APCICT
Asian and Pacific Training Centre for Information and Communication Technology for Development
ESCAP

Open Data Policy Framework in the Digital Economy

Executive Summary

The Fourth Industrial Revolution (4IR), driven by emerging technologies such as artificial intelligence, automation, Internet of Things (IoT), and big data analytics, has transformed industries and societies. At the heart of this revolution is data, making its availability and accessibility crucial. An Open Government Data (OGD) policy framework is essential in this digital era, aiming to enhance transparency, accountability, and public participation.

OGD policy strategy, legal frameworks, and governance structure are the main pillars for OGD implementation, driven by the open government philosophy, seeks innovation, participation, and accountability. Although many countries have embraced OGD programs, issues related to accessibility, usability, data ownership, quality, and technology infrastructure remain a challenge. Open Data Global partnership initiatives are playing an important role not only to provide guidelines for OGD policy for each country, but also to tackle global issues like climate change and pandemics.

The success of OGD initiatives relies on creating a vibrant OGD ecosystem that fosters interoperability and interconnectivity among key stakeholders.

The three main actors of OGD ecosystem (OGD providers (public agencies), users, and beneficiaries), which foster the dynamic interaction between providers and users to shape policies, strategies, and advancements within the open data ecosystem. Policymakers play a crucial role in continuously adapting the OGD policy framework to the evolving global digital economy. Selecting prioritized datasets, Regular upgrades, engagement with diverse stakeholders, and drawing upon globally recognized evaluation frameworks are essential to maximize the positive impact of OGD initiatives.

While no one-size-fits-all evaluation framework exists, establishing an OGD evaluation framework is crucial for assessing the success and impact of initiatives at national, business, and individual levels. The Open Data Charter which involves over 170 governments and organizations in promoting open data principles as well as the Open Data Barometer developed by the Worl Wide Web Foundation in 2016 are important frameworks for measuring and evaluating open data initiatives.

To ensure the successful diffusion and meaningful utilization of OGD, establishing

OGD quality management structure throughout the data(information) life cycle is required for diagnosing and improving data quality consistently. It is important to set the data governance related to policy, Standards, methodology, tools to define the quality goals before implementing and operating quality management process.

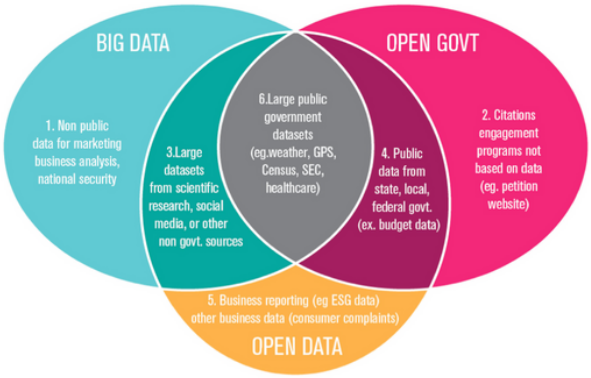
The uniqueness of open data is identified as equality, scrutiny, trust, participatory, value amplifier, and flexibility as the open innovation driver and facilitator. In particular, participatory and value amplifier have been regarded as more relevant and powerful in developing countries because meaningful participation from diverse stakeholders including marginalized communities is often limited. Also mismatch between the supply and demand of the open data is one of main obstacles because politically sensitive datasets and those essential for accountability are often among the least likely to be published. Therefore, complementing data provision with greater engagement and participatory approaches is a crucial factor in unlocking the true potential and value of open data.

The government's role as an OGD provider, leader, catalyst and user needs to foster open data skills within government institutions and collaborate with private sector. Also constantly addressing gaps and challenges in Open Data availability is also crucial to realize its widespread effective use and impact in developing countries. Fostering Open Data skills within government institutions, promoting private sector in developing countries.

Finally, emphasizing data integrity, privacy, and clear open licensing principles will enhance transparency and reusability as well as unlocking the full potential of Open Data for positive societal impacts and economic growth.

Open Government Data

Open Government Data (OGD) is a philosophy and a set of policies that aim to enhance transparency, accountability, and value creation by making 'government data' freely available and accessible to the public (OECD, 2019). OGD allows unrestricted use, reuse, and redistribution of data in a machine-readable format, facilitating easy access, analysis, and extraction of value by individuals, organizations, and systems.



