Transparency and Open Data in Public Procurement: An Analysis of European Union Member States

by

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EXECUTIVE SUMMARY

This report investigates the impact of open data on public procurement within EU member states, seeking to understand what initiatives have been implemented at the country level to create more transparent and value-oriented procurement systems. It examines prominent transparency and open data initiatives in public procurement, evaluating their methods, challenges, and achievements, and contrasts these findings with the EU's own TED (Tenders Electronic Daily) project. Drawing from these insights, the report identifies best practices and pitfalls, culminating in a set of targeted recommendations to guide future policy and technical strategies for enhancing procurement transparency.

Additionally, we propose a robust taxonomy of transparency projects, which classifies these projects according to the level of openness of data and the breadth of data elaboration and analysis. Based on these two dimensions, the identified types of transparency projects are A) regulatory compliance dashboards, B) pure open data projects, C) analytical dashboards, and D) comprehensive transparency platforms.
We conclude a series of recommendations aimed at improving national procurement systems toward better transparency. These recommendations include:

1) Emphasize Standardization of Data Formats:
   - Implement standardized data formats like CSV for consistency
   - Enhance interoperability and ease of data manipulation
2) Balance Depth of Data with Functionality
   - Curate detailed data to ensure clarity and comprehensibility.
   - Conduct regular audits for relevance and accuracy to maintain data integrity.
3) Adopt Open Data Policies
   - Mandate publication of procurement data in machine-readable and analytically friendly formats
   - Establish open data as a standard practice for transparency
4) Implement Interactive Dashboards
   - Utilize visual dashboards for easy understanding of procurement trends and insights
   - Allow stakeholders to engage with data without needing advanced analysis skills
5) Enhance Accessibility
   - Introduce multilingual support and user-friendly search functions
   - Democratize access to procurement information for international stakeholders
6) Collaborate with Civic Technology Organizations
   - Develop tools with civic tech to monitor public spending and detect irregularities
   - Promote a participatory governance model through these partnerships
7) Disclose Complete Procurement Process
   - Proactively publish all procurement stages, including contract awards and modifications
   - Enhance public institution accountability and citizen participation
8) Focus on Capacity Building for Data Literacy
   - Train public officials and stakeholders in data management and analysis
   - Empower informed decision-making through enhanced data literacy

1. INTRODUCTION

Public procurement plays a pivotal role in the economic landscape of developed countries. Government procurement activities, encompassing a wide range of goods and services, often represent a significant portion of a nation's Gross Domestic Product (GDP). In many developed nations, this figure ranges between 10% to 20% of the GDP, underscoring the sheer magnitude of government spending in the procurement sector[12].

Beyond the direct financial implications, the ripple effects of these procurement activities permeate various facets of the economy. For instance, when governments award contracts for infrastructure projects or public services, it often leads to substantial job creation, both directly within the awarded companies and indirectly in supporting industries. Moreover, by procuring goods and services from local businesses, governments can stimulate local industries, fostering innovation and promoting sustainable economic growth[3].

Transparency in public procurement is not merely an administrative necessity; it's a cornerstone in upholding public trust. When procurement processes are transparent, it assures the public that decisions are made based on merit and fairness, devoid of any undue influences or biases. This transparency becomes especially crucial given the significant amounts of public funds involved[4].

Citizens, as the primary stakeholders in any democratic setup, harbor an intrinsic expectation for their governments to act as judicious custodians of public funds. Every dollar, euro, or pound spent in procurement is, in essence, an investment made on behalf of the citizenry. As such, there's a collective anticipation for these investments to be made wisely, ensuring optimal value for money while adhering to principles of fairness and transparency. In the absence of transparent procurement practices, governments risk eroding this trust, which can have far-reaching implications on their legitimacy and public perception.

1.1 The importance of procurement transparency: why is more information needed?
In the realm of public procurement, information asymmetry refers to the situation where one party, typically the government or procuring entity, possesses more or better information than the other party, often the bidders or the general public. This imbalance of accessible information can lead to a skewed power dynamic, where the party with more information can potentially exploit its position to its advantage[5].

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[1] OECD. 2023. Size of Public Procurement. Accessed through https://www.oecd-ilibrary.org/sites/18dc0c2d-en/index.html?itemId=/content/component/18dc0c2d-en on November 1st, 2023.

[2] Duguay, R., Rauter, T., & Samuels, D. (2023). The impact of open data on public procurement. Journal of Accounting Research, 61(4), 1159-1224.

[3] Adam. I, Fazekas, M, & Zellmann, C. 2021. Open and Sustainable Procurement: Using Open Contracting Data to Assess Public Procurement Practices, discussion paper, Government Transparency Institute. Accessed from: https://www.govtransparency.eu/wp-content/uploads/2021/04/Adam_Fazekas_Zellmann_Open-and-sustainable-procurement_discussion-paper.pdf on October 20th, 2023.

[4] Adam. I, Fazekas, M, & Zellmann, C. 2021. Open and Sustainable Procurement: Using Open Contracting Data to Assess Public Procurement Practices, discussion paper, Government Transparency Institute. Accesssed from: https://www.govtransparency.eu/wp-content/uploads/2021/04/Adam_Fazekas_Zellmann_Open-and-sustainable-procurement_discussion-paper.pdf on October 20th, 2023.

[5] Dawson, G. S., Watson, R. T., & Boudreau, M. C. 2010. Information asymmetry in information systems consulting: Toward a theory of relationship constraints. Journal of management information systems, 27(3), 143-178.

