds semantic annotations that allow a wiki to function as a collaborative database and data catalog. Semantic MediaWiki is an [RDF](#) implementation, meaning that both data and metadata are stored as linked data and are accessible via linked data interfaces such as [SPARQL](#).

### Socrata

[Socrata](#) is a cloud-based SaaS Open Data catalog platform that provides API, catalog and data manipulation tools. One distinguishing feature of Socrata is that it allows users to create views and visualizations based on published data and save them for others to use. Additionally, Socrata offers an open-source version of its API, intended to facilitate transitions for customers that decide to migrate away from the SaaS model.

### Additional Reading

These links provide more information and background on technology options.

- [Technology Options for Open Government Data Platforms](#) (World Bank, January, 2014). This white paper discusses characteristics of several products and services provided by different organizations.
- [Technical Assessment of Open Data Platforms for National Statistical Organisations](#) (World Bank, October, 2014). This research report is intended to provide a better understanding and assessment of the technical issues related to data dissemination tools that NSOs use to distribute data to the public under an Open Data initiative.
- [Open Data Checklist](#). This checklist of Open Data best practices provides a good reference for the typical requirements of an Open Data platform.
- [ODI Presentation: How to choose the right Open Data platform for you](#) (Open Data Institute, 2014). This slide deck presentation gives a thorough overview of the key considerations in choosing an Open Data platform, and includes a brief overview of several of the most prominent products.

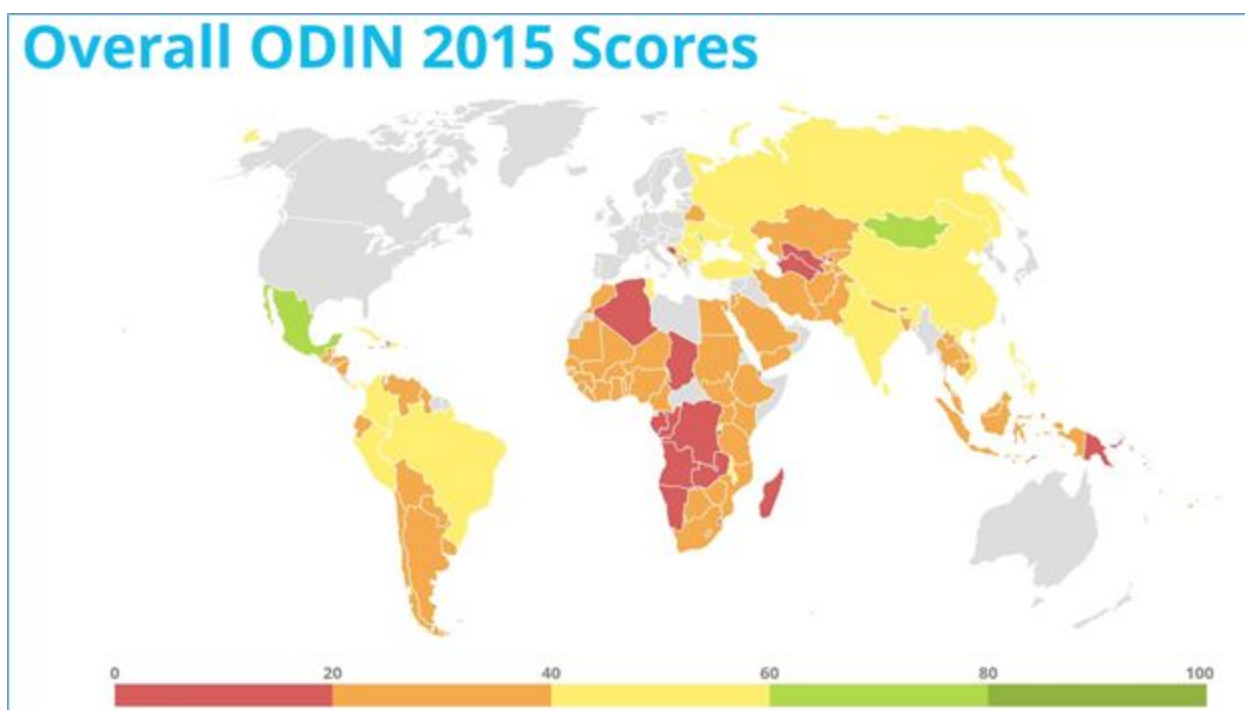
## Open Data and Official Statistics for Sustainable Development



