Data Availability and Usability in Data-Based Decision-Making for Development : A Study of the IATI Database and its User Interface

Phase 1 Report

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Table of Contents

List of Tables and Figures

List of Abbreviations

COP	Community of Practice
CDFD	Country Development Finance Data
DBDM	Data-Based Decision-Making
DDDM	Data-Driven Decision-Making
DIDM	Data-Informed Decision-Making
DMP	Decision-Making Process
DPG	Digital Public Goods
DPI	Digital Public Infrastructure
DSS	Decision Support Systems
GPEDC	Global Partnership for Effective Development Co-operation
HDI	Human Development Index
HLF	High-Level Fora on Aid Effectiveness
IATI	International Aid Transparency Initiative
IMF	International Monetary Fund
JIU	Joint Inspection Unit
MDGs	Millenium Development Goals
NGO	Non-Governmental Organization
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
RBM	Results Based Management
SDGs	Sustainable Development Goals
UN	United Nations
UNDP	United Nations Development Programme
UNOPS	United Nations Office for Project Services
UNSDCF	United Nations Sustainable Development Cooperation Framework

Executive Summary

Data plays a crucial role in informing project planning and management. As understanding of aid motivations and delivery mechanisms has advanced, **digital public goods (DPGs) have emerged as pivotal components of development cooperation**. By improving access to information, DPGs enable governments and organizations to make data-driven decisions, enhance public service delivery, and promote transparency and accountability. They also facilitate cross-border collaboration and knowledge sharing among nations and stakeholders.

The International Aid Transparency Initiative (IATI) functions as one such DPG. IATI is a voluntary initiative that brings together a diverse range of actors in international development, including donor governments, multilateral organizations, civil society, and private sector entities to provide forward-looking data to enhance accountability and development planning. IATI is overseen by a Governing Board that provides strategic direction. The Members' Assembly serves as a collaborative platform where all IATI members come together to exchange insights, share best practices, and discuss challenges related to the use of IATI data. The IATI Secretariat supports the initiative by delivering activities. And the IATI Community is the body composed of all users involved with IATI's substantive work.

IATI oversees eight tools that employ the data collected according to the IATI Standard: the IATI Registry, Aid Information Management Systems (AIMS), d-portal, the IATI Dashboard, IATI Validator, Country Development Finance Data, IATI Datastore, and the API Gateway. These are all rooted in the same IATI dataset, which publishes detailed information on development and humanitarian projects. D-portal serves as the primary gateway for the standard actor in development to access and explore IATI data. The newest tool, the Country Development Finance Data (CDFD) tool, bridges the gap between technical and non-technical users by providing tailored access to aid data aligned with partner countries' national development priorities.

IATI's tools should serve as components of aid actors' data-based decision-making (DBDM), a process that adds value to previous approaches by focusing on "when" and "what" actions are most effective. While strategic planning addresses the foundational questions of "what" an organization seeks to achieve and "why" those objectives are important, and results-based management (RBM) focuses on "how" to operationalize these goals through mechanisms and processes, **DBDM helps determine the optimal timing and selection of actions to maximize effectiveness**.

Central to effective DBDM is the quality of data: the ease with which data can be accessed, understood, and applied by decision-makers to drive meaningful actions. Data quality consists of four dimensions: (a) intrinsic quality, ensuring data is accurate, objective, and credible; (b) contextual relevance, addressing timeliness, completeness, and appropriateness to specific decisions; (c) representational clarity, focusing on interpretability and consistency; (d)

accessibility, emphasizing ease of use and security. However, user capacity is equally important, as it determines users' ability to transform available data into actionable insights.

Four distinct approaches were employed to identify and analyze IATI's data ecosystem, ensuring a comprehensive evaluation from multiple perspectives. These methodologies included reviews of published documentation, technical analysis of data architecture, stakeholder interviews, and scenario walkthroughs, each providing unique insights into IATI for DBDM.

While credibility and objectiveness are strengths of IATI's system, **intrinsic quality** remains a critical area for evaluation. IATI offers a Validator to ensure that submissions adhere to the Standard, but use of the Validator is voluntary and is not always used. Accuracy is also challenged by the lack of mechanisms to validate whether input values accurately reflect the financial realities of aid delivery. Another weakness in IATI's data accuracy is the lack of unique identifiers for distinguishing individual data entries.

Contextual relevance has improved by incorporating member demands on the code lists that define the IATI Standard. However, not all publishers comply with guidelines designed to ensure timeliness through frequent, regular updates. Completeness remains the biggest challenge. Publishers frequently fail to populate required fields, resulting in data gaps in critical areas such as project timelines, funding breakdowns, and geographic coverage. Additionally, limitations in the database schema introduce structural inefficiencies that hinder data integration and management. There are also performance issues with external projects, such as SQL queries.

Representational clarity is critical for a global standard like IATI. It is characterized by interpretability and consistency and addresses how effectively data is organized, presented, and structured to ensure it can be easily understood and consistently interpreted by users. The IATI Standard promotes consistency across datasets by defining how development data should be reported, structured, and formatted, making it easier for users to compare and aggregate data from different publishers. However, the absence of standardized attribute constraints affects how clearly and consistently data is presented. Additionally, fragmentation and overlap of IATI's multiple tools hinder the ability of users to efficiently locate and utilize the data they need and introduces data inconsistencies across platforms.

Accessibility determines how effectively users can engage with and leverage data for decision-making. Although data security is a key component of accessibility, IATI's central commitment to transparency as a digital public good effectively eliminates this concern. IATI works best when it is used for confirming facts, especially when searching for reference projects, identifying potential collaboration partners, and obtaining the aid profile of a specific organization. However, there are a number of issues with d-portal, the primary user interface: trends cannot be viewed both in time and across regions; selections cannot be easily scaled up or down; aid flows to a single country are difficult to distinguish from flows to multiple countries; and d-portal lacks a number of visualization tools.

IATI has made significant progress in fostering **user capacity.** User capacity encompasses the skills, tools, and organizational culture required for users to effectively leverage data for decision-making. This effort has benefitted from the UN system's broader organizational shift toward embracing DBDM. However, user capacity varies greatly across the system.

Many of IATI's challenges are rooted in the intrinsic nature of its voluntary framework, which leads to significant disparities in reporting quality among publishers. While IATI's adaptability has allowed it to evolve in response to emerging needs, this approach has also introduced fragmentation, such as inconsistencies across tools, schema changes, and a lack of backward compatibility. However, the steady improvement in data quality has positioned IATI as a vital DPG in coming decades.

I. Introduction

1.1 Project Description

Data plays a crucial role in informing project planning and management. Digital public goods (DPGs) are pivotal in development cooperation, fostering inclusivity, innovation, and efficiency across various facets of international development. By improving access to information, DPGs enable governments and organizations to make data-driven decisions, enhance public service delivery, and promote transparency and accountability. They also facilitate cross-border collaboration and knowledge sharing among nations and stakeholders.

However, DPGs face challenges related to data accessibility, quality, and accuracy, which can hinder the effectiveness of development programs. Despite their public nature, accessing development data can be difficult, and interpreting it once accessed poses further challenges, impeding data-based decision-making for development actors. Moreover, maintaining DPGs over the long term can be challenging due to interoperability issues within reporting structures. Addressing these shortcomings requires concerted efforts to enhance access, improve data quality, and ensure the sustainability of DPGs, thereby advancing effective and inclusive development cooperation.

One example of a DPG is the International Aid Transparency Initiative (IATI), described as "a global initiative to enhance the transparency of development and humanitarian resources and their outcomes to address poverty and crises." Aid transparency is believed to improve coordination, effectiveness, and accountability among aid actors, thereby maximizing positive impacts and minimizing negative ones. IATI encourages all stakeholders to submit information on their aid activities in a standardized format that can be integrated into a publicly accessible database through different platforms like the Initiative's own d-portal.

Despite its potential benefits, there is anecdotal evidence suggesting that the IATI database has not fully met expectations, with potential users reportedly unable to effectively obtain the information they need. Consequently, there is a demand for research to better understand these challenges and improve uptake. This research aims to assess the IATI database, its interfaces, and user experiences to identify areas for enhancement in data collection, database design, interface usability, user awareness, training, and other pertinent aspects.

1.2 Project Outline (Goals, Scope, Methodology)

The objective of this project is to establish conceptual frameworks for digital tools. The project aims to lay the intellectual foundation for enhancing development cooperation in key areas such as development effectiveness, digital transformation, innovation, and capacity building. This includes developing potential solutions that will facilitate their conceptualization and implementation.

The project is structured into two main phases: exploration and development. The initial phase, which is detailed in this report, aims to conduct a preliminary problem assessment through a comprehensive investigation.

First, they conducted an evaluation of Official Development Assistance (ODA) motivations and relevant data needs, including its evolution toward more data-based decision making. This effort informs understanding of the differing data demands of various aid actors.

Second, researchers identified gaps in existing tools that hinder a clear understanding of the UN portfolio at the country level. These gaps include challenges such as difficulty in discerning which donor provides funding for which projects through which agency, understanding the projects implemented by each agency in a country, and identifying synergies between projects across different agencies.

Third, researchers undertook a thorough assessment of practical use cases of IATI and other data sources for gaining insights into the development and humanitarian activities of UN agencies at the country level.

In the upcoming second phase of the project, efforts will focus on developing potential solutions to address the issues identified in the initial phase. These solutions will be documented in a Technical Requirements Document (TRD) for the UN portfolio data platform. The TRD will clearly outline the objectives of the digital public good aimed at addressing knowledge gaps and aligning with donor ODA strategies regarding UN portfolios at the country level, as outlined in the UNSDCF.

Specifically, researchers will develop a conceptual framework that serves as the blueprint for the digital product. This framework will aim to bridge existing knowledge gaps in UN

country-level activities, define the data sources capable of providing comprehensive insights into these activities, and elucidate how these sources can help users understand which agencies are executing specific projects. Furthermore, it will detail how the platform can assist in identifying donor strategies and fund flows by agency, sector, and type of assistance (development/humanitarian), thereby enabling the tracking of these flows over time.

1.3 Research Team

The Development Futures Lab (DFL), located within the Global Research Institute (GRI) at the Graduate School of International Studies at Korea University, works to envision, evaluate, and engender future development by predicting how future socioeconomic transformations will impact development and by exploring the potential contributions of emerging technologies. The core mission of the DFL is to forge innovative, data-driven policy solutions that significantly improve the efficiency, transparency, and overall impact of global development initiatives.

The DFL research team consists of one professor specializing in international development and concerned with epistemological questions and with ongoing technological and socioeconomic change, one doctoral student specializing in needs assessments, and two master's students interested in data applications in development evaluation and planning.

II. Theoretical Background

This chapter traces the evolution of foreign aid practices, moving from subjective, motivation-driven approaches to more objective, data-based decision-making frameworks. Understanding this transition is crucial, as the motivations of different actors—donors, recipients, and international organizations—inform the type and use of data required in development processes. The discussion begins by exploring the concept of aid effectiveness, charting the shift from donor-centric motivations toward approaches that emphasize inclusivity, recipient ownership, and multilateral coordination. It then examines how these shifts have influenced decision-making in development, with a focus on the frameworks and tools used by international organizations to balance competing priorities. Finally, the chapter highlights the growing role of data-driven methodologies, illustrating how advancements in digital technologies have transformed development decision-making to enhance effectiveness. By linking evolving aid motivations to the increasing utility of development data, this chapter provides a foundation for understanding the interplay between motivations, decision-making frameworks, and the role of data in achieving effective development outcomes.

2.1 Aid Effectiveness

2.1.1 Overview

Throughout the history of development cooperation, aid has been shaped by evolving motivations that reflect the shifting priorities of donors and the growing complexities of recipient needs. In its earliest forms, aid was primarily driven by donor interest—aligning closely with diplomatic, economic, or political objectives. However, with the global trend toward more inclusive and recipient-focused approaches, motivations such as recipient need and merit have also become part of the framework for aid provision. This evolution reflects a growing recognition that aid must be mutually beneficial, addressing both the strategic interests of donors and the pressing development needs of recipients.

As donor motivations expanded and the volume of development aid increased over time, concerns about aid effectiveness gained prominence. These concerns highlighted the need for mechanisms to ensure that aid was not only delivered efficiently but also aligned with the priorities of recipient countries. Discussions about aid delivery began to focus on overcoming the inefficiencies of top-down approaches by suggesting bottom-up methods that emphasize local ownership and stakeholder involvement. Similarly, the increasing reliance on multilateral aid reflects the necessity of coordinated, multistakeholder efforts to address complex global challenges.

This section not only traces the global trends in aid motivations but also aims to analyze the differing motivations of donors to better understand their perceptions and expectations from aid programs. It further connects the evolution of donor motivations to the call for aid effectiveness, highlighting how this shift laid the foundation for discussions around transparency, accountability, and ultimately effectiveness.