The implications of information asymmetry in public procurement are manifold. For instance, when procurement officials have access to information that potential bidders do not, it can pave the way for favoritism. Officials might be inclined to provide preferential treatment to certain bidders, giving them an unfair advantage over others. This can manifest in various forms, from leaking confidential bid information to tailoring bid requirements to suit a particular bidder. Furthermore, information asymmetry can deter genuine competitors from participating in the bidding process, fearing an uneven playing field. This lack of competition can lead to non-competitive bidding, where contracts might be awarded at inflated prices that are not reflective of the market value.

Historically, accessing comprehensive data on public procurement posed significant challenges. Procurement notices, contract awards, and other relevant data were often disseminated in formats like PDF and HTML. While these formats are suitable for human reading, they are not conducive to large-scale data analysis or integration into databases.

For stakeholders, be it researchers, competing businesses, or watchdog organizations, this presented a myriad of challenges. Compiling data from disparate sources, each with its formatting nuances, was a labor-intensive task. Even after compilation, the analysis was hindered by the lack of standardization across these documents. For instance, extracting specific data points from a multitude of PDFs required specialized software and often manual intervention, making real-time or large-scale analysis almost infeasible. This lack of easy access to structured data not only hampered transparency efforts but also deterred many potential bidders, especially smaller enterprises, from participating in the procurement process due to the sheer complexity of accessing relevant information. This set the stage for the rise of transparency and open data projects.

1.2 The rise of transparency and open data projects
The European Union, recognizing the challenges posed by traditional data formats (in public procurement and in other government functions), took a monumental step in 2015 with the creation of the European Data Portal[6]. The European Data Portal was launched three years after a similar initiative was founded – the EU Open Data Portal – and it was meant to be larger in scope, as it aimed to be the main point of collection of relevant databases created by EU Member States and affiliated countries. Among the different databases offered by the European Data Portal, there is a subset of the Tender Electronic Daily (TED) data[7], which covers tenders above the procurement thresholds from 2006 and 2022 for the published in EU Member States, European Economic Area and beyond[8]. This was an ambitious initiative to consolidate all historical procurement notices into a singular, cohesive database, following the new standard forms published according to the 2014 Directives on Public Procurement. By consolidating most of the procurement notices published through the TED website, the EU aimed to provide a one-stop-shop for businesses and individuals looking for public procurement opportunities in Europe.

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[6] European Commission. n.d. Accessed through https://data.europa.eu/en on November 20th, 2023.

[7] TED – Tenders Electronic Daily. N.d. Accessed through https://ted.europa.eu/TED/browse/browseByMap.do on November 20th, 2023.

[8] European Commission. N.d.. Accessed through https://data.europa.eu/data/datasets/ted-1?locale=en on November 23rd, 2023.

This was not just about making information available; it was about making it accessible in a format that could be easily searched, analyzed, and used – thus realizing "data democratization."[9]

Choosing the CSV (Comma-Separated Values) format for this database was a significant decision. CSV, known for its simplicity and wide applicability, offers unparalleled accessibility. Unlike PDFs or HTML documents, CSV files can be easily imported into various data analysis tools, databases, and software applications, facilitating seamless data manipulation and analysis. This choice ensured that procurement data was not only centralized but also readily usable for stakeholders ranging from researchers to potential bidders. This project was part of a larger effort from the EU to promote data visibility and transparency in public administration – particularly for procurement.

Over the past eight years, in the wake of EU initiatives, projects promoting open data and transparency have seen a marked increase throughout the EU, both at the union-wide and individual country levels. A selection of significant initiatives — not limited solely to procurement data — and their examples are outlined below.

- *France-Data gouv.* France's primary public data portal offers a wide range of datasets from various public entities. It promotes transparency, innovation, and knowledge sharing by providing open access to public data[10].

- *Germany - GovData*. GovData is the data portal for Germany, aiming to make administrative data available to the public in a centralized location. It's a collaborative effort between the federal, state, and local governments[11].

- *Spain – Aporta*. An initiative by the Spanish government, the Aporta project aims to promote the use of open data and encourage public entities to share their data. It's a cornerstone of[12][OBJ].

- *Netherlands - Data.Overheid.* The Dutch government's official open data portal, Data.Overheid.nl, provides datasets from various governmental organizations, promoting transparency and innovation[13].

- *Italy – Dati.gov.* Italy's open data portal, dati.gov.it, offers a plethora of datasets from different public administrations in an effort to provide more information and transparency about governance and decisions in the public sector[14].

The transition to open data has ushered in a plethora of benefits, especially in public procurement. Foremost among these is the enhanced transparency it offers. With data being

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[9] European Commission. 2017. Making Public Procurement work in and for Europe. Accessed through https://ec.europa.eu/docsroom/documents/25612 on October 20th, 2023.

[10] French Government Data Portal. Accessed through https://www.data.gouv.fr/fr/ on October 20th, 2023.

[11] German Government Data Portal. Accessed through https://www.govdata.de/ on October 20th, 2023.

[12] Spanish Government Data Portal. Accessed through https://datos.gob.es/en/about-aporta-initiative on October 20th, 2023.

[13] Dutch Government Data Portal. Accessed through https://data.overheid.nl/en on October 20th, 2023.