### The Open Data Inventory:

**An objective assessment of the coverage and openness of official statistics**

National statistical systems produce authoritative measures of the health, educational status, and well-being of their citizens and residents. They also compile important indicators of the size and performance of the economy and the state of the natural and built environment. Many of these official statistics are included in the Sustainable Development Goals or underpin the construction of other SDG indicators. National statistical offices, as the principal agencies overseeing the production and dissemination of official statistics, have the responsibility under the *Fundamental Principles of Official Statistics* to “[serve] the government, the economy and the public with data about the economic, demographic, social and environmental situation. To this end, official statistics that meet the test of practical utility are to be compiled and made available on an impartial basis by official statistical agencies to honor citizens’ entitlement to public information.”



The Open Data Inventory (ODIN) provides an assessment of the breadth of coverage and the openness of statistics produced by national statistical systems. Assessments are carried out annually by Open Data Watch, a non-profit, non-governmental organization committed to improving the quality and availability of statistics worldwide. The results of the ODIN assessments are available online at <http://odin.opendatawatch.com/> under an open license that permits their use and reuse by anyone.

### **ODIN Methodology**

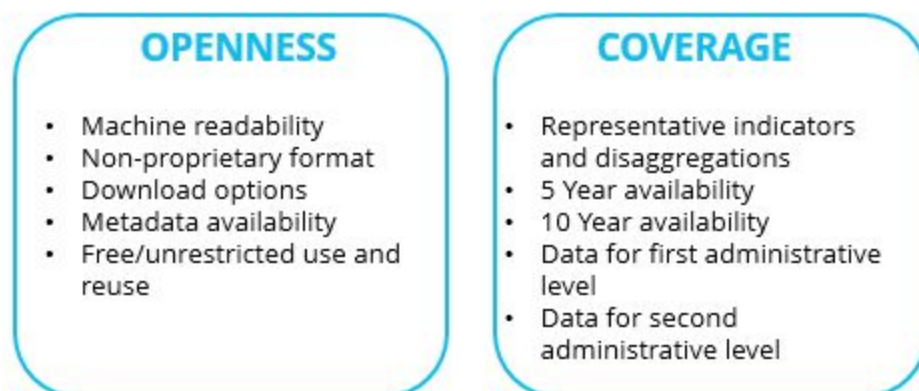
The Open Data Inventory assesses twenty categories of statistics made available on the official websites of national statistical offices. The twenty data categories are:



All twenty ODIN data categories contribute directly or indirectly to the measurement of all seventeen SDGs. Not surprisingly, population and vital statistics have the most pervasive effect, playing a role in 11 SDGs, followed by poverty statistics, national accounts, labor statistics, resource use, and pollution statistics. Without the official statistics produced by national statistical systems, it would not be possible to monitor the SDGs.

Each data category is evaluated on five elements of coverage and five elements of openness. ODIN guidelines provide strict criteria for assessing each element. The objectivity and reproducibility of ODIN results permit comparison over time and between countries or regions. ODIN assessments are accompanied by detailed notes that provide the location of each data series, thus providing a quick reference to the data available in each country.

The elements of openness and coverage considered in the ODIN assessments are:



In 2015 ODIN assessments included 125 mostly low- and middle-income countries. In 2016 ODIN assessments will cover 175 countries, including many high-income, OECD members.

### Using ODIN assessments

ODIN results can be used to identify gaps in data coverage or shortcomings in openness. Analysis of the 2015 ODIN results reveal that the coverage of economic statistics is generally better than social statistics,

and the greatest gaps are in the environmental categories. The assessment of openness reveals that only a third of all data are available in machine readable formats such as XLS or CSV and less than 10 percent are in non-proprietary formats such as CSV or XML. Perhaps the greatest obstacle to openness is that fewer than 10 percent of the official websites included terms of use that permitted unrestricted use and reuse of data.