2.1.2 Evolving Aid Motivations and Approaches in Foreign Aid

The motivations behind foreign aid have undergone significant evolution, reflecting shifting priorities among donors and the complexities of recipient needs. Early foreign aid initiatives were often shaped by donor-centric objectives, such as political influence or economic gain, which aligned closely with the binary categorization of the world into "developed" and "developing" countries. This simplistic division, designed to distinguish donors from recipients, proved inadequate in addressing the diverse development levels and specific needs within recipient countries. To better capture these variations, organizations like the UNDP, IMF, and World Bank introduced more refined classification systems. For instance, the UNDP's Human Development Index (HDI) categorized countries into low, medium, and high human development groups, offering a more nuanced understanding of development contexts (UNDP, 2014).

As foreign aid expanded in scope, so too did donor motivations, incorporating concerns for recipient needs and merit alongside traditional donor interests. Humanitarian considerations, governance reforms, and institutional capacity-building became increasingly central to aid allocation decisions. While donors motivated by strategic interests often prioritized aid that advanced trade or geopolitical objectives, those driven by recipient needs emphasized initiatives aimed at alleviating poverty, enhancing social welfare, and fostering local development. This growing diversification of motivations underscores the evolving recognition that effective aid requires alignment with both donor objectives and recipient priorities.

These evolving motivations are reflected not only in the goals of aid but also in its delivery mechanisms and execution. Approaches such as top-down versus bottom-up and tied versus untied aid have emerged as critical frameworks for understanding how donor motivations shape the characteristics of aid programs. By examining these frameworks, this section highlights how historical and contemporary discourses have sought to address inefficiencies and challenges inherent in aid delivery, ultimately setting the stage for the global call for aid effectiveness.

Evolving Donor Motivations

Morgenthau (1962) provides a foundational perspective on the traditional motivations underlying foreign aid. He argued that United States foreign aid, particularly in its pre-Marshall Plan form, functioned primarily as a diplomatic tool, serving to advance national interests through strategic alliances and political leverage. While ostensibly aimed at promoting economic development in recipient countries, such aid was often contingent upon the adoption of specific governmental (democratic) and economic (market-based) practices. This approach, aimed at achieving development goals aligned with donor priorities, was criticized for its inefficiencies and high costs compared to traditional forms of diplomatic engagement or prestige-driven foreign aid. In early literature, aid motivations during this period were categorized into five distinct types: 1) humanitarian foreign aid, 2) subsistence foreign aid, 3) military foreign aid, 4) prestige or bribery-driven foreign aid, and 5) foreign aid for economic development (Griffin & Enos, 1970; McKinlay & Little, 1977; Morgenthau, 1962).

As the global aid landscape expanded, with a growing number of donors and increasing volumes of aid, additional categorizations emerged to better capture the complexity of motivations driving aid allocation. Hoeffler and Outram (2011) identified three key motivations: **donor interest**, **recipient need**, and **recipient merit**. Their analysis of the top five OECD DAC members (United States, Japan, France, Germany, and the United Kingdom) revealed that donor interest remained the strongest driver of aid allocation, often reflecting strategic and political priorities. Recipient need also played a significant role, focusing on addressing poverty and critical developmental challenges. In contrast, recipient merit—measured by factors such as governance quality and domestic reforms—had minimal influence, accounting for less than one percent of the variance in aid allocation. Among major donors, only Japan and the UK demonstrated a tangible response to recipient countries' democratization efforts and

improvements in human rights, indicating a limited emphasis on incentivizing governance reforms (Hoeffler & Outram, 2011; Barthel et al., 2014).

Table 1Types of Aid Motivation and Definition

Type of Motivation	***Definition / Focus Areas Reflecting Motivation***
Recipient need	• *Developmental motives (altruistic)*
Donor Interest	• *Geopolitical ties (geopolitical motives)* • *Political interests* • *Economic interests* • *Strategic factors* • *Ex-colonies* • *Trading partners* • *UN voting patterns*
Recipient merit	• *Domestic reforms* • *Economic policies* • *Democracy (democratization)* • *Human rights (better HR vs. poorer HR)* • *Economic growth*

Source: Table adopted from Hoeffler & Outram (2011)

More recently, the understanding of donor motivations has broadened to include altruistic dimensions, particularly in response to global crises. Civelli et al. (2016) introduced the concept of **countercyclical altruism**, which highlights the capacity of certain donors to maintain or increase aid levels during economic downturns, driven by a commitment to global solidarity. Additionally, there is growing recognition of aid's role in supporting **Global Public Goods (GPG)**, such as health systems, climate change mitigation, and pandemic preparedness. The COVID-19 pandemic underscored the interconnectedness of donor and recipient needs, reinforcing the idea that aid benefits not only recipients but also the global community. This shift signals a move toward more inclusive and multistakeholder approaches in development cooperation, where aid motivations are shaped by a combination of strategic interests, altruistic commitments, and shared global priorities.

Reflecting Donor Motivations in Aid Delivery and Execution

The evolution of donor motivations, encompassing donor interest, recipient need, and recipient merit, has profoundly influenced how aid is delivered and categorized. Established discourses in international development—such as top-down versus bottom-up approaches and tied versus untied aid—offer a lens through which these motivations can be analyzed. These discourses highlight critical distinctions in donor traits and forms: top-down versus bottom-up and tied aid versus untied aid. By examining these binaries and linking them to Hoeffler and Outram's aid motivations, this section seeks to demonstrate how differing donor traits are reflected in aid delivery methods and types, ultimately shaping aid effectiveness discourse.

Top-down vs. Bottom-up Approaches

One of the most enduring debates in international development is the contrast between top-down and bottom-up approaches. These approaches encapsulate the dichotomy between governmental and non-governmental actors in aid delivery. Governmental aid, often influenced by donor interests such as diplomatic or economic objectives, tends to adopt a top-down approach, where decisions regarding aid allocation and implementation are primarily driven by donor priorities (Ashitate, 2007; Nath, 2007). This aligns closely with Hoeffler and Outram's concept of "donor interest," where the strategic goals of donors dictate the structure and focus of aid programs.

In contrast, non-governmental organizations (NGOs) typically operate from a bottom-up perspective, leveraging civil society and local expertise to address recipient needs directly. This approach allows NGOs to tailor interventions to the specific circumstances of beneficiaries, fostering greater flexibility and responsiveness compared to government-led initiatives. The increasing emphasis on bottom-up approaches reflects broader trends in international development, particularly the push for sustainability and local ownership in aid projects (Karkee & Comfort, 2016; Mercer, 2002; Wright, 2012).

Evidence suggests that even when NGOs are funded by governments, their focus often extends to Least Developed Countries (LDCs), which are frequently overlooked by bilateral donors and private-sector interests due to limited strategic or economic appeal (Davis, 2019). For example, Ashitate (2007) highlights how Japan integrated NGO participation into its foreign aid strategy to enhance transparency and address local needs more effectively. While top-down approaches may align with donor priorities, bottom-up methods are widely recognized for their alignment with recipient needs and their potential to address local challenges sustainably.

Tied Aid vs. Untied Aid

While the top-down versus bottom-up debate addresses the overall approach to aid delivery, the discourse on tied versus untied aid focuses specifically on the mechanisms of aid distribution. Tied aid, which requires recipients to procure goods or services from the donor country, has been extensively critiqued for its inefficiencies and negative impacts on recipients. For instance, tied aid in sectors such as food assistance has been shown to cause delays and discourage local production, reducing its overall effectiveness (La Chimia, 2013). Untied aid, by contrast, provides recipients with greater flexibility to source resources from the most cost-effective or contextually appropriate suppliers, enhancing its impact in well-governed settings (Miquel-Florensa, 2007).

From the donor perspective, tied aid offers immediate economic benefits, often serving as a vehicle for trade expansion and market entry. This aligns closely with donor interest, as it reinforces economic or strategic gains for the donor country. Untied aid, while less advantageous in the short term, fosters goodwill and establishes long-term partnerships with recipient countries, contributing to broader developmental goals (Arvin & Baum, 1997). These differing

outcomes reveal the contrasting priorities of bilateral and multilateral donors. Bilateral donors, typically motivated by donor interest, favor tied aid to achieve immediate returns, while multilateral donors, guided by recipient need and merit, tend to utilize untied aid to promote sustainable development and equitable outcomes.

This distinction underscores the broader binary of bilateral versus multilateral donors, reflecting differing approaches to aid delivery. Bilateral aid often prioritizes strategic donor interests, whereas multilateral aid embodies a multistakeholder approach that seeks to harmonize donor and recipient priorities. These evolving discourses not only reveal the complexities of aid provision but also highlight the growing recognition of the need for frameworks that address the inefficiencies and challenges arising from these approaches.

2.1.3 Global Agenda for Aid Effectiveness

The evolution of donor motivations and their reflection in aid delivery mechanisms have underscored the need for a more systematic approach to ensure that aid achieves its intended outcomes. As donor priorities shifted from purely strategic interests to encompass recipient needs and merit, and as aid delivery became increasingly complex with varied approaches such as top-down, bottom-up, tied, and untied aid, the global development community recognized the need for frameworks to enhance aid effectiveness.

With the significant increase in aid volumes over recent decades, scholars and practitioners turned their attention to understanding not only the motivations behind aid but also the factors that contribute to its effectiveness. By the mid-2000s, transparency emerged as a cornerstone of this discourse, with experts emphasizing its crucial role in improving aid allocation, achieving goals, and delivering better outcomes (Easterly, 2006; Collier, 2007; Sachs, 2006; Riddell, 2007). Global initiatives like the Organisation for Economic Co-operation and Development (OECD)'s High Level Fora on Aid Effectiveness (HLF), played a central role in addressing inefficiencies in aid delivery all while fostering alignment between donor objectives and recipient priorities.

2.2 Decision-Making in Development

2.2.1 Overview

International organizations (IOs) have long been at the forefront of global governance, advocating for improved transparency and effectiveness while navigating the complex challenges of coordinating across stakeholders. Operating in resource-constrained environments, IOs are under constant pressure to ensure their decisions maximize impact, making their ability to make sound, informed decisions not just an operational necessity but a cornerstone of their legitimacy and effectiveness (Schemeil 2013; Federo and Saz-Carranza, 2016). For this purpose,

IOs employ systematic decision-making frameworks that integrate a range of inputs, including policy goals, stakeholder priorities, and, increasingly, data insights. Over the past two decades, the rapid rise of digital technologies has transformed these processes, with data-based decision-making (DBDM) emerging as an organizational interest.

To understand the prominence of DBDM in global development, this section looks into its evolution and impact. Beginning with an overview of the different management frameworks in IOs, the section outlines historical and contemporary dynamics leading to the rise of data in global decision-making for aid effectiveness.

2.2.2 Decision-Making Frameworks in Development

Decision-making within IOs relies on a range of frameworks aimed at enhancing performance. These frameworks have been gradually established over time, forming a system that helps IOs navigate uncertainty, uphold their legitimacy, and adapt to evolving global challenges.

The first framework is strategic planning, which serves as a foundation for decision-making by addressing "what the organization is, what it does, and why it does it" (Olsen and Eadie 1982, as cited by Bryson 2004). Strategic planning was integrated within the United Nations (UN) over time, as early forms appeared in some agencies in the 1950s but were shared across the system through informal practitioner networks. As operations became more complex, demands for performance grew and these practices were formalized into structured, time-bound frameworks such as medium-term plans and biennial plans. This shift was driven by member states' interest in effective resource utilization, linking financial expenditures to the advancement of agency and stakeholder mandates (Joint Inspection Unit 2012).

Today, UN agencies typically publish strategic plans with timeframes of four to five years, complemented by secondary strategies for specific work streams, as well as country specific guidelines like the United Nations Sustainable Development Cooperation Framework (UNSDCF)[1]. The integration of strategic planning into UN operations has strengthened its capacity to coordinate efforts and deliver programs as a cohesive system, addressing fundamental questions about **"what" the organization aims to achieve and "why" those objectives are important.**

The second framework is results-based management (RBM), which became widely embedded within the UN system following the Joint Inspection Unit's (JIU) 2004 recommendation. **RBM introduced a systematic focus on the "how,"** emphasizing the mechanisms required to achieve organizational goals. By linking objectives to measurable outcomes, its integration encouraged IOs to strengthen accountability and enhance project-related data collection. This emphasis on measurability was notably set in practice through global

[1] The UNSDCF has replaced the United Nations Development Assistance Framework (UNDAF).

development initiatives like the Millennium Development Goals (MDGs) and the Sustainable Development Goals (SDGs), reinforced by OECD's HLF discussions.

Millennium Development Goals and the Sustainable Development Goals

The Millennium Development Goals (MDGs) integrated strategic planning and results-based management by using quantifiable targets to guide development. The MDGs, established in 2000, were composed of 21 targets and an extended 60 indicators to measure progress towards the achievement of eight development goals. With this framework, donors increasingly justified project interventions based on the anticipated contributions these projects would make toward achieving specific MDG targets, emphasizing measurable outcomes and aligning funding priorities with global efforts. This results-oriented approach marked a shift in how development effectiveness was conceptualized and assessed (Bilney et.al. 2013).