[14] Italian Government Data Portal. Accessed through https://www.dati.gov.it/ on October 20th, 2023.

easily accessible, monitoring procurement processes becomes more straightforward, ensuring that deviations or irregularities can be swiftly identified and addressed. This transparency inherently fosters increased accountability, as procurement officials are aware of the heightened scrutiny their decisions undergo[15].

Beyond transparency, open data holds the promise of innovation[16]. With barriers to data access dismantled, researchers, businesses, and even tech startups can delve into procurement data to derive insights, identify trends, or even develop solutions tailored to the needs of public authorities. This culture of innovation, spurred by open data, can lead to more efficient procurement processes, novel solutions to longstanding challenges, and a more vibrant competitive landscape in public procurement.

For these reasons, we have seen a rise in transparency and open data projects specifically for the public procurement area. For example, launched in 2012, Open Contracting Partnership is a global initiative that aims to promote transparency in public contracting. The Open Contracting Data Standard (OCDS) promotes the publication of structured data in public contracting, making it easier to compare and analyze data across countries[17].

At the country level, we also observe different initiatives that vary in terms of depth and level of transparency. For instance, Italy has made strides in promoting transparency in public procurement through the National Anti-Corruption Authority. Launched in 2016, ANAC's open data portal offers comprehensive access to data concerning public contracts, tenders, and awards, all as a part of Italy's broader strategy to combat corruption[18]. Similarly, in 2017, the French government launched the Direction des Achats de l'Etat portal to provide transparent access to public procurement data, including contracts, tender notices, and awards[19]. The portal is part of France's broader open data strategy, aiming to promote transparency and competition in public procurement. Many other countries, such as Bulgaria[20] and Portugal[21], have also followed through with dedicated public procurement platforms and data portals.

1.3 Objectives of the research

The advent of open data has profound implications for the behavior of public procurement officials. With every decision, every tender, and every contract being open to public scrutiny,

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[15] Adam. I, Fazekas, M, & Zellmann, C. 2021. Open and Sustainable Procurement: Using Open Contracting Data to Assess Public Procurement Practices, discussion paper, Government Transparency Institute. Accessed from: https://www.govtransparency.eu/wp-content/uploads/2021/04/Adam_Fazekas_Zellmann_Open-and-sustainable-procurement_discussion-paper.pdf on October 20th, 2023.

[16] Adam. I, Fazekas, M, & Zellmann, C. 2021. Open and Sustainable Procurement: Using Open Contracting Data to Assess Public Procurement Practices, discussion paper, Government Transparency Institute. Accessed from: https://www.govtransparency.eu/wp-content/uploads/2021/04/Adam_Fazekas_Zellmann_Open-and-sustainable-procurement_discussion-paper.pdf on October 20th, 2023.

[17] Open Contracting Partnership. Accessed through https://www.open-contracting.org/worldwide/#/ on October 20th, 2023.

[18] Autorità Nazionale Anticorruzione (ANAC), Bandi di Gara e Contratti. Accessed through https://www.anticorruzione.it/amministrazione-trasparente/bandi-di-gara-e-contratti on October 20th, 2023.

[19] French Government Open Data Portal. Accessed through https://www.data.gouv.fr/fr/datasets/5cd57bf68b4c4179299eb0e9/ on October 20th, 2023.

[20] The Republic of Bulgaria Data Portal. Accessed through https://www2.aop.bg/en/home/ on October 20th, 2023.

[21] Portugal Data Portal. Accessed through https://www.base.gov.pt/Base4/en/ on October 20th, 2023.

there's an inherent pressure to ensure fairness and adherence to best practices. This visibility can act as a deterrent to non-competitive practices or potential biases, as officials are cognizant of the reputational and legal repercussions of any missteps. Open data levels the playing field in public procurement. With transparent access to data, bidders, irrespective of their size or stature, have equal footing in terms of information. This promotes genuine competition, as more businesses, including SMEs and startups, are encouraged to participate in the bidding process, knowing they have access to the same information as their competitors[22]. Such a competitive landscape invariably leads to better value-for-money outcomes, as governments can benefit from competitive pricing, innovative solutions, and higher-quality offerings.

On these premises, this report aims to answer the following questions:

What type of public procurement transparency and open data initiatives have Member States launched in the last years?

To answer these questions, we aim to analyze the different projects related to public procurement transparency that have been initiated by Member States in recent years, in terms of objectives and motivations behind these projects, nature, characteristics and potential benefits for public procurement efficiency, transparency and accountability.

In doing so, this research report will elaborate on the following areas:

1. **Project Analysis.** This segment will delve into an in-depth analysis of the most notable transparency and open data initiatives to identify both their distinct and common features. Towards this end, it will examine the approaches utilized, explore the obstacles they face, and assess the successes they have realized.
2. **Best Practices & Evaluation.** This section will identify and document the best practices that have emerged from these initiatives based on their classification. Conversely, it will highlight the pitfalls and challenges they have encountered, providing a balanced view of the pros and cons in comparison with other non-country-specific projects (such as TED).
3. **Recommendations.** The report will conclude with a set of policy and technical recommendations, charting a course for the future. This roadmap is intended to guide stakeholders on harnessing the full potential of open data and ensuring sustained transparency in public procurement.

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[22] Adam. I, Fazekas, M, & Zellmann, C. 2021. Open and Sustainable Procurement: Using Open Contracting Data to Assess Public Procurement Practices, discussion paper, Government Transparency Institute. Accessed from: https://www.govtransparency.eu/wp-content/uploads/2021/04/Adam_Fazekas_Zellmann_Open-and-sustainable-procurement_discussion-paper.pdf on October 20th, 2023.