The ODIN website provides detailed visualizations of ODIN results and an option to download item scores for one or more countries.

National statistical offices can use ODIN assessments to prioritize their development plans. In many cases improvements and coverage can be made quite inexpensively. Coverage scores can be improved by making data that already exist available online. Most countries could improve their openness scores by clearly stating their terms of use and providing data in non-proprietary, machine-readable formats. Other improvements may take longer to implement and require greater resources, such as extending coverage to the subnational level or providing options for user selection of data or an application programming interface (API).

ODIN assessments will also be of value to other statisticians and data users by providing a comprehensive guide to the availability of official statistics and their location. Over time the evolution of ODIN scores will track progress toward creating a national statistical system that serves the needs of all people.

## **Steps to Open Data**

ODIN assessments are meant to guide countries in making changes to improve the usefulness and accessibility of their data for stakeholders across sectors. The challenge is to translate scores into effective actions.

### ***Build Awareness of ODIN Scores***

Understanding the components of the ODIN scores will clarify the issues that need to be addressed. Recently, a presentation on ODIN was given at the National Roadmaps Workshop in Sierra Leone. It covered Sierra Leone's overall score as well as the sub-scores by data category and elements. This showed representatives from Statistics Sierra Leone (SSL) specific areas where the data published on their website need strengthening.

### ***Consult on Priorities***

Initiate a consultation with stakeholders on priorities for improvement. The data context facing each country is distinct, with its own set of demands and limitations. At the workshop in Sierra Leone, following an Open Data Readiness Assessment, much emphasis was placed on openness. Although SSL had concerns about implementing open terms of use, citing the possibility of misuse, discussions still focused on identifying the quickest low cost ways to improve openness.

### ***Identify Quick Wins and Articulate Action Items***

Identify specific, achievable activities with clearly defined responsibilities. In the case of Sierra Leone, several ways to improve the openness score across all of SSL's available data sets were highlighted. The least costly improvement was implementing clear, open terms of use for all data on their website. This requires only political buy-in and minor edits to the existing SSL website, although some countries may also require changes to the enabling statistical law. Improving data coverage or adding an application programming interface (API) to a website may require greater financial and human resources and should be guided by the country's national statistical development plan.

### ***Implement Changes***

The final step is to follow through and implement change. In Sierra Leone, discussions are underway on how to implement necessary changes before the end of the 2016 assessment cycle. The opportunity to improve ODIN scores from one year to the next provides an incentive for swift implementation. The purpose of ODIN is not to enforce rules on the NSO or to create a competition between countries. Instead, having helped to identify gaps, it can now serve as a measure of progress.

### **More information**

The 2015 ODIN report is available at

<http://odin.opendatawatch.com/Downloads/otherFiles/ODIN-2015-Annual-Report.pdf>

Individual country profiles can be selected at

<http://odin.opendatawatch.com/report/pressReport>

A description of the ODIN methodology is available at:

<http://odin.opendatawatch.com/Downloads/otherFiles/ODIN-2015-Methodology.pdf>

### **Help from Open Data Watch**

Open Data Watch is available to assist countries in understanding ODIN results, identifying opportunities for improvements, and building partnerships to support efforts to increase the coverage and openness of national statistical systems

For questions or to request assistance in the use of ODIN assessments, please contact:



**Open Data Watch**

1110 Vermont Avenue

Washington, DC 20005

USA

Email: [info@opendatawatch.com](mailto:info@opendatawatch.com)

Telephone: +1 301 320 3020

Business hours: Monday-Friday, 10:00 to 18:00 (GMT -5)



## **Measuring Progress on Open Data**

To understand a country's level of data openness and accessibility relevant to achieving sustainable development, the following resources are often cited:

- [The Open Data Barometer \(Web Foundation\)](#)<sup>58</sup> - Ranks countries on their readiness for open data initiatives, implementation of open data programs, and impact that open data is having on businesses, politics and civil society.
- [The Global Open Data Index \(Open Knowledge International\)](#)<sup>59</sup> - An annual effort to measure the state of open government data around the world. The crowdsourced survey is designed to assess the openness of specific government datasets
- [Open Data Inventory \(ODIN\)](#)<sup>60</sup> - ODIN assesses the coverage and openness of official statistics to identify gaps, promote open data policies, improve access, and encourage dialogue between national statistical offices (NSOs) and data users.