However, the MDGs faced significant criticism regarding the quality and scope of the data they employed. As outlined by Fehling, Nelson, and Venkatapuram (2013), they were criticized on several fronts being that: (a) procedurally, their development was largely shaped by donor priorities; (b) structurally, their chosen indicators were too narrow to capture the complexity of development challenges; (c) substantively, they failed to address all critical aspects of development; and (d) practically, they suffered from inadequate data availability and quality, hindering effective monitoring.

In an effort to establish a more comprehensive framework, the MDGs were succeeded by the Sustainable Development Goals (SDGs) in 2015. Comprising 17 goals, 169 targets, and 247 indicators, the SDGs aim to guide global development efforts until 2030. Unlike the MDGs, the SDGs expanded the scope of challenges, integrated more measurement granularity, and introduced a tiered system for their indicators, categorizing them based on the availability of data and the maturity of methodologies. This structure has demanded the collection and use of more robust data to ensure interventions are aligned with global priorities and lead to measurable outcomes.

High Level Fora on Aid Effectiveness

The emphasis on data for RBM was concurrent to the discussions in the HLF. Although data was not a central focus in the early stages in the early 2000s, the 2008 Third High-Level Forum in Accra marked a turning point by emphasizing results management and making project data accessible to all stakeholders.

The First High-Level Forum on Harmonisation in Rome (2003) was an initial effort to establish global principles for aid effectiveness, focusing on accountability and improved management practices. A discussion led by donors, this forum laid the foundation for enhancing donor coordination and developing systematic approaches to project management.

The Second High-Level Forum in Paris (2005) introduced the Paris Declaration, formalizing five key principles: ownership, alignment, harmonization, managing for results, and mutual accountability. This declaration emphasized the need for better monitoring practices and accounted for the role of recipient countries in shaping development strategies, providing a clear framework for more transparent and equitable aid delivery.

The Third High-Level Forum in Accra (2008) introduced the Accra Agenda for Action, prioritizing country ownership, inclusive partnerships, and a focus on results. Expanding aid governance to that of civil society, it aimed to improve transparency, accountability and coordination through comprehensive data sharing of aid information between all actors. This led to the establishment of the International Aid Transparency Initiative (IATI), which aims to address the fragmented publication of aid flows per recipient for better transparency and accountability, by providing project-level data to improve coordination and reduce the burdens on users such as recipient governments, CSOs, and intermediaries like the DAC on collecting data[2].

The Fourth High-Level Forum in Busan, Republic of Korea (2011) contributed to aid effectiveness looking at country ownership, a focus on results, inclusiveness, and mutual accountability. It highlighted the connection between data quality and its role in achieving development outcomes, resulting in the Busan Partnership Agreement and the creation of the Global Partnership for Effective Development Co-operation (GPEDC). Today, GPEDC continues to oversee effective, inclusive, and results-driven development cooperation practices.

Thus, understanding data has emerged as an important element in driving measurable and impactful development outcomes, **data-based decision-making (DBDM) has emerged as a third framework**, expanding the use of data beyond retrospective analysis to prospective functions for all stages of the project cycle.

DBDM as a Third Framework

DBDM adds value to decision-making in international development by focusing on "when" and "what" actions are most effective. While strategic planning addresses the foundational questions of "what" an organization seeks to achieve and "why" those objectives are important, and RBM focuses on "how" to operationalize these goals through mechanisms and processes, DBDM complements these by determining the optimal timing and selection of actions to maximize effectiveness.

The "when" component in DBDM ensures decisions are made at the right moment to maximize impact. Today's development practitioners face a hidden time crunch, as the sustainability agenda does not fully consider time-sensitive windows of opportunity (Persson, 2023). In this regard, Ruwet (2022) notes that effective timing can be identified through robust

[2] IATI, *Scoping Paper on Aid Information*, 2009, https://cdn.iatistandard.org/prod-iati-website/documents/IATI-scoping-paper-2009.pdf.

systems capable of processing real-time data, allowing development agendas to be more clearly identified and addressed.

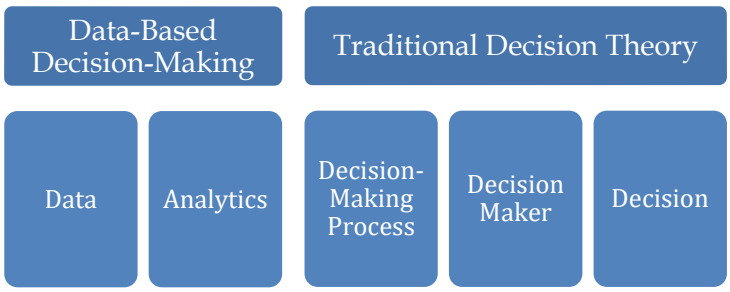
The "what" dimension of DBDM enhances the ability to prioritize by providing evidence-based insights into which specific actions or policies are most likely to achieve desired outcomes. Given that decisions in development must balance technical feasibility with political considerations (Schemeil, 2013), through DBDM, organizations can concentrate their efforts on initiatives with the greatest likelihood of acceptance, ensuring resources are used efficiently and aligned with overarching strategic objectives.

Thus, DBDM complements strategic planning and RBM by enhancing their temporal and actionable dimensions in a world increasingly defined by the speed and scale of challenges. It ensures that decisions are not only aligned with overarching goals (strategic planning) and operationalized effectively (RBM) but also executed actively with precision in terms of timing and focus (DBDM). But what exactly is DBDM?

2.2.3 Data-Based Decision-Making and Decision Support Systems

Data-based decision-making (DBDM) is an approach where organizations systematically use data and analysis alongside traditional decision-making pillars to achieve their objectives (Elgendy et al., 2021). Having emerged as a response to the growing availability of data, DBDM involves five elements: data as inputs, analytics to interpret and make sense of the data, a sequential decision-making process, a rational and informed decision maker, and ultimately, a quality decision. Together, these elements form the backbone of data-based strategies for decision making.

Figure 1 The Elements of Data-Based Decision-Making

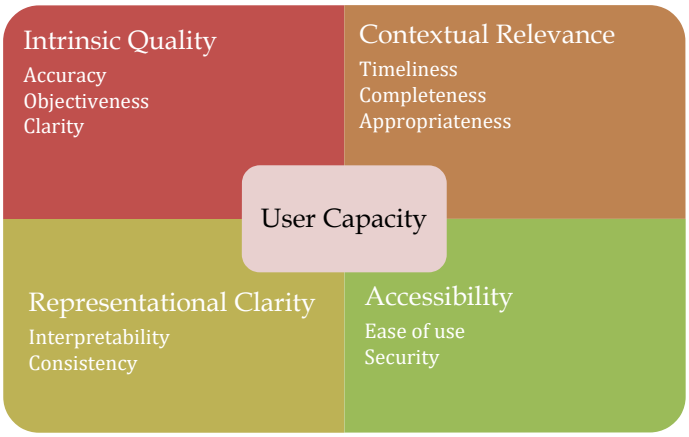


Source: adapted from Elgendy et al., 2021

Central to effective DBDM is the **quality of data**—the ease with which data can be accessed, understood, and applied by decision-makers to drive meaningful actions (Cai & Zhu, 2015; Webber & Zheng, 2019). Data quality is best understood through Wang and Strong's multidimensional framework (1996), which emphasizes four dimensions: (a) **intrinsic quality**, ensuring data is accurate, objective, and credible; (b) **contextual relevance**, addressing timeliness, completeness, and appropriateness to specific decisions; (c) **representational clarity**, focusing on interpretability and consistency; (d) **accessibility**, emphasizing ease of use and security. However

equally important is **user capacity**, which determines the ability to transform available data into actionable insights. Without adequate analytical skills, technological tools, and an organizational culture that prioritizes data-driven approaches, even high-quality data may remain underutilized (Davenport et al., 2001).

Figure 2 Data Utility Assessment Framework



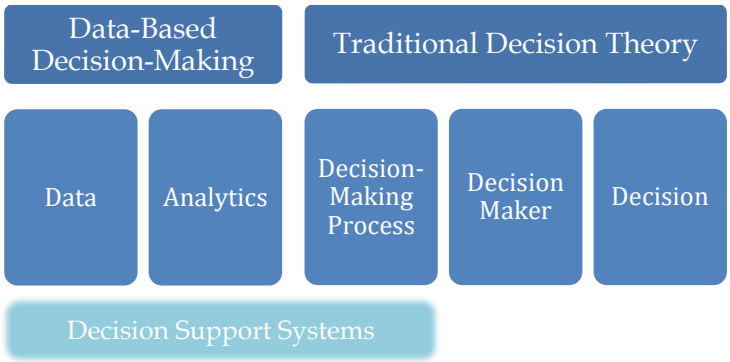
Source: adapted from Wang and Strong (1996)

Decision Support Systems

To operationalize DBDM amid the proliferation of data, organizations have been compelled to organize information into structured databases, which form the foundation for **Decision Support Systems (DSS)**.

A DSS is a computer-based system designed to assist in decision-making, improving both the efficiency and effectiveness of the process (Rashidi et al., 2018). These systems present data in various forms—such as graphs, tables, and other visual representations—making complex information easier to comprehend. For example, in medical practice, Clinical Decision Support Systems (CDSS) are utilized at different stages of patient care, from diagnosis to treatment and administrative functions (Sutton et al., 2020); in the fintech industry, DSS are used to assess risk profiles for potential borrowers or to devise tailored investment products (Pahsa, 2024). Regardless of the domain, whether in business, medicine, or any other field requiring DBDM, DSS's ability to access, synthesize, and present data in a clear and **actionable format** (Segal, 2024), plays a role in facilitating DBDM by "improving the accuracy, sophistication, and completeness of the rational analysis and final decision" (Cao & Duan, 2015 as cited in Elgendy et al. 2021).

Figure 3 Decision Support Systems in Data-Based Decision-Making



Source: adapted from Elgendy et al., 2021

With this context in mind, organizations seeking to integrate DBDM into their decision-making processes are actively exploring DSS's potential and applications. **In the context of international development, this framework provides a basis for analyzing the International Aid Transparency Initiative (IATI) as both a key artifact of aid effectiveness and a foundational element for advancing Data-Based Decision-Making (DBDM) within the broader development ecosystem.** This report examines the roles IATI plays in aid effectiveness and DBDM—potentially as a Decision Support System (DSS) component emphasizing data utility as a critical foundation for effective DBDM.

Data-Driven Decision-Making (DDDM) and Data-Informed Decision-Making (DIDM)

DBDM can be categorized into two different approaches, being that of Data-Driven Decision-Making (DDDM) and Data-Informed Decision-Making (DIDM). While these terms are often used interchangeably, there is an emerging literature that aims to differentiate these two terms (Webber and Zheng, 2019).

DDDM refers to decision-making processes that heavily rely on quantitative data and analytics to guide decisions. In this approach, decisions are based primarily on data, with a strong emphasis on objective measurement and empirical evidence. DDDM is characterized by the use of data to drive every aspect of the decision-making process, from identifying problems to evaluating solutions and outcomes. Advanced DDDM models essentially automate decision-making by making the decisions for the user, as they provide outputs based on models.

In contrast, DIDM incorporates data as one of several factors in the decision-making process. It aims to place data as a central element, but gives space for the decision-maker to consider other qualitative insights, expert judgment, and contextual knowledge. While data plays a significant role in informing decisions, it is not the sole determinant.

In other words, DDDM and DIDM mainly differ upon the degree to which an actor uses data to inform the decision or, conversely, how automated the decisions are.

Understanding the difference between the two might be easier with an example:
Assume a manager is deciding on whether to fund a new project or not. Inputting the numbers from the project proposal to relevant statistical analysis and forecasting models suggests that the project does not attain the stable baseline required for it to be approved.

Based on this information, the manager should reject the project. Rejecting the project would be an example of DDDM as the decision solely comes from a quantitative approach.

However, imagine that the manager is willing to consider potential as well. While the project may not have met the numerical baseline, they believe that the project can achieve higher returns or serve longer term interests with proper guidance. With this in mind, they decide to fund the project. This latter line of action would be an example of DIDM as other non-quantified factors were taken into account.

III. Methodology

The team employed four distinct approaches to identify and analyze IATI's data ecosystem, ensuring a comprehensive evaluation from multiple perspectives. These methodologies included reviews of published documentation, technical analysis of data architecture, stakeholder interviews, and scenario walkthroughs, each providing unique insights into IATI for DBDM.

3.1 Document Review

A thorough review of IATI's published documents was conducted to triangulate findings and ensure a comprehensive understanding of its data architecture, tools, and governance framework. This process involved analyzing official reports, technical documentation, meeting minutes, strategic plans, and user guides available through IATI's platforms. The aim was to cross-verify insights obtained from other methodologies, such as interviews and technical analysis, and to provide additional context on IATI's priorities, challenges, and evolution over time.

The document review focused on identifying recurring themes, stated objectives, and updates to the IATI Standard, as well as understanding how IATI's tools and systems are designed to meet user needs. By corroborating findings from multiple sources, this approach enhanced the reliability and validity of the analysis, offering a well-rounded perspective on IATI's functionality and its role in supporting transparency and DBDM in international development.