2. METHODOLOGY: APPROACH FOR TRANSPARENCY PROJECT ANALYSIS

Our research focuses on a comprehensive exploration of transparency in public procurement across the 27 EU member states. This endeavor necessitated a meticulous examination of government sites and sources for each country. The primary criterion for our study was to identify projects that emphasize transparency in public procurement, especially those that employ tools to monitor such processes. This broad criterion encompassed all initiatives that presented procurement or contracting data to the public. The authors wish to acknowledge that, despite comprehensive research efforts, there might exist projects that were not identified in this study. This oversight may be attributed to language barriers or other unforeseen challenges. Please note that the analysis presented in this report is strictly based on the data that was successfully identified and collected.

2.1 The difference between transparency and open data projects

To further refine our understanding, we distinguished between two types of projects. The first, termed "**Transparency Projects**," are initiatives that present procurement or contracting data, ensuring that the procurement process is open and clear to the public. The second category, "**Open Data Projects**," represents a specific subset of transparency projects. These are characterized by the availability of data for download in CSV or XML formats, facilitating further analysis and reuse by interested parties.

A few cases illustrate this distinction, as noted below. In Italy, CONSIP, a public company under the Italian Ministry of Economy and Finance that offers procurement tools and centralized agreements to aid public organization acquisitions, features a section on its website dedicated to open tenders and procurement procedures, including the type of competition. This information is displayed as aggregated indicators on a dashboard (Figure 1); however, the underlying data is not available for download. This is an example of a *transparency project*.

Figure 1. Example of transparency project in public procurement: CONSIP, Italy[23]

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[23] CONSIP. Accessed through https://www.consip.it/bandi-di-gara/cruscotto-gare on October 20th, 2023.
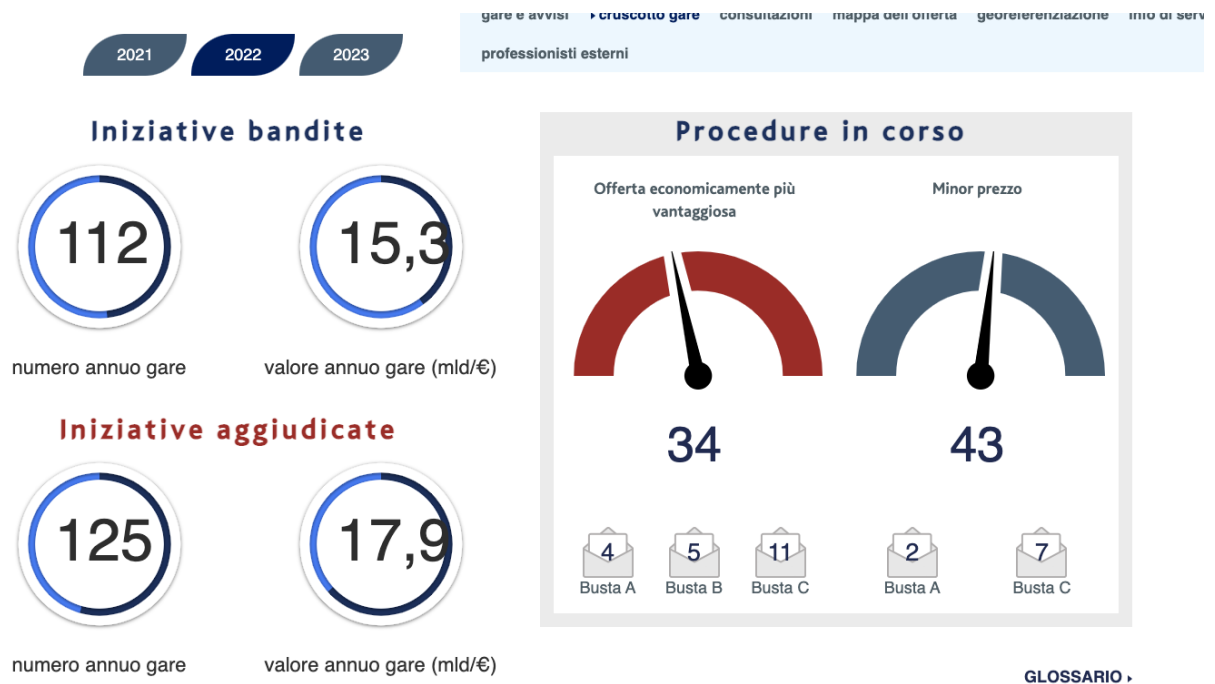
Latvia, on the other hand, has a procurement data portal that provides both aggregate statistics and downloadable data based on specific criteria (Figure 2). This is an example of an *open data project*.