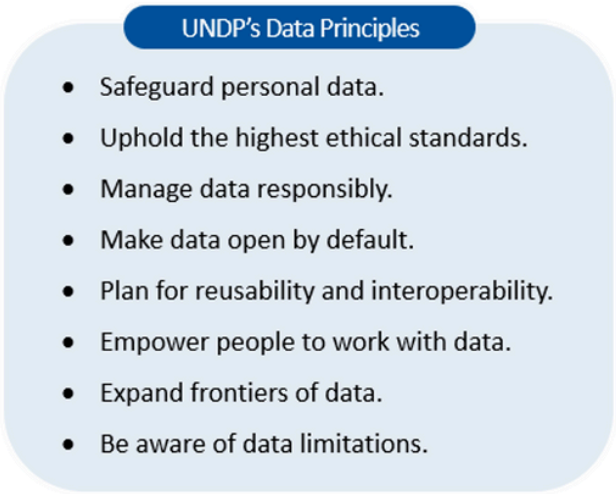
Source: Grossi et al. 2021

Principles of Open Government Data

In order to quality OGD in the maximum value, there are key OGD principles that are generally adapted by most countries.

- *Key OGD principles: Complete, Primary, Timely, Accessible, Machine processable, Non-discriminatory, Non-proprietary, License-free*

Those principles interconnected with United Nations Development Programme (UNDP)'s data principles that every government must adhere to.

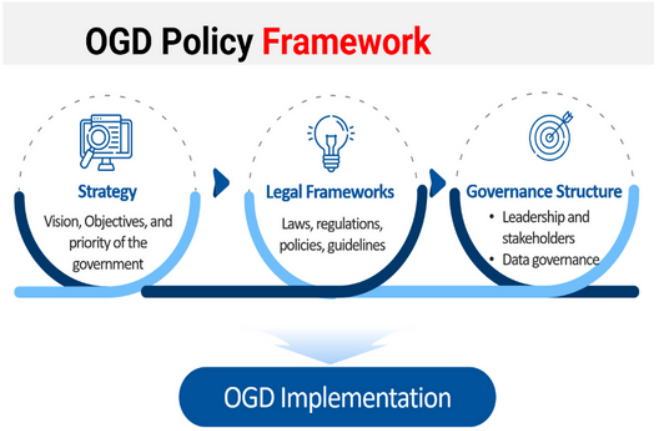


Source: www.undp.org

Open Data Policy Framework

The concept of OGD policy framework is well-defined set of criteria to ensure that the published government datasets comply with clearly articulated standards and are made available in a consistent, reliable, complete, and fully open manner. Therefore, OGD policy frameworks need to be established based on robust strategies and action plan to facilitate good governance and implementation (OECD, 2020).

OGD strategy, legal frameworks, governance structure are main three pillars for OGD implementation.



1. OGD Strategy:

OGD strategies are vision, objectives, and priority of the government that provide a common vision and understanding in establishing government-wide data governance affairs and data management capacities, which aims to build an overall environment that enables and incentivizes public data and reuse (OECD, 2020).

2. Legal Frameworks:

Legal frameworks within the OGD policy context encompass laws, regulations, policies, and guidelines governing the release, sharing, and use of government data. These frameworks provide clarity on rights and obligations, ensuring consistent and legally sound implementation. They address data protection, privacy concerns, intellectual property rights, accessibility standards, and accountability mechanisms.

Legal frameworks also address concerns by establishing guidelines for releasing sensitive information, safeguarding privacy through measures like anonymization. This promotes data protection and privacy.

These frameworks equally determine ownership and licensing, fostering data reuse while respecting copyright and intellectual property protections. Legal frameworks may mandate the use of open data formats, standards, and APIs to enhance interoperability and consistency as well as ensuring governments are held accountable.

3. Governance Structure:

As OGD policy and legal frameworks progress, the establishment of a governance structure becomes crucial. This structure defines rules, procedures, roles, and responsibilities within the decision-making process, guiding development, implementation, and oversight of the policy. OGD governance involves multiple layers, including management, legal and policy, technical and standards, and capacity.

In summary, the evolution of the OGD policy framework involves strategic planning, robust legal frameworks addressing key aspects, and the establishment of a comprehensive governance structure.

This multifaceted approach aims to create an environment that maximizes the positive impact of open government data on transparency, accountability, and public participation.

4. Portal Implementation:

The Implementation of OGD involves careful consideration of various factors. Typically, OGD is put into action through an Open Government Portal, which serves as a platform for releasing data through open data portals. This process involves navigating a complex decision-making journey, considering data ownership, embargo periods, transparency, dataset sensitivity, data quality, and metadata (Safarov,2019)

The governance structure of OGD extends to exploring open data portals, considering their functional design and features, such as the availability of APIs for accessing datasets and system wide management capabilities. The Open Government Portals acts as a practical representative of the OGD policy, offering guidance for implementing the managing open data initiatives. It aligns with the policy's objectives and principles, follows defined workflows and standards, and utilizes a governance mechanism for coordination and oversight (UNDP, 2023).