3.2 Technical Review

As part of the methodology, the team had the support of a data fellow in conducting an in-depth review of IATI's data architecture, focusing on its structure, functionality, and adherence to best practices in data management. Using Python, the fellow analyzed the IATI Datastore, Registry, and related tools to identify potential issues from a developer's perspective. This process included evaluating the architecture's scalability, consistency, and adaptability to meet the diverse needs of stakeholders.

3.3 Interviews

Interviews were conducted with several users of IATI to gain qualitative insights into their experiences with the platform and its data ecosystem. Participants included development practitioners who regularly interact with IATI's tools and datasets. The interviews were semi-structured, allowing for both guided questions and open-ended discussions to capture diverse perspectives on IATI's usability, data quality, and overall functionality.

Participants were also asked to provide examples of how they use IATI data in their work and to identify any gaps or inefficiencies they encountered, loosely paralleling the scenario walkthroughs described below. This feedback provided context for evaluating IATI's effectiveness in meeting the needs of its stakeholders and informed subsequent recommendations for improving its system and practices.

3.4 Scenario Walkthroughs

Last but not least, in order to gain a deeper and firsthand understanding of development databases, the research team conducted a series of scenario walkthroughs, in which they outlined a set of practical case studies of different user and decision-maker needs that in theory could be achieved through using IATI d-portal or other development databases. Then, researchers attempted to use the database to achieve the objectives outlined in each case study. Two crucial related criteria were kept in mind while conducting these scenario walkthroughs: usability and data availability. The following sections will describe the importance of usability and data availability framework, the theoretical rationale for using a case study approach, details of the case studies themselves and the corresponding walkthroughs, and an evaluation of the databases.

Criteria: Usability and Data Availability

Databases can and do perform a pivotal role in the work of international development by providing the tools needed to access and analyze data and by assisting their users in decision-making processes. In order to effectively operate in this role, however, certain qualities need to be met. A database should ideally be both user-friendly and contain comprehensive and organized data sets. These qualities are discussed as usability and data availability in the literature, and together form the foundation for evaluating a database's effectiveness.

Usability consists of five quality components (Nielsen 2021; Nielsen 1990). First, learnability refers to how easily users can accomplish basic tasks on their first attempt with a system. Efficiency measures how quickly tasks can be completed. The memorability dimension assesses how easily users can regain proficiency after a period of non-use. Errors consider both the frequency and severity of mistakes, as well as the ease with which users can recover from an error. Finally, satisfaction refers to how pleasant the user experience is. Bevan (1994), as quoted in Welie et al. (1999), offers a more condensed set of criteria that considers efficiency, effectiveness, and satisfaction. While satisfaction remains unchanged, in Bevan's definition efficiency is characterized as the capacity to complete tasks accurately and completely while using minimal resources. Effectiveness, meanwhile, measures the accuracy and completeness with which users achieve specified goals when interacting with the system.

This research adopts Bevan's version of usability, as its parameters more closely align with the capacity of a DSS to assist in decision-making. Among the parameters provided, effectiveness is critical. Effectiveness–with its focus on achieving specific goals–is the most relevant measure of whether a development database can, indeed, support decision-making considering that the task we are interested in *is* decision-making itself. If a database such as IATI d-portal fails in its ability to help users achieve their goals with accuracy and completeness, its utility as a DSS is severely diminished, regardless of how efficient or satisfying it may be to use. Usability is not the only factor that matters in the decision-making process, however. Data must be structured and presented in a clear way, such that it aids the user. This leads us to a second criterion in evaluating development databases: data availability.

Data availability refers to the completeness of the data uploaded to the database, encompassing the *scope* and *saturation* of reliable information accessible to users, which serves as the foundation for informing actors' capabilities. Data availability and usability are complementary. Even if a DSS has all the data that a decision-maker could want or need to reach a decision, deficient usability will prevent them from accessing the desired data or synthesizing it into a useful form. On the other hand, a DSS that is well-designed in terms of usability yet lacking in data availability poses another set of problems: perhaps the user can make a nice graph or smoothly find a bit of information they are searching for, yet without the data, the picture they have constructed is incomplete.

One alone is insufficient. Only combined can decision-makers arrive at the best possible decision. This pairing of data availability and usability serves as evaluative criteria for assessing databases. Therefore, the procedure used here for qualitative evaluation was developed by applying these criteria to existing frameworks in other fields.

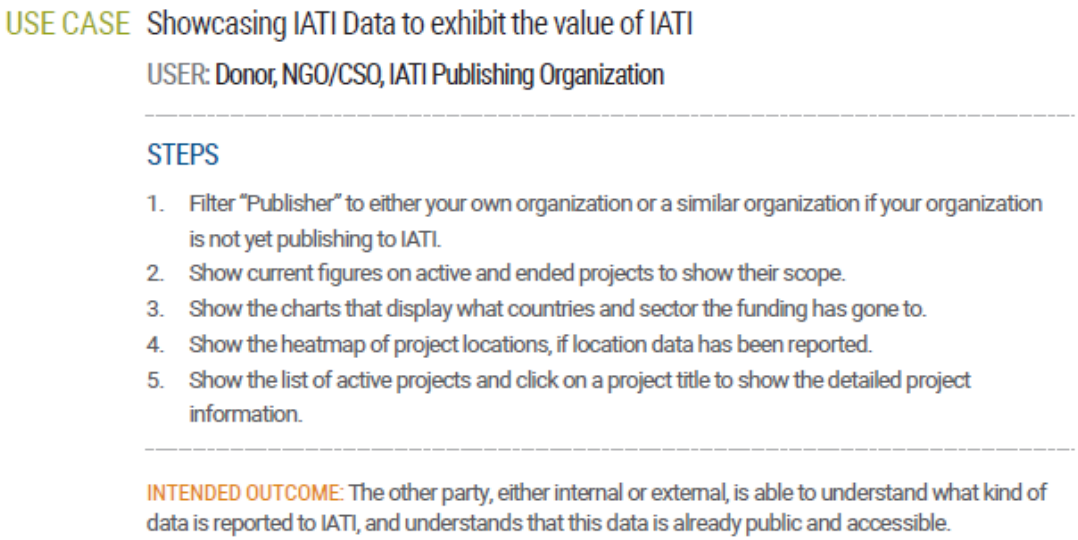
Method and Background

Various methods are utilized in testing digital systems, such as user journey mapping, heuristic evaluation, and cognitive walkthroughs. In user journey mapping, a method employed in customer experience design, participants engage with a system either as potential customer profiles or directly as customers themselves (Endmann and Kessner 2016). Researchers then observe and evaluate the user's experience as it unfolds over time, in some cases conducting interviews to gain more details. Along with recording the user experience, particular attention is given to measuring certain metrics that are deemed vital by evaluators. For example, a user's level of satisfaction at certain points in the process (Howard 2014). In this process, the results are then converted into a visual "map" of the overall user journey (Mucz and Gareau-Brennan 2019).

Heuristic evaluation, developed by Jakob Nielsen and Rolf Molich (1990) for assessing an interface's usability, involves the assessment of a system along predefined usability principles referred to as heuristics. To illustrate, some of the heuristics are "simple and natural dialogue," "good error messages" and "provides shortcuts" (Nielsen and Molich 1990). The primary objective of heuristic evaluation is to identify the challenges that users experience during their interaction with a system. Additionally, cognitive walkthroughs are another framework relevant to our investigation of development databases. Building on the heuristic evaluation strategy, cognitive walkthroughs aim to evaluate user interactions and identify the challenges and obstacles users face in accomplishing a task and its underlying goals within a given system (Mahatody, Sagar, and Kolski, 2010). Given its task-based focus, cognitive walkthroughs typically implement a case study approach that emphasizes not only evaluation but also exploration (Wharton et al., 1994).

The method adopted here synthesizes aspects from these different approaches and both adopts and adapts IATI's suggested scenarios for how to use their primary interface, known as d-portal. Contained in the *IATI Tool Guide* are several use cases, detailing potential actors and how they can utilize IATI to achieve their objectives, such as identifying potential new donors to a developing country or creating project proposals. An example can be found below:

Figure 4 IATI Tool Guide "Use Case"



USE CASE Showcasing IATI Data to exhibit the value of IATI

USER: Donor, NGO/CSO, IATI Publishing Organization

STEPS

1. Filter "Publisher" to either your own organization or a similar organization if your organization is not yet publishing to IATI.
2. Show current figures on active and ended projects to show their scope.
3. Show the charts that display what countries and sector the funding has gone to.
4. Show the heatmap of project locations, if location data has been reported.
5. Show the list of active projects and click on a project title to show the detailed project information.

INTENDED OUTCOME: The other party, either internal or external, is able to understand what kind of data is reported to IATI, and understands that this data is already public and accessible.

Source: taken from IATI Tool Guide

Using these use cases as a basic template and integrating features from the previously discussed theories of usability engineering and user experience (UX) design, the scenario walkthrough process was developed specifically to test databases like IATI's d-portal. The scenario walkthrough consists of the following process:

1. **Determine main testing criteria**: Establish clear criteria, such as usability and data availability, for assessing system effectiveness.
2. **Determine DSS to be investigated**: Select a DSS system for evaluation. In this case, development databases.
3. **Develop realistic scenarios:** Create scenarios that reflect cases that are relevant to potential users of the DSS and reflect real potential uses.
4. **Navigate scenario from the actor's perspective:** From the perspective of the actor in the scenario, navigate the DSS and attempt to achieve the stated objectives.
5. **Record verbal commentary:** Take notes on insights, challenges, and observations in the form of verbal commentary to document the process without disrupting the flow.
6. **Review and evaluate against testing criteria:** Based on the previously established testing criteria, evaluate the overall experience and identify areas of improvements and existing strengths.

With this scenario walkthrough methodology established, scenarios were developed to capture potential user interactions with development databases.

Case Studies and Database Selection

Case studies were developed with IATI d-portal as the model database. The researcher's case studies were modeled with the IATI guide as the basic format. However, the case studies were designed to be different enough from the guide examples to both avoid overlap and effectively identify data availability and usability. According to this process, six scenarios were developed:

Scenario One
Actor: Health Official
Topic: Vector-borne Disease Aid Assistance
Scenario: I am a government official in the CDC equivalent of a country in Latin America. I need to find an NGO with a track record of working in Latin America, with experience dealing with infectious disease transmission Ideally, the NGO should have a track record of not going over budget and completing projects on time.

Scenario Two
Actor: International Development Researcher
Topic: Disaster Aid Analysis
Scenario: I am a researcher focusing on the effectiveness of disaster relief aid in Southeast Asia. Using IATI, I intend to track the flow of aid following a major natural disaster to study the response times, amounts allocated, and project outcomes to evaluate the impact and efficiency of different types of aid from different donors.

Scenario Three
Actor: NGO Coordinator
Topic: Finding Collaboration Partners
Scenario: I am the coordinator of a non-profit focused on water sanitation. I use IATI to find other organizations that have successfully implemented clean water projects in Sub-Saharan Africa. My goal is to identify potential partners for collaboration.

Scenario Four
Actor: Policy Maker in a Donor Country
Topic: Aid Portfolio
Scenario: I am a policy maker from a donor country evaluating the allocation of our country's aid to South America. I use IATI to analyze our aid's distribution across different sectors (health, education, infrastructure) and its alignment with our strategic goals, ensuring that our international aid portfolio is balanced and effective.

Scenario Five

Actor: Economic Development Specialist in Asia

Topic: SME Growth

Scenario: I am an economic development specialist looking to enhance small and medium-sized enterprises' growth in Southeast Asia. I utilize IATI to identify programs and initiatives that have successfully attracted funding and have had significant impacts, aiming to replicate these successes in current development strategies.

Scenario Six

Actor: UNDP Analyst

Topic: MEA Gender Equality Initiatives

Scenario: As a UNDP analyst, I am tasked with preparing a comprehensive report on gender equality projects funded in the Middle East. I use IATI to gather data on the scope, funding, and outcomes of these projects to assess trends and prepare recommendations for future funding directions.

Before attempting the scenario walkthroughs, the researcher shared them with a member of USCP staff to determine their viability. The USCP staff member approved the case studies, considering them to be plausible initiatives for an IATI d-portal user. The researcher then conducted and recorded scenario walkthroughs for each of the case studies, testing the database's effectiveness as a DSS. D-portal was not the only database tested. OECD Data Explorer (Data Explorer) and UNOCHA Financial Tracking Services (FTS) were also tested using the scenario walkthrough method, with the criteria of data usability and usability at front of mind. The additional databases were chosen because they appeared to be similar to IATI d-portal in terms of having a broad scope and being saturated in data. However, FTS does not appear in the report because after a few walkthroughs, it was determined to be insufficient past the first few steps of the walkthrough.

IV. The Current State of IATI

4.1 Background

In 2008, actors in development and humanitarian fields were acting in a world in which the importance and volume of development data was growing yet the transparency of data was not. To meet this challenge, the International Aid Transparency Initiative (IATI) was launched in 2008 (Ntawiha and Zellmann 2017). The initiative emerged as a response to fragmented and often inaccessible aid information, which imposed rising costs on stakeholders. By committing donors to "publicly disclose regular, detailed, and timely information on the volume, allocation, and, where available, results of development expenditure" (IATI 2009), IATI aimed to provide a unified framework for reporting aid data.