Figure 2. Example of transparency project in public procurement: Latvia [24]
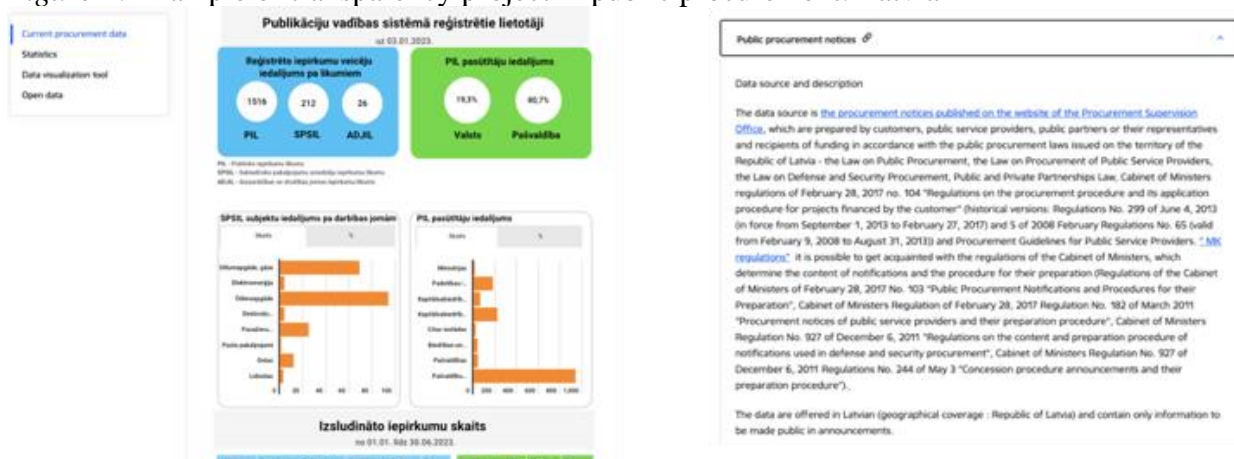
2.2 Recorded characteristics of transparency projects

For each project that met our criteria, we meticulously documented various attributes. This included a concise description, a direct URL to the project, its classification as open data based on the availability of downloadable data, the detail level of the project's data, and the type of information it provided. Another pivotal dimension in our evaluation of these transparency

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[24] Latvia. Accessed through https://www.iub.gov.lv/lv/aktualie-iepirkumu-dati on October 20th, 2023.

projects was the accessibility of their data. Our research was particularly discerning, focusing solely on national-level projects and deliberately excluding initiatives spearheaded by individual public organizations.

Table 1 summarizes the characteristics recorded for each project. See also the Excel repository provided in the attachment to this report.

Table 1. Transparency projects: attributes

Attribute	Description
Short description	A short description of the project
Link to the project	Link(s) to access the project data/information
Open data status	If the project is a transparency or open data
Type of information provided	The type of procurement information available through the project (independently if downloadable or not)
Project founder	The entity who founded/supervises the project
Tools used to monitor procurement	If aggregate statistics are present, the type of statistical and visualization tools used to present them
Accessibility	The level of accessibility and understanding of the project, e.g., if an English interface is offered

2.3 Sample

We sought to profile each EU member state in relation to public procurement transparency projects. This involved describing the various projects identified and correlating them with macro-indices. These indices included metrics like general government expenditure, as sourced from EUROSTAT[25], and the impact of public procurement on GDP from OECD data[26].

Table 2 provides an overview of this information and sample characteristics at the country level. As we can notice from the table, except for three countries (Austria, Poland, and Sweden, for which the authors were not able to locate any explicit transparency project), all the EU member states have at least one transparency project. The number of projects found in each case (from a minimum of 1 to a maximum of 5) does not seem to be correlated with the macro-data at the country level (i.e., we cannot conclude that countries where procurement represents a higher portion of GDP and/or government expenditure are also those that have more and/or better transparency projects).

Table 2. Countries, procurement indicators and the number of recorded transparency projects (NA = data not available).

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[25] Eurostat (2023). Government Expenditure by function. Accessed from https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Government_expenditure_by_function_%E2%80%93_COFOG#Detailed_data_by_function on October 20th, 2023.

[26] OECD (2023), *Government at a Glance 2023*. Accessed from https://doi.org/10.1787/3d5c5d31-en on October 20th, 2023.

	General government expenditure (2021; million €)	Procurement % of general government expenditure (2021)	Procurement % of general GDP (2021)	Number of transparency projects
Austria	227,261.6	27.7	15.6	0
Belgium	278,742.6	27.3	15.2	1
Bulgaria	28,871.0	24.7	10.3	1
Croatia	28,276.4	NA	NA	1
Cyprus	10,340.6	NA	NA	1
Czechia	110,818.6	30.3	14.1	2
Denmark	171,065.9	27.1	13.8	1
Estonia	13,040.6	34.3	14.2	2
Finland	139,928.0	33.9	18.9	1
France	1,476,674.0	26.0	15.4	2
Germany	1,845,999.0	35.3	18.1	1
Greece	104,368.0	21.5	12.4	1
Hungary	74,447.5	33.8	16.4	2
Ireland	105,814.2	31.1	7.7	1
Italy	986,167.0	20.5	11.8	5
Latvia	14,814.2	32.5	14.4	1
Lithuania	21,067.2	25.1	9.4	1
Luxembourg	31,006.2	26.8	11.5	1
Malta	6,532.3	NA	NA	2
Netherlands	399,073.0	44.8	20.9	1
Poland	254,114.0	27.3	12.0	0
Portugal	102,536.9	21.6	10.3	2
Romania	96,012.9	27.6	11.0	2
Slovakia	45,656.4	26.7	12.4	1
Slovenia	25,735.1	27.6	13.7	1
Spain	610,864.0	22.9	11.6	1
Sweden	265,466.9	32.8	16.2	0

3. REPOSITORY OF TRANSPARENCY PROJECTS

This section encompasses a comprehensive repository of transparency projects, each representing one of the 27 EU member states. The repository is curated to provide detailed insights into the type of project (based on the definition outlined in Section 2.1. above), various facets of these initiatives, including the accessibility and type of data available, the integration of dashboards and analytical tools, and the quality and ease of access to the information. Moreover, it outlines the ownership and oversight structures of the portals, drawing from the extensive information gathered on each project. The goal is to offer a clear snapshot of the transparency landscape across the Union, highlighting the diverse approaches and capabilities of the member states in promoting open data and public procurement transparency.