Open Data Ecosystem in Digital Economy

The global open government philosophy has stimulated a transparency movement with goals of innovation, participation, and accountability. Governments worldwide are adopting open data programs, anticipating economic, social, and political benefits from free and open publication of the data. However, challenges persist in the widespread adoption of OGD, involving issues of accessibility, usability, data ownership, quality, and infrastructure development. Despite the availability of datasets in OGD portals, the utilization for value creation remains limited, highlighting a gap in established solutions for promoting widespread adoption. Therefore, the understanding of the OGD ecosystem, which encompasses the interoperability and interconnectivity of OGD among various actors and resources related to OGD generation, management, and utilization, is essential for success in the digital economy. The OGD ecosystem plays a crucial role by providing access to valuable data resources that drive innovation, economic growth, and social benefits. From the comprehensive view of the OGD ecosystem, OGD providers, users, and beneficiaries are the main actors and key stakeholders.

OGD Providers:

OGD providers, typically central government agencies or public institutions are responsible for collecting, managing, and publishing OGD as well as entitled to restrictions related to national security, commercial sensitivity, and privacy.

The OGD policies and governance frameworks serve as the foundation for national data collection, management, and publication across various domains. These frameworks establish principles, guidelines, and legal structures, authorizing the government's role in the OGD ecosystem. They also ensure governance mechanisms for data oversight, privacy protection, and ethical considerations.

Local governments, including cities, counties, and municipalities, contribute by producing geographically specific data on local budgets, services, and infrastructure. Communication channels between OGD producers and the public vary, including OGD portals, websites, Data APIs, and collaborative platforms. Local governments play a crucial role by making jurisdiction-specific data accessible, addressing local issues, and collaborating with central government agencies for a

coordinated OGD approach.

Policymakers must navigate legal and ethical considerations, weigh risks and benefits, and consider public opinion and expert advice. Opening data to public bodies, businesses, and citizens has numerous benefits. However, concerns about revenue loss, increased scrutiny, and management efforts may hinder data openness. The decision is influenced by the governance system and understanding the impact of governance models is crucial for shaping policies that balance transparency and the protection of sensitive information.

Government's opening data process

OGD Users:

Open government data (OGD) users encompass a diverse range of individuals, businesses, researchers, journalists, civil society organizations, and government agencies. Each user group utilizes open data in unique ways to drive innovation, research, decision-making, and value-added services. The global momentum behind OGD has faced a recent slowdown, with concerns about reduced publication speed and a perception that OGD is considered peripheral (Barometer, 2018).

One contributing factor is the underutilization of OGD, attributed to obstacles in transforming data into tangible products and services. Understanding the user process in utilizing OGD is crucial, involving stages of identification, acquisition, enrichment, and deployment.

- **Identification Stage:** Users explore available OGD to assess relevance and potential uses. Methods include searching OGD portals, engaging with publishers, or participating in hackathons.

- **Acquisition Stage:** Users move to this stage to access and obtain identified OGD by downloading data files, using APIs, or data query tools provided by publishers.

- **Enrichment Stage:** Users process and analyze acquired OGD to derive insights and create value. Activities involve cleaning, transforming, statistical analysis, visualization, or combining with other datasets.

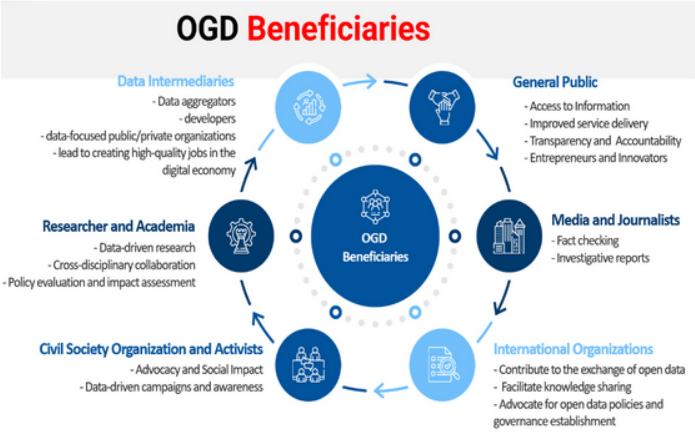
- **Deployment Stage:** Users utilize insights, applications, or services derived from OGD. This includes sharing findings, incorporating data into decision-making, developing products, or creating data-driven applications.