These measures were designed to enable diverse stakeholders—from governments and NGOs to researchers and community groups—to access and utilize data in ways that could directly inform budget planning, service delivery, and macroeconomic management. Through these efforts, IATI positioned itself as a cornerstone of aid effectiveness, addressing gaps in existing data systems and fostering a culture of open and inclusive information sharing. However, it recognized the hardship in building a perfect system, leading to the creation of a basic guideline users could leverage for their own interests.

> *"IATI [proposed] that: donors should agree the list of information to be covered by IATI; combine and extend the existing classifications and formats into a common aid information standard that substantially meets all the various different data needs; and agree a code of conduct covering implementation and compliance. Donors would then make adjustments to their own systems and processes to collect and publish this information in the common format. This would allow a wide variety of different users to access the information they need – and then to present it in a format that is suitable for their particular purpose."* (Scoping Paper, 2009)

The introduction of the IATI Standard, a set of rules regarding data formatting and publishing by donors, provided a common language and structure for reporting, allowing diverse stakeholders to access consistent and comparable information. And according to the IATI Registry, as of October 2024 1,699 different actors have published their data to IATI. Publishers listed on the IATI website include multilateral institutions, governments, private sector actors, civil society organizations, and others. A report by Oxfam and Development Initiatives (2018) reinforces the value IATI data brings for researchers, journalists, donor organizations, NGOs, and recipient country government organizations (to name a few), by offering improved "accountability, coordination, allocation, and effectiveness of aid." As mentioned above, IATI's very own tool guide provides suggestions for how actors can utilize IATI data, including identifying new donors to a developing country, creating project proposals, or confirming basic information about a project.

In its Strategic Plan 2020-2025, IATI outlined its commitment to build on its foundational principles, aiming to further enhance the **relevance, quality, and accessibility of its data**. The plan emphasizes three strategic objectives: (1) ensuring the data meets the evolving needs of diverse stakeholders by enhancing its usability, (2) expanding engagement with new publishers while retaining the participation of existing ones, and (3) strengthening the IATI community to ensure inclusiveness and collaboration across development actors. Recognizing that the aid and development landscape is rapidly evolving—with new types of partnerships, funding flows, and technological advancements—IATI aims to remain a global standard for aid transparency for development effectiveness, integrating feedback from its stakeholders and building capacities of its users.

4.2 Organizational Structure

IATI functions as a voluntary initiative that brings together a diverse range of actors in international development, including donor governments, multilateral organizations, civil society, and private sector entities. Its multi-stakeholder composition exemplifies a collective commitment to addressing the complexities of aid transparency, ensuring that the varying needs of all participants are represented. Underpinning this collaborative effort is a well-defined organizational structure that facilitates coordination, governance, and the effective implementation of IATI's goals.

The Governing Board

IATI is overseen by a Board that provides strategic direction and ensures the initiative remains aligned with its objectives. Comprised of seven elected representatives, chosen every two years from diverse stakeholder groups, the Board's structure ensures that decision-making processes reflect a wide range of perspectives and priorities. The composition includes two representatives each from partner countries, providers of development cooperation, and civil society organizations or other entities, along with one technical seat open to nominees from any constituency.

The Members' Assembly

Known as the Steering Committee until 2016, the Members' Assembly serves as a collaborative platform where all IATI members come together to exchange insights, share best practices, and discuss challenges related to the use of IATI data. With 105 members as of 2024, this assembly is central to fostering a participatory and inclusive approach to the initiative's operations, meeting annually to shape and approve changes suggested by the Governing Board.

The Secretariat

The IATI Secretariat supports the initiative by delivering activities. It offers technical expertise, communication, and outreach services, facilitating the implementation of its objectives,

maintaining the data standards, and actively promoting the use and adoption of IATI data across stakeholders. Hosted by UNDP, services for the Secretariat are provided by The United Nations Office for Project Services (UNOPS), and technical services are provided via the Open Data Services co-operative.

The IATI Community

Last but not least, the IATI Community is the body composed of all users involved with IATI's substantive work, subdivided into 'Communities of Practice' (COP) and 'Working Groups'. COPs are composed of practitioners using IATI data, whereas Working Groups are taskforce teams that are created based on the need of the two formal, strategy-oversight bodies.

4.3 Work Streams

IATI's work streams focus on enhancing transparency, data quality, and usability to drive accountability and informed decision-making in international development. Through efforts like maintaining the IATI Standard, supporting data publishers, and advancing tools for data access and analysis, IATI strives to ensure that diverse stakeholders can leverage its data. These work streams collectively aim to foster collaboration, streamline reporting processes, and maximize the impact of development and humanitarian initiatives.

The IATI Standard comprises two key data schemas: **organization** and **activity**. The organization schema focuses on high-level information about organizations, such as budgets, expenditures, and funding commitments, while the activity schema provides granular details about specific development projects, including objectives, locations, and results. These schemas facilitate a holistic view of development efforts, bridging gaps in data transparency and accountability. The current version in use, **Version 2**, was implemented to enhance data quality by introducing additional reporting categories and improving the data structure. As part of this evolution, **Version 1** was deprecated in 2019 to ensure alignment with the growing needs of the development community[3].

IATI oversees eight tools that employ the data collected according to the IATI Standard,: the IATI Registry, Aid Information Management Systems (AIMS), d-portal, the IATI Dashboard, IATI Validator, Country Development Finance Data, IATI Datastore, and the API Gateway. These are all rooted in the same IATI dataset, which publishes detailed information on development and humanitarian projects and is also available in its raw form. However, the tools' value lies not just in the quality of the data they use, but in how effectively they enable the diverse stakeholders to interact with, interpret, and apply this information.

[3] IATI Standards are updated irregularly, with number changes indicating larger structural updates, and decimals indicating adjustments to the versions.

Table 2 IATI Tools

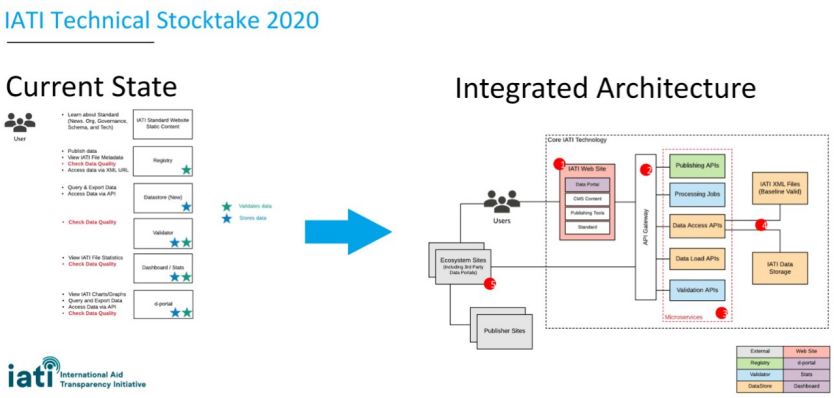
Tool	Year Launched	Target Audience	Purpose
IATI Registry	2011	Data publishers, developers	Central repository for registering and accessing IATI data files.
Aid Information Management Systems (AIMS)	Various	Partner country governments, development agencies	IATI plug-in for internal resource management systems regarding development and humanitarian activities.
d-portal	2014	General public, development practitioners, policymakers	Provides access to IATI data presented in charts, graphs, and maps.
IATI Dashboard	2014	Data publishers, analysts, policymakers	Provides summaries on the range and quality of IATI data published by organizations.
IATI Validator	2019	Data publishers	Checks if data files align with the IATI Standard's rules and guidance.
Country Development Finance Data	2021	Partner country governments, development agencies	Offers data to support partner country data access needs.
IATI Datastore (v3)	2021	Data analysts, researchers, developers	Allows downloading of IATI data in CSV, JSON, and XML formats; Version 2.0 available since 2019
API Gateway	2022	Developers, data analysts	Central point for programmatically accessing IATI's data services.

Source: adapted from IATI Tools, 2024

It is worth noting that as of 2020, IATI undertook a technical stocktake to address fragmentation and inconsistencies within its tool ecosystem[4]. The stocktake aimed to harmonize IATI's various platforms, ensuring that each tool complements the others and serves its intended audience more effectively. By streamlining data access processes, reducing duplication across tools, and aligning their functionalities with user needs, a key outcome of this effort was the integration of tools like the IATI Dashboard, which now provides improved insights into data quality and publisher performance.

[4] Thomas, Wendy. 2020. "IATI's Technical Stocktake," IATI Standard, https://iatistandard.org/en/news/iatis-technical-stocktake/

Figure 5 IATI Tool Ecosystem



Source: taken from IATI Meeting Minutes (2020)

The IATI Registry, IATI Datastore, IATI Dashboard, API Gateway, and IATI Validator collectively function as tools that support the input and use of IATI data. These tools are not DSS. The IATI Registry acts as a central catalog of datasets published by IATI publishers; the Datastore provides raw IATI data in CSV, JSON, and XML formats; the Dashboard offers insights into data quality and publisher performance; the API Gateway allows programmatic access to data for integration into external systems; and the IATI Validator serves as a voluntary checker that ensures data compliance with the IATI Standard by identifying errors or inconsistencies. The services these tools offer do not inform decisions directly but instead serve as foundational resources on maintaining data quality, and at most, enabling stakeholders to create custom applications and solutions tailored to their decision-making needs.

Of these tools, d-Portal serves as the primary gateway for the standard actor in development[5] to access and explore IATI data on development and humanitarian activities. Designed with accessibility and ease of use[6] in mind, d-portal allows users to visualize aid flows and project details through interactive dashboards, charts, and maps. While it provides a valuable interface for understanding data, it does not include advanced analytical tools, predictive modeling, or decision optimization features that are characteristic of DSS. Instead, it acts as a transparency tool, prioritizing data accessibility and exploration rather than direct decision-making support. This dual role—as a planning tool for recipients and a monitoring tool for donors—was emphasized in an interview with a transparency specialist who has overseen IATI operations.

[5] The word choice 'standard actor in development' is selected intentionally, as data specialists may prefer to view IATI data in alternative environments where they can directly manipulate data.

[6] "d-portal looks at IATI data from the viewpoint of the recipient country, allowing users to drill down to individual project detail and see what data exists, who has published and who hasn't yet, and where there are data quality issues" (IATI 2015)

The Country Development Finance Data (CDFD) tool is the most recent addition to IATI's toolbox, as it bridges the gap between technical and non-technical users by providing tailored access to aid data aligned with partner countries' national development priorities[7]. Unlike Aid Information Management Systems (AIMS), which is used to integrate IATI data into national platforms to support governments and organizations in managing aid information more effectively, the CDFD presents information in a simplified, user-friendly interface designed to serve a broader audience. CDFD and AIMS provide dashboards and reporting tools that facilitate development planning and coordination, and to this extent these systems might qualify as DSS components.

By harmonizing its tools, IATI has developed an integrated ecosystem that enhances data usability and advances its mission of promoting transparency and DBDM in the development and humanitarian sectors. But their overall quality requires closer examination.

4.4 IATI's Data Quality

Recalling the framework introduced in Section II: Theoretical Background, data quality is assessed across four dimensions: **intrinsic quality**, **contextual relevance**, **representational clarity**, and **accessibility** (Wang & Strong, 1996). Each dimension addresses a critical aspect of how data is generated, managed, and utilized, shaping its overall utility for decision-making. Additionally, **user capacity** allows for the effective use of data, emphasizing the need for technical skills, organizational culture, and analytical tools to transform data into actionable insights. This section thus evaluates IATI's data quality based on these dimensions while considering user capacity, identifying strengths and weaknesses of IATI to facilitate DBDM for aid effectiveness.

4.6.1 Intrinsic Quality

Intrinsic quality, as a dimension of data quality, assesses the inherent characteristics of the data itself, focusing on **accuracy**, **objectiveness**, and **credibility**. In the case of IATI, its data inherently benefits from credibility and objectiveness due to the nature of the information being managed: detailed project management data submitted directly by donors. These donors, including governments, multilateral organizations, and NGOs, must undergo an acceptance process as publishers before contributing data to the platform, reinforcing its reliability and impartiality.