3.1 Austria (0 projects)

While a centralized database for comprehensive procurement data is not evident in Austria, several platforms facilitate access to open tenders and awarded contracts. These platforms primarily cater to suppliers and contracting authorities, indicating a focus on internal utility with limited public transparency.

The online edition of the Official Tender Journal, a service provided by Auftrag.at[27], is a notable platform where all calls for tenders from the federal government and federal sector contracting entities are published. This platform enhances searchability with functions that allow filtering by the contracting entity's name, contract type, place of performance, publication date, CPV (Common Procurement Vocabulary) code, and NUTS (Nomenclature of Territorial Units for Statistics) code. It is freely accessible to the public and maintains an archive of tenders from the past two years, which underscores a commitment to historical data transparency.

Furthermore, the procurement portal of the Austrian Contractor Registry (ANKÖ) consolidates all Austrian announcements from various governmental levels, including the federal government, federal provinces, cities, and those from the supplement to the Official Journal of the European Union. The portal's user-friendly features, such as the creation of personalized search profiles and an email service that alerts users to relevant tenders, significantly streamline the search process for potential bidders[28].

While these platforms do not constitute a unified national repository, they represent Austria's steps toward facilitating access to procurement information. However, the extent of public transparency is curtailed by the platforms' apparent design for internal stakeholders. The quality of data and accessibility, while serviceable for targeted users, may not fully meet the open data criteria as data is not readily downloadable for broader public use. The presence of a dashboard is not specified, which could further enhance data visualization and monitoring if implemented.

The website commendably includes an English language tab to cater to non-German speakers. However, it should be noted that full data accessibility is somewhat restricted by the necessity to comprehend German. Key documents and certain navigational elements remain in German, which could pose a challenge for those not versed in the language.

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[27]Austrian procurement portal. Accessed through https://www.lieferanzeiger.at on October 20th, 2023.
[28] Austrian Contractor Registry. Accessed through https://www.ankoe.at/en/index.html on October 20th, 2023.

3.2 Belgium (1 project + additional locals)

3.2.1 Central Procurement Platform (Type of project: transparency)
Belgium has taken significant strides in public procurement transparency with the establishment of a central procurement platform, which is managed by the Federal Public Service Policy and Support[29]. This platform is a testament to Belgium's commitment to enhancing the efficiency, transparency, and accessibility of public procurement.

  The platform serves as a comprehensive hub for both contracting authorities and suppliers. Contracting authorities have the convenience of managing procurement processes online, from publishing tender notices to inviting and interacting with suppliers. Suppliers, on the other hand, gain access to a centralized source of current and upcoming procurement opportunities, with the ability to submit bids electronically.

Type of data
The platform provides downloadable procurement data; however, the formats are restricted to PDF and HTML, which are not as amenable to detailed data use and analysis as structured data formats like CSV or XML would be. The data are captured with a high level of detail at the contracting authority level, offering a nuanced perspective of procurement activities. For ongoing projects, the platform encompasses a broad spectrum of information, from the procurement object and organizing entity, title, description, and nature to the CPV category, objectives, dispatch dates, status, and TED publication status, along with relevant deadlines. In the case of archived projects, it retails essential data, including the dossier and publication numbers, title, dispatch date, type of procedure, deadline for submission, and a brief description.

Presence of dashboard and analytics tools
The absence of a dashboard feature suggests a potential area for enhancement, as aggregate data analysis tools could significantly benefit users.

Accessibility
While the platform boasts an English interface, a comprehensive understanding of the procurement documents requires knowledge of French or other national languages, which could be a barrier for international stakeholders.

Ownership and oversight
The Federal Public Service Policy and Support underpins the platform, indicating robust governmental backing.

3.2.2 Additional Local Projects
In addition to the central platform, Belgium's commitment to procurement transparency is further exemplified by regional initiatives such as the procurement portals of the Brussels region[30],

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[29] Belgian procurement portal. Accessed through https://www.publicprocurement.be on October 20th, 2023.
[30] Brussels region portal. Accessed through https://pouvoirs-locaux.brussels on October 20th, 2023.

Flanders[31], and Wallonia[32]. These regional platforms complement the central system, catering to localized procurement needs and contributing to a more decentralized approach to transparency.

3.3 Bulgaria (1 project)

3.3.1 Public Procurement Portal (Type of project: open data)
Bulgaria's Public Procurement Agency has established a Public Procurement Portal (PPP), which stands as a centralized information system for public procurement[33]. This portal is a significant step towards enhancing the transparency and efficiency of procurement processes in the country. The portal offers a comprehensive suite of services:
- **Public Procurement Register**: A detailed repository of all public procurement activities.
- **Methodological Guidelines**: Resources for implementing the Public Procurement Law (PPL), aiding contracting authorities in compliance and best practices.
- **Document Templates**: Standardized documents for use by contracting authorities, streamlining the procurement process.
- **Lists of Entities**: Registers of contracting authorities, registered contractors, and economic entities subject to procurement regulations.
- **Monitoring Results**: Insights from the monitoring of public procurement activities, ensuring compliance, and identifying areas for improvement.
- **Control Results**: Outcomes of the PPA's control exercises, reinforcing accountability.
- **Monthly Bulletin**: Updates on the public procurement market in Bulgaria, keeping stakeholders informed of the latest trends and developments.