OGD can generate value through transparency, participation, efficiency, and innovation mechanisms. These mechanisms are interconnected, working synergistically to unlock OGD's potential for creating economic and social value.

OGD Beneficiaries:

OGD data use yields various benefits for private sector entities, civil society, and the government. These advantages span social, political, economic, and operational realms, impacting quality of life, economic growth, trust, and transparency.

In turn, such benefits affect the demand and motivation to further develop the OGD programs (Dawes et al., 2016).



As the understanding of the digital economy deepens, collaborative efforts and effective regulations become increasingly important. This allows OGD ecosystem actors to work together in developing innovative solutions and expand globally with the recognition of multinational issues and the necessity of cross-border collaboration.

OGD is seen as having substantial potential to enhance democratic governance, political participation, service improvements, and innovation across various sectors. Understanding dynamic relationships among different components and stakeholders is crucial for maximizing benefits in the OGD ecosystem.

Intentional cultivation of ecosystems, where governments interact with constituencies, unlocks the value of open government.

OGD Evaluation Frameworks

In the ever-evolving global digital economy, the OGD evaluation framework stands as a dynamic entity, demanding continuous adaptation. While there is no single standardized evaluation framework universally applicable to all countries due to their varying priorities, policymakers leveraged recognized evaluation frameworks established by international organizations and communities. These frameworks serve as invaluable benchmarks, offering insights to policymakers on effectively managing the quality of OGD data and services. They also become the cornerstone for assessing the existence and effectiveness of implementation plans and strategies at national, business, and individual levels.

The Open Data Charter (ODC) is a collaborative initiative involving over 170 governments and organizations, promoting open data principles since 2015. The ODC's Measurement Guide provides comprehensive guidelines for measuring the impact of open data initiatives, focusing on transparency, citizen engagement, and innovation. The emphasis lies in establishing a consistent data management strategy and practice, incorporating guidelines for metadata, publication frequency, data inventories, documentation, quality assurance procedures, and user feedback management.

The Open Data Barometer (ODB) was developed by the World Wide Web Foundation in 2016. It measures the readiness and impact of open data initiatives across 115 countries. Assessment includes policy, implementation, and impact aspects of open data ecosystems based on a tripartite structure: readiness, implementation, and impact, each comprising three components. Its methodology structure was founded on the need for active engagement from the Government, Civil Society, and the Private Sector for successful OGD initiatives.

Global Open Data Index (GODI) is an independent assessment of open government data publication from a civic perspective and a global benchmark run by the Open Knowledge Network using crowdsourced survey measures, allowing for insights into data gaps and improvements. Its methodology focuses on predetermined categories to ensure comparability and usefulness and minimize bias in assessments.

The GODI's structured evaluation method aims to make sure of a fair assessment of open data, encouraging transparency and improvements while providing valuable feedback to governments and stakeholders.

European Open Data Maturity Assessment (EODMA) is a tool for assessing open data maturity across European countries, developed and managed by the European Commission. It aims to help countries understand their open data maturity levels, capture progress, and identify areas for improvement.

The assessment criteria initially focused on readiness and maturity indicators for national open data portals and evolved to incorporate open data quality, reuse, and impact. It was designed for comparative analysis of each member state's open data policies and strategies in regional and local contexts and has evolved, expanding focus to encompass policy, impact, portal, and quality dimensions.

Recently, the 2022 revision heightened focus on countries' readiness for the European Commission's upcoming implementing regulation on high-value datasets.

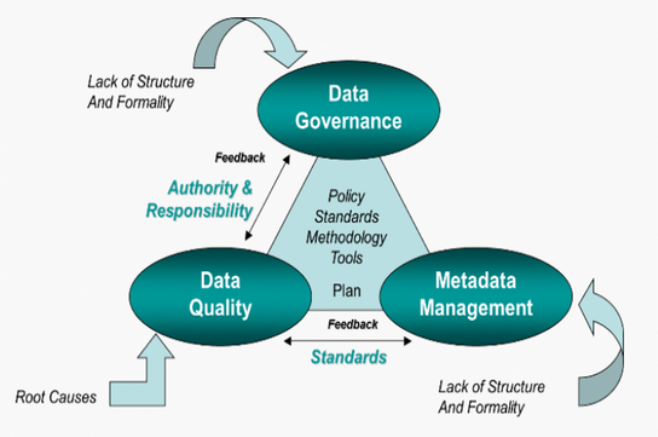
OGD Quality Management

The surge in OGD adoption raises concerns about the potential negative consequences of releasing data without adequate quality control. The absence of quality assurance measures can impede dataset reuse and undermine civic participation. “Data Quality Management” involves setting goals, diagnosing, and improving data quality,traditionally considered a post-construction task. A systematic approach to data quality management throughout the information life cycle ensures prioritized and consistent data quality, enhancing OGD reliability, usefulness, and benefiting citizens and society. These frameworks assess accuracy, completeness, and relevance, enhancing citizen trust and promoting data usage for societal benefits.