While credibility and objectiveness are strengths of IATI's system, accuracy remains a critical area for evaluation. **Accuracy** refers to how well the data reflects real-world conditions and whether it is free from errors or inconsistencies. Given the decentralized nature of data reporting, accuracy can vary significantly across publishers, affecting the overall reliability and

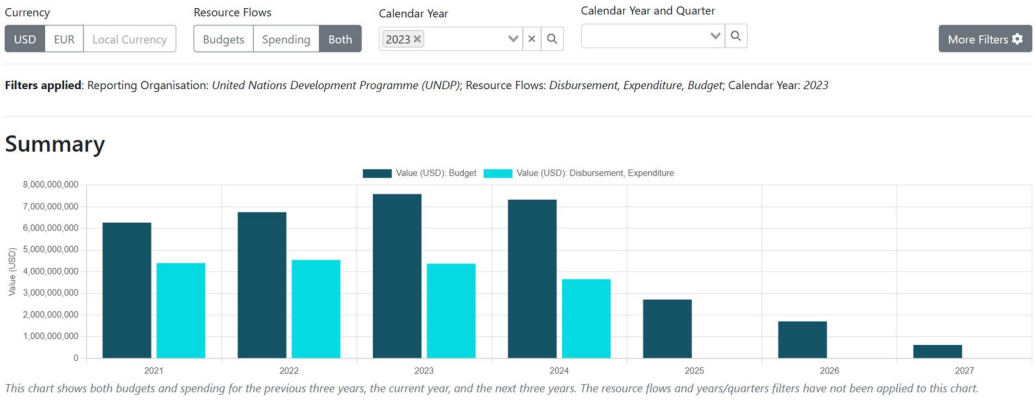
[7] International Aid Transparency Initiative. *IATI Country Development Finance Data*. Accessed June 8, 2024. https://countrydata.iatistandard.org/introduction/#fn-4.

usability of the data. The findings draw heavily on insights from technical evaluations and user feedback.

IATI's commitment to accuracy is anchored by the IATI Standard, which provides guidelines on the data that should be reported. To further its accuracy, it strives to ensure that reported data adheres to predefined formats and rules. To this end, the Standard is complemented by the IATI Validator, a tool designed to help publishers ensure their data conforms to the IATI Standard before publication. The Validator checks for structural and formatting issues, such as missing fields, incorrect data types, or invalid identifiers. By identifying and flagging these issues during the data submission process, the Validator supports publishers in placing data in the correct columns. Unfortunately, like IATI generally, use of the Validator is voluntary. Should contributors choose not to use it, they may inadvertently introduce errors.

However, accuracy is challenged by the lack of mechanisms to validate whether input values accurately reflect the financial realities of aid delivery. This issue becomes evident when analyzing UNDP's delivery and disbursement rates through the Country Development Finance Data (CDFD) platform. While differences between delivery and disbursement rates may be justified by operational delays or procedural factors, there is a gap in understanding what causes those differences, leading to questions of accuracy. This lack of clarity makes it difficult to distinguish whether reported budgets represent new funding or cumulative carryovers. Without mechanisms to identify and contextualize these discrepancies, users are left unable to determine the true flow of funds, complicating financial accountability and effective resource allocation.

Figure 6 UNDP Budget Summary (CDFD)



Source: taken from IATI's Country Development Finance Data

Additionally, another weakness in IATI's data accuracy is the lack of unique identifiers (e.g., primary keys) for distinguishing individual data entries. This shortcoming leads to problems such as data duplication and missing entries. According to the IATI Dashboard, approximately 4.6 percent of activity records are duplicates, representing nearly 43,641

duplicated entries out of 837,821 reported activities. This leads to questions on accuracy as duplicated activities are unlikely to reflect actual conditions in practice.

These issues have also been flagged by the IATI Data Publishing Community of Practice, which has identified duplicate activity identifiers as a recurring problem[8]. Practitioners within the community have noted that duplicates often arise due to overlapping reporting practices among publishers, inadequate validation mechanisms, and the absence of unique activity identifiers at the time of data entry. These challenges reduce accuracy in tracking aid flows and project details, making it difficult for users to rely on the data for comprehensive analysis.

4.6.2 Contextual Relevance

Contextual relevance is a critical dimension of data quality, focusing on whether data is suitable for its intended use. It evaluates **timeliness**, or how current and up-to-date the data is; **completeness**, referring to whether the data captures all necessary information; and **appropriateness**, which assesses whether the data aligns with the specific needs of its users (Wang and Strong 1992). In the context of IATI, ensuring contextual relevance is particularly important given the diverse array of stakeholders who rely on its data, including governments, NGOs, researchers, and donors for decision-making.

Once again, the IATI Standard provides publishers with detailed reporting guidelines aimed at addressing appropriateness. By incorporating member demands on the code lists it uses for the IATI Standard, especially demands from recipient countries, that Standard strives for user interest alignment. This is observable in its Version 1.0 to 2.0 update, which introduced more detailed categorizations and expanded data fields to improve the specificity and usability of reported information. For example, new codelists were added to enhance geographic classifications, allowing for more detailed regional and sub-regional information to align with partner country needs. Policy markers, such as those for climate change, biodiversity, and gender, were incorporated to reflect global thematic priorities. Sector classifications were updated to better align with partner country budget categories, and financial reporting categories now include forward planning budgets, disbursement dates, and multi-year projections. These updates were designed to align with evolving user needs, making the data more relevant and actionable for stakeholders such as governments, NGOs, and researchers. By refining its framework, IATI aimed to enhance the contextual relevance of its data, ensuring it remains adaptable to the complexities of development and humanitarian efforts.

IATI also relies on secondary tools like the Country Development Finance Data (CDFD) platform, which tailors data insights to the specific needs of partner countries. By presenting development finance data in a curated format, the CDFD helps align data with national priorities,

[8] IATI, 2021. "Duplicate Activity Identifiers: Problems and Solutions," *IATI Connect*, https://www.iaticonnect.org/data-publishing-cop/discussion/duplicate-activity-identifiers-problems-solutions.

addressing challenges of appropriateness. Through its interface and the ability to download data-filled spreadsheets, this tool bridges the gap between highly technical users and decision-makers with limited technical expertise, improving the usability of IATI data in practical contexts.

Timeliness has been addressed through the IATI Standard's emphasis on timely, comprehensive, and forward-looking reporting, in alignment with the Busan dimensions of data quality[9]. The IATI Standard recommends regular updates, such as monthly or quarterly reporting, to ensure data remains current and relevant. To support this, the IATI Dashboard[10] plays a complementary role by monitoring the performance of publishers, offering metrics that highlight adherence to reporting frequencies, data completeness, and overall coverage. While some publishers comply with these guidelines and provide timely updates, others report infrequently or with delays, affecting its contextual relevance.

Completeness remains the biggest challenge and limits the contextual relevance of IATI's datasets. Technical evaluations indicate that publishers frequently fail to populate required fields, resulting in data gaps in critical areas such as project timelines, funding breakdowns, and geographic coverage. These omissions reduce the utility of the data for stakeholders conducting detailed analyses or comparisons, particularly for large-scale initiatives spanning multiple regions or sectors.

Compounding these issues are limitations in the database schema, which introduce structural inefficiencies that hinder data integration and management. A related concern is the performance issues with external projects, such as the Code for IATI initiative, which allows SQL queries through Datasettle. While this platform enables users to interact with IATI data at a granular level, the database query speeds can take over 30 seconds, , making it impractical for regular use. These performance bottlenecks render Datasettle more suitable for one-time analyses, such as educational or academic purposes, rather than ongoing decision-making or operational needs. For stakeholders requiring timely and efficient access to data—particularly in fast-paced or resource-constrained environments—these limitations reduce the platform's appropriateness for integrating IATI data into real-time planning and monitoring processes.

4.6.3 Representational Clarity

Representational clarity is a vital dimension of data quality, addressing how effectively data is organized, presented, and structured to ensure it can be easily understood and consistently interpreted by users. This dimension encompasses two key elements: **interpretability**, which refers to the clarity and coherence of the data, enabling users to extract meaningful insights; and **consistency**, which ensures that data follows uniform formats,

[9] IATI, 2015. "What We Achieved in 2015," *IATI Standard*. https://iatistandard.org/en/news/what-we-achieved-in-2015/.
[10] IATI, "Timeliness of Data Publishing," *IATI Publishing Statistics*, https://publishingstats.iatistandard.org/timeliness.html.

definitions, and structures across datasets to avoid confusion and misinterpretation (Wang and Strong 1996).

For IATI, representational clarity is particularly important given the platform's role as a global standard for development data, serving a diverse audience of stakeholders ranging from technical experts to non-technical users. While IATI's use of a standardized schema provides a foundation for consistency, challenges remain in ensuring that data is presented in a way that is both accessible and actionable for users with varying levels of expertise.

Once again, the **IATI Standard** serves as a strength in its representational clarity, by defining how development data should be reported, structured, and formatted. This standardized approach promotes consistency across datasets, making it easier for users to compare and aggregate data from different publishers. The use of a schema ensures that key elements such as financial flows, project descriptions, and geographic locations are uniformly reported, reducing the risk of misinterpretation. Additionally, tools like the IATI Dashboard and Country Development Finance Data (CDFD) contribute to interpretability by offering curated views of the data tailored to specific user needs.

Despite its strengths, IATI faces challenges in ensuring interpretability due to the absence of standardized attribute constraints, which affects how clearly and consistently data is presented. Publishers often submit data with inconsistent attribute values, such as variations in the naming of the same organization (e.g., "UNDP," "United Nations Development Programme," or "유엔개발계획"). These inconsistencies complicate efforts to aggregate and compare data across datasets, reducing the clarity and coherence needed for users to extract meaningful insights. Implementing stricter attribute constraints and validation mechanisms could significantly improve representational clarity, making the data easier to navigate and interpret for both technical and non-technical users.

Another issue is the lack of clear roles among IATI's multiple tools, including API, CDFD, d-portal, and Datastore. While these tools aim to serve different purposes, their overlapping functionalities and inconsistent user interfaces can confuse users, particularly those new to the platform. This fragmentation hinders the ability of users to efficiently locate and utilize the data they need, reducing the overall clarity and usability of the system, further hindered by the inconsistencies between the platforms. For example, data recollection under the same administrative tag of *urban development* (43032), *urban development and management* (43030), and *urban land policy and management* (43031) in d-portal and the Datastore return different number of activities being 4,584 for the former and 3,137 for the latter.

4.6.4 Accessibility

Accessibility is the fourth dimension of data quality, determining how effectively users can engage with and leverage data for decision-making. This section examines IATI's performance in terms of ease of use, focusing on how intuitive and user-friendly the platform is

for a diverse range of users, with no sensitive or restricted information included in its datasets. This open-access nature eliminates many of the typical security challenges faced by platforms handling confidential or proprietary data. Instead, the emphasis shifts to ensuring that users can effectively access, navigate, and apply the data available on platforms like d-portal.

Recognizing that the majority of development stakeholders are not database-savvy, this analysis assumes that their primary interactions with IATI data occur through d-portal, the most accessible gateway to the platform's resources. The following discussion highlights the strengths and limitations of d-portal's usability, considering its capacity to support stakeholders in making effective use of IATI's data.

When the user knows precisely what they are searching for, IATI performs well. Rather than working as a tool for guiding decision-making, IATI works best when it is used for confirming facts. There are three cases in which IATI appears to be useful. The first case is when the user is searching for reference projects, i.e., seeking projects that match a narrow profile. After refining the search to identify projects fitting a profile, the user can do additional research outside of d-portal. A second case is in identifying potential partners for collaboration. Expanding on the first case, once a project has been identified as relevant to a user's interests, the user can contact relevant persons associated with the project. IATI project details often include contact information, simplifying this process. The third and final case is finding out the aid profile for a specific donor organization *provided* that organization can be found on IATI and reports data regularly. This feature could be useful for an actor who is checking their own organization's development projects, provided the data is available.

Despite its strengths, the d-portal has several limitations that hinder its broader ease of use. The first major problem that influenced outcomes for every scenario walkthrough was an inability to view trends both in time and across regions. Many of the scenarios called for finding out about projects or funding in a region, such as Sub-Saharan Africa or Southeast Asia. It takes little digging to quickly find that this is impossible. Unlike CDFD, d-portal only enables selection for individual countries. Just as regional comparisons are inaccessible, d-portal is also unable to give the user insights into trends, regional or within a single country, over time. There is a table view showing projects and years, but the view is clunky and does not allow the user to see past a handful of years. For those seeking to make comparisons between regions, between countries, and between different snapshots in time, d-portal does not facilitate said use.

IATI d-portal also fails at scaling, whether going up or going down. It is not easy to go from a broad selection, such as a donor country, and then identify smaller categories within it. As illustrated in the in-depth analysis of scenario four, the user cannot select a country as a donor. This is not an issue if the user knows exactly which agency they are searching for and is only interested in that organization. In the scenarios, which were partly exploratory in nature, this was not the case, however. One can imagine situations in which it would be useful to initially identify all foreign aid or projects funded directly by the US government in order to understand the big

picture of its aid portfolio, and then break this data down into smaller components by government agency. Unfortunately, the user cannot perform such a task. Because there is a discontinuity between larger organizations and their sub-agencies, one cannot conduct the reverse process either.

Another problem is the inability to distinguish between flows to a single country and flows to multiple countries. Projects and project funding, especially those of larger donors, are often spread out among several countries. While conveying this information is useful, d-portal lacks a clear method for separating the funding for an individual recipient country from a batch of recipients. One flawed method, as noted earlier, is to use a keyword search. This speaks to a more general issue of being unable to make certain distinctions between units that one would expect to be critically important for decision-makers in development. The inability to choose between types of development actors (e.g., IO, NGO, MLO) being a representative example.