Type of data
The PPP provides data that is both accessible and downloadable, empowering users with the ability to conduct thorough analyses. Information is recorded at the level of the contracting authority, with details such as unique procurement numbers, contract dates, values, and changes.

Presence of dashboard and analytics tools
The portal includes analytical tools like bar charts, tables, and graphs, which are available through a dedicated analytics portal[34].

Accessibility
The portal is rated highly for the wealth of information it provides. While it supports an English interface, a comprehensive understanding of the procurement documents requires knowledge of Bulgarian, which could be a barrier for international stakeholders.

Ownership and oversight

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[31] Flanders region portal. Accessed through https://overheid.vlaanderen.be/overheidsopdrachten-en-raamcontracten on October 20th, 2023.
[32] Wallonia region portal. Accessed through https://marchespublics.wallonie.be/fr/home.html on October 20th, 2023.
[33] Republic of Bulgaria Portal. Accessed through https://www2.aop.bg/en/e-services/cais-eop-services-2/ on October 20th, 2023.
[34] Republic of Bulgaria Portal. Reporting bulleting. Accessed through https://app.eop.bg/today/reporting/bulletin on October 20th, 2023.

The platform's development was supported by the Operational Programme "Good Governance," co-funded by the EU through the European Social Fund (ESF), indicating a strong commitment to good governance practices.

3.4 Croatia (1 project)

3.4.1 Electronic Public Procurement Portal of the Republic of Croatia (Type of project: open data)
Croatia has taken a significant leap in public procurement with the development of the Republic of Croatia's new Electronic Public Procurement Portal[35]. This platform is a part of the National Recovery and Resilience Plan, specifically under the component "C2.3. R3-I9 Establishment of a new portal for the Electronic Public Procurement Platform of the Republic of Croatia." It marks a pivotal move towards digitizing and streamlining the public procurement process. The portal serves as a comprehensive platform for: The portal serves as a comprehensive platform for:
- **Publishing Public Procurement Procedures**: Contracting authorities can announce and manage procurement procedures in a transparent manner.
- **Bidding**: Economic operators have the opportunity to participate as bidders in public procurement procedures, fostering a competitive environment.
Users can access their procedures through a dedicated dashboard[36].

Type of data
The platform allows for data to be downloaded, although the richness of data is currently limited due to the newness of the site. Information is categorized by contracting authority and includes various tabs for procurement procedures, notices, decisions, rights protection, contract registers, and open data. Specific details such as procurement name, reference number, contract type, and estimated value are provided.

Presence of dashboard and analytics tools
The site's dashboard seeks to display up-to-date status indicators for procurement activities, including new procurements, recent consultations, newly posted notices, and planned procurement initiatives[37].

Accessibility
While the portal is in its nascent stages, some information is available only in Croatian, which may limit accessibility for international users.

Ownership and oversight
The portal's development is funded by the European Union's NextGenerationEU, reflecting a commitment to modernizing public procurement across member states.

3.5 Cyprus (1 project)

3.5.1 Cypriot Public Procurement Portal (Type of project: transparency)

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[35] Republic of Croatia portal. Accessed through https://eojn.hr/procurements-all on October 20th, 2023.
[36] Republic of Croatia dashboard Accessed through https://eojn.hr/DashboardFrm.aspx on October 20th, 2023.
[37] Republic of Croatia portal. Accessed through https://eojn.hr/konzola on October 20th, 2023.

In Cyprus, the public procurement landscape is shaped by the Cypriot Public Procurement Portal[38], known as e-PPS. This electronic procurement system is primarily designed for internal use within the public sector. It was developed under the auspices of the Republic of Cyprus, specifically by the Treasury of the Republic's Public Procurement Directorate. E-PPS stands as a secure and interoperable online application that aligns with both European and Cypriot legislation on public contracts. It facilitates the awarding of contracts through both single and repeat procurement processes. The Public Procurement Directorate of the General Accounting Office of the Republic of Cyprus oversees the management of the system, ensuring its adherence to legal standards and operational efficiency.

Type of data
The platform does not offer downloadable data for public consumption. Its primary function is to support the procurement process from within the government framework rather than serving as a public data repository. While this system may not offer the breadth of data accessibility seen in other countries' open data initiatives, it does provide essential insights into procurement outcomes for internal stakeholders and interested external parties. Specifically, the portal presents information for each call for tenders, offering a snapshot that includes the tender's title, the responsible contracting authority, the date of publication, submission deadlines, the procedural approach, estimated contract value, current status, threshold levels for bidding, and a downloadable PDF of the notice. It also indicates the date when the tender will be awarded. For tenders that are currently open, the website includes the tender's title, a unique identifier for ease of reference, the contracting authority in charge, the deadline for bid submission, the type of procurement procedure in use, comprehensive details to inform submissions, and the anticipated award date.

Presence of dashboard and analytics tools
While e-PPS lacks a dashboard for data analytics, it does provide a section titled "statistics," where it offers reports for transparency purposes. These reports cover tenders awarded through the eProcurement system for various years. However, the platform issues a disclaimer regarding the raw nature of the data, indicating that it may contain errors or omissions due to factors like incorrect or incomplete data entry. The responsibility for the use and further processing of this data lies solely with the user. The statistical reports available on the e-PPS platform are Tenders awarded from 2015 to 2023. These reports are downloadable in XLS format, providing a degree of transparency regarding the outcomes of the procurement processes.