To learn more about the various options for measuring progress refer to the European Data Portal's e-Learning Module on "[Measuring Success for Open Data](#)."<sup>61</sup>

## **V. OPEN DATA LEARNING RESOURCES**

Books, handbooks, manuals, presentations and other training materials on the topic of Open Data<sup>62</sup>:

- [Open Data Handbook](#) (Open Knowledge Foundation). Details the "why, what and how" of Open Data; especially helpful for those responsible for opening government data
- [European Data e-Learning Portal](#) This programme has been designed to enable you to discover what open data is and how it is changing the lives of everyone on our planet.
- [Data Wrangling Handbook](#) (School of Data). Provides a glossary and explains the basic stages of data processing (e.g., acquisition, extraction, cleaning, transformation, integration, analysis, presentation); for all experience levels
- [Data Journalism Handbook](#) (European Journalism Centre & OKFN). Open-source reference book exploring data journalism
- [Open Data: An Introduction](#) (Open Knowledge Foundation). Overview of requirements for Open Data and related content; advocates using "openness" to contribute to open knowledge
- [Open Data Field Guide](#) (Socrata). Collection of lessons learned by pioneers of the Open Data movement; for public servants in government, nonprofits and NGOs
- [Open Data Guides Series](#) (ODI). This series provides background and training on specific topics such as licensing, data anonymizing, making the business case for open data, and many more. This collection expands over time.
- [Open Data Research Network](#). Network that connects researchers from across the world who are exploring the implementation and impact of Open Data initiatives
- [Beyond Transparency: Open Data and the Future of Civic Innovation](#). Book that surveys Open Data, with a focus on its civic applications; practitioners discuss their accomplishments with open civic data

<sup>58</sup> Open Data Barometer - [http://opendatabarometer.org/data-explorer/?\\_year=2015&indicator=ODB&lang=en](http://opendatabarometer.org/data-explorer/?_year=2015&indicator=ODB&lang=en)

<sup>59</sup> Open Data Index (Open Knowledge International) - <http://index.okfn.org/>

<sup>60</sup> Open Data Inventory (Open Data Watch) - <http://odin.opendatawatch.com/>

<sup>61</sup> European Data Portal e-Learning Programme - <http://www.europeandataportal.eu/elearning/en/module6#/id/co-01>

<sup>62</sup> World Bank Open Government Data Toolkit - <http://opendatatoolkit.worldbank.org/en/>



- [Open Data for Resilience Initiative \(DRI\) Field Guide](#) (World Bank). Discusses how to craft a strategic vision, budget and hire personnel for and evaluate impacts of Open Data and implement the Open DRI vision to build resilient societies; intended to improve access to disaster risk management data from public data catalogs; especially helpful for planners and program officers
- [Open Data: Challenges and Opportunities for National Statistical Offices](#) (World Bank). Provides an analysis of the opportunities and challenges that Open Data presents to NSOs and the steps and solutions needed to enable NSOs to play a valuable role in national or subnational Open Data initiatives
- [Community Informatics and Open Government Data](#). Special issue of the Journal of Community Informatics explores the connections between open government data and other topics such as transparency, Right to Information Laws, regulation and public planning.
- [Supporting sustainable development with open data](#). This report sets out ways that governments, donors, NGOs, civil society and industry can apply open data to help realize the [sustainable development goals](#)

## VI. GLOSSARY

[Open Data Handbook Glossary](#) provides definitions of key open data terms relevant to developing your open data program or initiative.