Finally, though not conclusively, d-portal lacks a number of visualization tools. While a pie chart entitled "where does the money go?" appears at the bottom of each search result, a click takes the user to an inflexible table. The IATI Tool Guide contains links to data visualization tools. However, clicking these links or searching independently takes the user to dead links despite the existence of relatively new tools like IATI Country Development Finance Data (CDFD).

4.5 User Capacity

Having looked at data quality for DBDM through its four dimensions, it is important to recognize that none of it can be utilized if there is a lack of proper user capacity. Understanding that user capacity encompasses the skills, tools, and organizational culture required for users to effectively leverage data for decision-making, IATI has actively focused on providing user capacity-building opportunities and tools. These efforts include training programs, user guides, and resources tailored to both technical and non-technical stakeholders, enabling them to better understand and utilize IATI data. Additionally, IATI's tools, such as d-portal and the IATI Dashboard, are designed with varying levels of user expertise in mind, providing accessible entry points for less technical users while also catering to advanced analysts and developers.

To further enhance user engagement and knowledge sharing, in November 2020 IATI launched IATI Connect, a user-friendly digital community platform that facilitates peer exchange and collaboration among data publishers, users, transparency advocates, and technical specialists worldwide. IATI Connect offers both formal and informal opportunities for learning through its Communities of Practice (COPs), e-discussions, consultations, event listings, and a resource library, all accessible with automatic translation. This transition was a result of the COVID-19 pandemic, as annual meetings were postponed and shifted to online forms. This transition is reflected in IATI's 2020 Annual Report, which highlights the organization's adaptation to new ways of conducting business and engaging with stakeholders during the pandemic.

User capacity however also benefits from a broader organizational shift within the UN system, which has increasingly embraced DBDM as a cornerstone of its operational strategies. This alignment strengthens IATI's relevance as part of a wider ecosystem that recognizes the transformative potential of data in development efforts.

Embracing DBDM in the UN System

As the pandemic hindered progress on the SDGs, the UN Secretary-General introduced 'Our Common Agenda,' endorsing 12 commitments aimed at advancing the SDGs. Among these commitments was the 'Quintet of Change for UN 2.0,' which identifies five key areas of focus: 1) behavioral science, 2) digital transformation, 3) innovation, 4) data, and 5) strategic foresight (United Nations 2021). By recognizing data as a strategic asset to improve its operations, it aims to better adapt the UN system for future challenges by further embedding DBDM into the core of development efforts through its Data Strategy.

The UN Data Strategy is an initiative designed to enhance the organization's ability to harness the power of data to drive better decision-making and achieve greater impact across its activities. Launched in 2020 to be implemented over five years (2020-2025), the strategy outlines a commitment to improving data governance, literacy, protection, and use across all UN agencies. It prioritizes enhancing data governance by creating policies and standards that ensure ethical and secure data handling; promoting data sharing and interoperability to facilitate collaboration and innovation; and fostering a data-literate workforce to enhance DBDM. In other words, the strategy aims to establish a "data-driven culture" within the UN, emphasizing the role of data in informing practices that align with the wider discussions of transparency, accountability, and effectiveness.

However, user capacity varies greatly across the system, presenting a significant challenge for the effective use of IATI data. Many stakeholders, particularly in resource-constrained contexts, lack the technical expertise or training needed to navigate IATI's tools or interpret its data effectively. While IATI has invested in user guides, training programs, and platforms like IATI Connect to bridge this gap, many potential users remain unaware of these resources or of IATI itself. This lack of awareness, combined with disparities in data literacy and technological access, often results in underutilization of IATI's tools and datasets. Addressing these gaps will require targeted outreach, enhanced training opportunities, and simplified interfaces to ensure that all users, regardless of their technical background, can leverage IATI data for meaningful decision-making.

V. Discussion

5.1 Summary of Problems

While evaluating data quality across the dimensions of intrinsic quality, contextual relevance, representational clarity, and accessibility, it becomes clear that these issues are interconnected. Challenges in one dimension often influence the others. For instance, the absence of standardized attribute constraints compromises intrinsic quality by leading to inconsistencies in how data is reported, which in turn impacts representational clarity by making the data harder to interpret. Similarly, gaps in completeness under contextual relevance reduce the usability of data for decision-making, while also undermining accessibility by forcing users to navigate incomplete datasets.

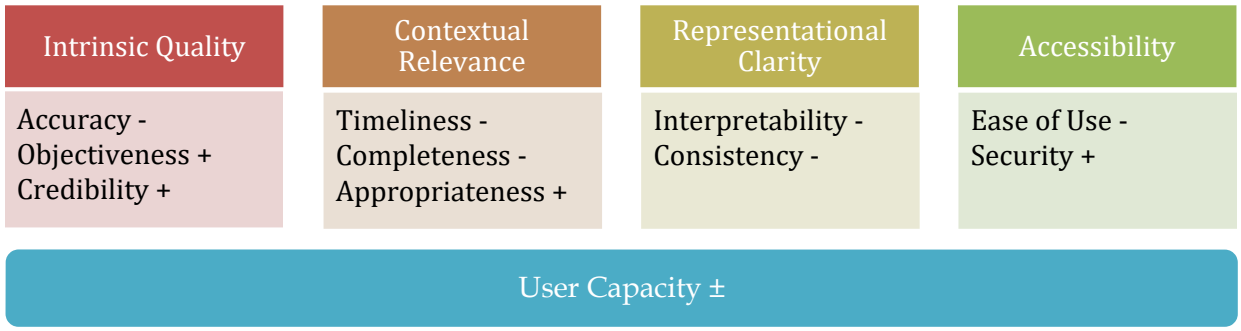
Problems identified have been listed in the following figures as well, to clearly outline the specific areas requiring improvement and to facilitate the development of targeted interventions.

Table 3 Categorized Problems per Dimension from IATI

Dimension(s)	Problem	Observable as…
Intrinsic Quality *Accuracy*	Lack of project validation	Mismatch between budget and expenditure in CDFD
	Lack of unique identifiers	Duplicated identifiers, missing data
Contextual Relevance *Completeness*	Incomplete data inputs	Missing data
Contextual Relevance *Timeliness*	Irregular data updates	Outdated data
Contextual Relevance *Appropriateness*	Structural inefficiencies for real-time use	Delayed responses for queries
Representational Clarity *Interpretability*	Absence of standardized attribute constraints	Inputs in different languages
Representational Clarity *Consistency*	Lack of clear roles among IATI tools	Inconsistent query responses between tools
Accessibility *Ease of use*	Inability to view trends both in time and across regions	Only individual countries/years selectable
	Fragmented donor scales	Lack of linkage between multiple donor agencies in same country
	Lack of single/multifunding differentiation	Projects reported an individual basis
	Lack of visualizations	Non-interactive visualizations
User Capacity	Varying degrees of user capacity	Varying demands on IATI

The challenges identified across IATI's dimensions of data quality and user capacity collectively underscore significant limitations in its ability to effectively support decision-making. Issues such as incomplete data inputs, irregular updates, and the lack of unique identifiers hinder the reliability and usability of IATI's datasets, while structural inefficiencies and fragmented donor scales complicate their integration into real-time or multi-level analyses. Furthermore, inconsistencies across tools, limited visualization options, and the absence of standardized attribute constraints impair interpretability and representational clarity, creating additional barriers for users attempting to extract meaningful insights. These limitations are compounded by varying levels of user capacity, which influence how effectively stakeholders can navigate and apply IATI's tools. Taken together, these challenges restrict the platform's functionality and highlight critical gaps in its ability to serve as a comprehensive resource for data-driven decision-making. With that in mind, the overall evaluation of IATI's data quality sums up as follows:

Figure 7 Overview IATI's Data Quality for DBDM



Many of IATI's challenges are rooted in the intrinsic nature of its voluntary framework, which leads to significant disparities in reporting quality among publishers. While the IATI Standard and tools like the Dashboard and CDFD have made strides in promoting contextual relevance, adherence to reporting guidelines varies widely across stakeholders. Some publishers provide timely and comprehensive data, while others submit incomplete or outdated information, exacerbating fragmentation within the dataset. This variability underscores the limitations of a voluntary system in ensuring consistency and accountability, ultimately affecting IATI's ability to deliver on its promise of transparency and effectiveness for its diverse user base.

Beyond these intrinsic challenges, structural issues stemming from IATI's incremental development over time have further compounded the platform's difficulties. While IATI's adaptability has allowed it to evolve in response to emerging needs, this approach has also introduced fragmentation, such as inconsistencies across tools, schema changes, and a lack of backward compatibility. These piecemeal developments make it challenging to harmonize older datasets with new standards, resulting in problems like duplication, incomplete records, and inefficiencies in querying and analysis. Additionally, demands for updates often prioritize donor

countries' needs over those of recipient countries, as observed in Members' Assembly discussions and historical trends in the platform's evolution[11]. Addressing these structural challenges is critical to ensuring that IATI's iterative changes enhance its utility as a decision-support resource while maintaining its commitment to transparency and aid effectiveness.

V. Future Direction

On IATI and Effectiveness

The International Aid Transparency Initiative (IATI) was conceived as a response to the evolving complexities of aid delivery and execution, shaped by diverse donor motivations and varied aid mechanisms. As donor priorities expanded from strategic interests to encompass recipient needs and merit, so too did the recognition of inefficiencies inherent in traditional aid frameworks. The global call for aid effectiveness underscored the importance of transparency and accountability—principles that IATI seeks to address by providing a standardized platform for data sharing.

IATI's ability to enhance aid effectiveness lies in its role as a bridge between the growing demand for robust development data and the practical needs of stakeholders involved in planning and executing aid programs. By making data accessible, comprehensive, and comparable, IATI facilitates evidence-based decision-making and fosters a collaborative approach to addressing development challenges. However, as aid delivery becomes increasingly multifaceted, ensuring that IATI evolves alongside these changes is critical to sustaining its impact.

At the heart of this evolution is the recognition that data quality is the foundation of effective decision-making. The discussions in this report have shown how intrinsic quality, contextual relevance, representational clarity, and accessibility each contribute to the utility of IATI's data. Addressing gaps in standardization, completeness, and interpretability will enhance IATI's ability to deliver actionable insights, ultimately strengthening its alignment with the broader goals of aid effectiveness.

Moreover, IATI's focus on user capacity highlights its understanding of the centrality of human and institutional readiness in leveraging data. These efforts reflect broader shifts within the UN system, particularly its push toward Data-Based Decision-Making (DBDM) as an emerging decision-making framework, additional to that of Strategic Planning and Results-Based Management. By situating IATI within this larger framework of international decision-making

[11] IATI, *IATI Community Exchange Bogota, 25 & 26 April 2024: Summary Report*. https://cdn.iatistandard.org/prod-iati-website/documents/IATI_Community_Exchange_2024_Summary.docx.pdf.

processes, its role extends beyond transparency to becoming an enabler of strategic foresight and innovation.

However, given that DBDM is defined by its ability to address the questions of "when" and "what" actions are most effective, IATI holds the potential to evolve into a comprehensive Decision Support System (DSS). To realize this potential, the next phase of the project will focus on developing targeted solutions to address the challenges identified during the initial phase.

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Annex A. Semi-Structured Interview Questionnaire

This annex lists the questions designed to explore two narratives for IATI: **procedural** (how IATI was planned and implemented) and **substantive** (how IATI is currently used and perceived). These questions served as guidelines to steer the conversation and address our research objectives. Interviewers adapted the questions as needed during the interview process.

- How familiar are you with IATI? How did you first become involved with IATI?
- How do you use IATI? What do you want to use IATI for?
- What did you envision for IATI at the time you first started working on it? How well does this align with its current state?
- When are IATI inputs done, and how long do they take?
- To what extent do these scenarios realistically reflect the use cases and users of IATI data?

  Scenario One
  Actor: Health Official
  Topic: Vector-borne Disease Aid Assistance
  Scenario: I am a government official in the CDC equivalent of a country in Latin America. I need to find an NGO with a track record of working in Latin America, with experience dealing with infectious disease transmission Ideally, the NGO should have a track record of not going over budget and completing projects on time.

  Scenario Two
  Actor: International Development Researcher
  Topic: Disaster Aid Analysis
  Scenario: I am a researcher focusing on the effectiveness of disaster relief aid in Southeast Asia. Using IATI, I intend to track the flow of aid following a major natural disaster to study the response times, amounts allocated, and project outcomes to evaluate the impact and efficiency of different types of aid from different donors.
- If the scenarios are not reflective of real use cases, what would be more realistic scenarios?
- How diverse are participant backgrounds (e.g., technical vs. non-technical)?
- How well do you think IATI's current user interface and functionalities align with the needs of its users?
- In your view, how does the use of IATI impact the transparency and effectiveness of information sharing among its users?