Overcoming interoperability restrictions is a challenge for public managers in effectively opening up government data. Despite efforts, the overall volume of open government data is limited, especially concerning economic growth-related uses.

Data Governance, Metadata Management, and Commitment to Continuous Data Quality Improvement serve as fundamental pillars of effective data management strategy.

Data Management Structure



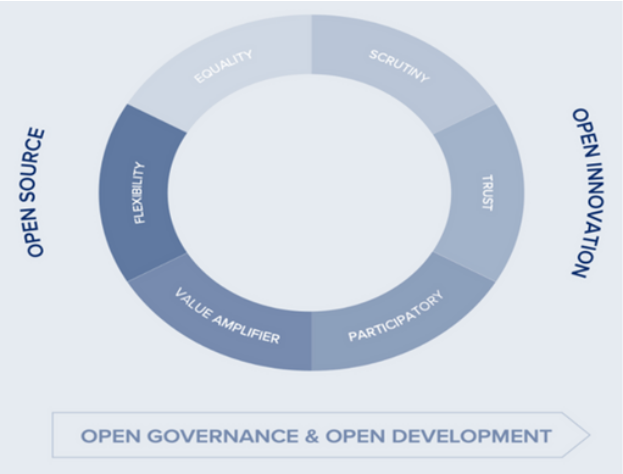
Source: https://logandata.com/data-governance

Robust data quality management practices are essential for enhancing the reliability and usefulness of OGD. While progress has been achieved in OGD management and evaluation, continuous efforts are required to enhance data quality measurement methodologies so that OGD remains a reliable resource for all stakeholders. In conclusion, collaborative global efforts and advancements in evaluation frameworks and data quality management are crucial to maximize the potential benefits of OGD for society and the economy.

Policy Recommendations

Unlocking the full potential of OGD requires a comprehensive and strategic approach that extends beyond the mere act of making data available on a website. International experiences have revealed that while the initial release of data is a crucial step, sustaining and maximizing the impact of OGD initiatives is an ongoing journey. Even in countries at the forefront of embracing Open Data, the complete requirements for successful and sustainable utilization, as well as the development of its supporting ecosystem, are still being explored.

The exploration of OGD in developing countries reveals common features and challenges.



Source: www.odimpact.org

- **Participation:** Developing countries face challenges in ensuring meaningful participation due to limited internet access, language barriers, and awareness gaps.

- **Value Amplifier:** While open data can bridge gaps and increase value, challenges include prioritizing datasets, addressing data completeness, and ensuring accuracy.

- **Flexibility:** Interoperable and machine-readable open data offer innovative potential, but challenges include data standardization, fostering data sharing practices, and addressing limited machine-readable data in developing countries.

- **Equality:** Open data has the potential to promote equity, but challenges include accessibility for marginalized communities, addressing cultural factors, and leveraging Right to Information (RTI) laws.

- **Trust:** Open data can foster trust, but challenges include ensuring data accuracy, reliability, and preventing manipulation, particularly in developing countries with existing and new data ecosystems.

- **Scrutiny:** Open data brings scrutiny, exposing government data to external actors and promoting transparency, accountability, and improved data quality.

Government's role as an OGD Provider, Leader, Catalyst, and User

As an OGD Provider, responsive data release plays a key role by engaging with stakeholders and prioritizing core reference data, enhancing data discoverability, ensuring data supply continuity, and releasing detailed and disaggregated data to maximize economic benefits.

Also, extending data release beyond ministries requires leadership for the government by actively promoting open data use and showcasing practical applications within each ministry. Comprehensive open data strategies for diverse entities need to be developed.

As a catalyst, the government has to foster collaborative and demand-driven open data portals, enhancing accessibility and understanding and leveraging existing government programs for maximum impact.

Finally, the government's role as a user involves fostering Open Data skills development within government institutions. Empowering officials with comprehensive Open Data skills and continuous leadership is crucial for responsible data release and transforming the way officials work. Encouraging government adoption of private sector data services and products is the second key strategy, promoting the use of innovative services for better decision-making and fostering collaboration with the private sector.

In summary, it is essential to address challenges and promote the development of open data skills within governmental organizations to unlock the transformative possibilities of Open Government Data (OGD) in developing nations. This approach will contribute to advancing governance, refining policymaking, and augmenting the overall public value.