Annex B. Detailed Methodology and Findings from 3.4 Scenario Walkthroughs

Deep Dive: Scenario Four

This annex describes and discusses the results of one of the case studies in detail, showcasing how it played out in the two databases, IATI d-portal and OECD Data Explorer. The

highlighted case study is scenario four. Scenario four has been picked for the in-depth analysis because it is the least complex task in comparison to the other scenarios. In principle, it should be a simple matter of choosing a country and finding how its foreign aid is distributed across a region. In theory, this should be an easily accomplished task for a researcher, journalist, or policy maker. The scenario walkthrough proves this to be anything but the case. The details of scenario four are as follows:

> **Scenario Four**
> *Actor:* Policy Maker in a Donor Country
> *Topic:* Aid Portfolio
> *Scenario:* I am a policy maker from a donor country evaluating the allocation of our country's aid to South America. I use IATI to analyze our aid's distribution across different sectors (health, education, infrastructure) and its alignment with our strategic goals, ensuring that our international aid portfolio is balanced and effective.

IATI d-portal: Scenario Analysis

Prior to opening d-portal, the researcher makes the determination to select the United States as the donor country and selects Peru as the recipient country. Only Peru, rather than the South America region, is selected because d-portal lacks the ability to choose regional profiles. After opening d-portal and choosing 'Peru' the researcher tries to select 'the United States' as the donor under both the 'Reporting Organization' and 'Participating Organization' headings. However, this quickly leads to a roadblock. There is no way to choose a donor *country*. Users can select government-affiliated donors specific to a country. In the case of the United States, this leads to options like 'Department of State' or 'Department of Agriculture' while the option to simply choose all aid from the US government does not exist. The researcher manually types "United States" and then selects all related options. The researcher further narrows their search by selecting a time range of five years, from 2015 to 2019.

While the scenario guide calls for determining aid portfolio by sector, the researcher opts to not choose a specific sector in order to gain an overall picture to start. A search yields 818 total activities. A list of the 818 activities appears, displaying information such as: (1) date, (2) description, (3) receiver, and (4) value in USD. Clicking on a project opens to a new page featuring a comprehensive breakdown. One project of interest, due to the size of the disbursement, is a $1.601 billion USD national security project in Peru, reported by the US Department of State. The researcher opens the project page, curious about nearly $2 billion in spending on security matters in Peru.

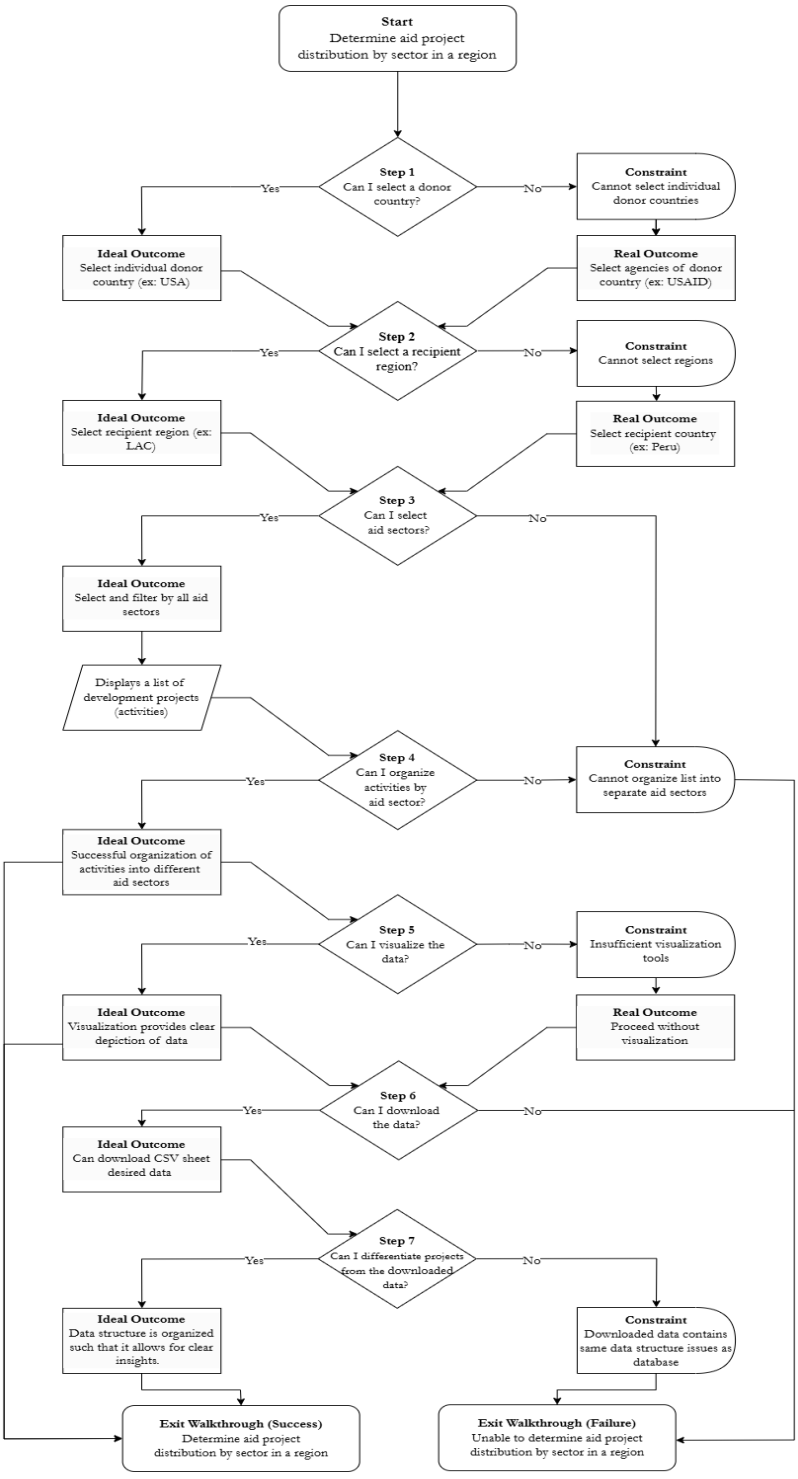
However, the researcher discovers that the listed amount is not solely designated for Peru. Rather, it is funding for a large-scale project that spans multiple countries, of which Peru is a small part. This would not be a major obstacle to the original goal of finding the aid disbursement in a

sector for one country (region) if Peru and the funding it has received could be filtered. It cannot be filtered, however. To find the individual disbursements to Peru, the researcher has to use a CTRL+F word search to find individual instances of 'Peru' and manually enter each value into a spreadsheet. This is a tedious and labor-intensive process.

To make matters more problematic, many of the activities listed on d-portal for Peru are a part of compounding funding projects that service multiple countries. The researcher determines that the only way to find the complete picture of US funding to Peru, one would have to open all 818 activities, use a keyword search to sift through the data, locate all instances of Peru and add it to a separate file. Such an undertaking could conceivably take months depending on the parameters. Recognizing that there seems to be no way to isolate the direct relationship between the selected donor and the recipient country, the researcher quits the walkthrough due to usability issues.

However, despite challenges in navigating IATI d-portal, through the research process broadly and the scenario walkthroughs in particular, it demonstrated itself to be the more effective resource. Much of this value is due to its mostly positive attribution in data availability. Most limitations came from challenges with displaying the data or separating it from other similar data. It is necessary to disclose that the walkthroughs examined the d-portal interface, so a more technical approach look may reach a different appraisal on data availability. That said, the foundation of d-portal exhibits its utility, but some shortcomings inhibit it from being a fully effective DSS.

Figure 8 Scenario Walkthrough Flowchart



OECD Data Explorer: Scenario Analysis

Similar to the process outlined in the previous scenario analysis, the researcher initiates the scenario walkthrough by deciding to focus on one aid recipient country instead of an entire region. Like last time, the researcher selects the 'United States' for the donor country whose aid portfolio is being evaluated. The researcher notes the clear categorization of donors by type (e.g., IO, NGO, multilateral organization, non-OECD, etc.). This is a welcome contrast to d-portal, which clumps all donors together regardless of type.

For the recipient country, the researcher settles on Colombia, and chooses "Official Development Assistance" as the target criteria. While choosing Colombia, the researcher notices that there is an option to choose a region, and decides to take a closer look later on. A search displays links to several pages. It is unclear what the purpose of these pages are. Clicking on a link takes the researcher to a page with data in a table with two columns, with years in the left column and total aid in USD on the right. Thus, the researcher can quickly find out total aid disbursements over any determined time period. However, unlike d-portal, the data cannot be broken down into specific projects or sectors. Beyond year and quantity, no further insights can be gained.

The researcher switches the recipient from Colombia to South America, while keeping the original criteria of ODA. A search leads to a table similar to the previous one, showing total ODA per year. Once again, this information cannot be broken down into smaller units such as project, sector, or country. The researcher further investigates the page links used to access quantitative data, page links with titles like "Aid (ODA) commitments to countries and regions [DAC3]" and "Aid (ODA) disbursements to countries and regions [DAC2]" (DAC referencing the OECD's Development Assistance Committee). It is unclear why data must be accessed through these pages, and exactly how it changes the data. Downloading a CSV file provides no additional insights, as the data is displayed in the same format with no new information.

Eventually, the researcher clears all criteria and starts from the beginning by selecting the United States. Finding an option to break down aid by sector, the researcher chooses 'all sectors' for the US. This option reveals aid spending by year, but cannot show where money is spent. The opposite case, trying to find the aid sector breakdown for a single recipient such as Afghanistan, shows numerical values but not where the aid comes from. The researcher interacts with OECD Data Explorer's visual display tools, such as tables and charts. The interface behaves counterintuitively at times, for example a bar graph ordering the x-axis by amount of aid rather than year despite selecting for year.

OECD Data Explorer can offer a fragmented big picture of yearly spending patterns by donors and aid received by recipients but lacks the data to track the flow of aid and identify relationships between recipients and donors. Some of its tools assist with usability, particularly the way it organizes criteria through headings and subheadings and the visual data tools. However, the lack of granularity renders these tools' value shallow.

Comprehensive Results

The in-depth look presents a snapshot of the challenges the researcher encountered while using the databases for just one scenario. Of course, there was not only one scenario, rather there were six. This section consists of abridged versions of the results for all the scenario walkthroughs.

Key:
+ = effective/sufficient
o = effectiveness unclear
– = ineffective/lacking

Table 4 Scenario 1: Vector-borne Disease Aid Assistance

	IATI D-Portal	OECD Data Explorer
Data Availability	+	–
Usability	o	–
Notes	● Unable to select target region ● NGOs cannot be filtered and differentiated from other actors; must sift through "Reporting Organizations" in the results	● Unable to select target region ● Displayed results do not clearly match with filters

Table 5 Scenario 2: Disaster Aid Analysis

	IATI D-Portal	OECD Data Explorer
Data Availability	+	–
Usability	–	–
Notes	● Region and actor selection is limited ● "List of activities" organization method unclear ● Lack of visualization impedes objective completion ● Project documents make d-portal useful for a detailed investigation of a few activities	● Unclear if results are derived directly from chosen filters

Table 6 Scenario 3: Finding Collaboration Partners

	IATI D-Portal	OECD Data Explorer
Data Availability	+	–
Usability	o	–
Notes	● Unintuitive to make comparisons (between: countries, donors, types of activities, etc.) ● Adding search terms can reset previous results ● Cannot compare project completion ● Able to find and contact donors	● Allows for very basic comparisons (i.e., funding) ● Results do not clearly match search criteria: ● E.g., selecting 'water supply and sanitation' yields results with titles like 'aid activities targeting gender equality and women's empowerment' ● Opening search criteria leads to alternative page: E.g., clicking a hyperlink titled 'activities targeting global environmental objectives' opens a page titled 'CRS grant equivalent'

Table 7 Scenario 4: Aid Portfolio

	IATI D-Portal	OECD Data Explorer
Data Availability	o	o
Usability	–	o
Notes	● Unclear if all data relevant to the donor (USA) is available ● Donors cannot be broken down by country affiliation ● Inability to parse out individual countries from multi-country aid packages significantly complicates usability	● Can make generalizations about donor and recipient; e.g., overall aid to a country ● Lacks capability to provide a granular view of data and information ● Visualization tools useful but also limited

Table 8 Scenario 5: SME Growth

	IATI D-Portal	OECD Data Explorer
Data Availability	+	–
Usability	o	–
Notes	● Parameter in scenario of "successfully attracted funding" too broad within IATI ● However, can do web searches of the donors and projects that come up in database search results ● Would be useful to view expanded view of individual activities within the activities list	● Development data relatively limited in scope; parameters unclear ● Unable to access all countries (both donors and recipients); especially individual countries in Southeast Asia ● Difficult to determine relationships between donors and recipient countries at the sector-level ● Dearth of data limits determination of usability

Table 9 Scenario 6: MEA Gender Equality Initiatives

	IATI D-Portal	OECD Data Explorer
Data Availability	o	–
Usability	–	o
Notes	● Major difficulties with identifying trends over time; especially across a region ● Uncertain of how policy marker differs from sector ● Selecting 'reporting organizations' rather than 'activities' provides a better picture of actors in a region, though still insufficient at giving details about trends ● 'Where does the money come from' table visually incoherent	● Filter results not necessarily related to filter selections ● Fairly easy to see trends in spending per OECD country ● Unable to break data down to smaller components; 'microdata' frequently missing ● Data visualization tools provide some help, but are overall messy