Accessibility
Most of the information is available only in Greek, although the website has an English interface, which may limit accessibility for international users.

Ownership and oversight
The portal appears to be financed and maintained by the Government of Cyprus, with direct management by the Treasury of the Republic.

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[38] The Republic of Cyprus portal. Accessed through https://www.eprocurement.gov.cy/epps/home.do on October 20th, 2023.

3.6 Czech Republic (2 projects)

3.6.1 The ROZZA Portal (Type of project: open data)
The Czech Republic's approach to public procurement is centralized through the Public Procurement Portal[39], managed by the Ministry of Regional Development. This portal serves as a comprehensive resource for information on public contracts, offering guidance throughout the contract award process and ensuring the development of related legal norms.
The Public Procurement Portal includes several key components:
- **Information System on Public Contracts**: This subsystem includes a publication platform, a list of approved economic operators, a list of certified economic operators, and statistical outputs on public contracts.
- **Annual Reports and Summary Data**: The portal provides access to a wealth of reports, including annual reports on the state of public procurement for various years, strategy implementation reports, and reports on the functioning of the National Electronic Instrument for Public Procurement (NEN).
- **Public Procurement Statistics**: Detailed statistics and commentaries for each year are available, offering insights into the public procurement landscape.

Type of data
The portal allows for the downloading of various reports, which include:
- Annual reports on public procurement from 2011 to 2022.
- Strategy reports for the electronic award of public contracts for two periods, 2011-2015 and 2016-2020, along with their respective implementation reports.
- Reports on the functioning of the National Electronic Instrument for Public Procurement (NEN) from 2014 to 2021.
- Public procurement statistics from 2006 onwards, with accompanying commentaries.
- Reports on the evaluation of departmental centralized procurement systems and the functioning of public administration electronic markets, although the latter system was terminated in 2017.

Presence of dashboard and analytics tools
The portal presents a very minimalistic dashboard that displays only the very basic statistics: the total number of contractors registered and the cumulative number of orders processed[40].

Accessibility
The platform does not have an English interface.

Ownership and oversight
The portal and its associated systems are developed with a focus on transparency and efficiency in public procurement. The Ministry of Regional Development administers these systems, ensuring they are up-to-date and provide valuable guidance to stakeholders.

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[39] Czech Republic's portal. Accessed through https://www.portal-vz.cz on October 20th, 2023.
[40] Czeck Republic's portal. Accessed through https://rozza.cz/zakazky on October 20th, 2023.

3.6.2 The National Electronic Tool (Type of project: transparency)
The National Electronic Tool (NEN) is an integral part of the Czech Republic's public procurement infrastructure. It serves as an administrative platform for public procurement and concessions and is directly linked to the Ministry of Regional Development. It has itself a platform[41]. The NEN provides basic information about tender procedures, including contact details, descriptions of the procurement object, and additional details such as framework agreements or public contracts. It also maintains records of publication both in the NEN and the Public Procurement Journal (PPJ), ensuring transparency in the procurement process. Information regarding the place of performance for each contract is available, which is crucial for logistical planning and assessment.

Type of data
While the NEN offers data on various aspects of the procurement process, it is not readily downloadable, which may limit the ease of data analysis and accessibility for stakeholders.

Presence of dashboard and analytics tools
The NEN homepage features a dashboard that displays the number of contracting authorities, suppliers, realized tenders, and the total value of tenders within the system, providing a snapshot of procurement activity.

Accessibility
The platform does have an English version, which facilitates understanding for international users. However, detailed documents and procedural information may still require knowledge of Czech to fully comprehend.

Ownership and oversight
The NEN is the property of the Ministry of Regional Development, which suggests that it is subject to government oversight and standards for public procurement.

3.7 Denmark (1 project)

3.7.1 Udbud.dk (Type of project: open data)
Udbud.dk[42] is the centralized Danish platform for public procurement notices. It serves as a comprehensive repository for suppliers to find public-sector contracts and assists contracting authorities in the procurement process. The platform is mandated to collect information on future procurement procedures and notices from the ministries, as per the circular letter on government procurements. It is a key resource for both suppliers and contracting authorities in Denmark, centralizing procurement notices and plans in a user-friendly manner. While it may not offer advanced analytics tools, its daily updates and comprehensive data recording ensure transparency and accessibility. The requirement for ministries to report procurement plans underscores the platform's official status and the government's commitment to an open procurement process.

Type of data

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[41] Czech Republic's public procurement portal. Accessed through https://nen.nipez.cz/en/o-portalu on October 20th, 2023.

[42] Denmark portal. Accessed through https://udbud.dk/ on October 20th, 2023.

The platform aims to facilitate the procurement process, indicating a focus on the quality and clarity of the information provided. The platform is designed to be accessible to suppliers and contracting authorities, with daily updates on new notices and tender advertisements. Changes to procurement plans can be reported and accessed, ensuring up-to-date information. Data on national tender procedures, EU procurement procedures, and public authority procurement plans are recorded, and downloadable notices include whether the procurement is an EU procedure, the relevant area, expected time of completion, contract term, and contact information, including whether the procedure is SME friendly.

Presence of dashboard and analytics tools
Udbud.dk does not explicitly mention the presence of a dashboard or analytics tools. However, it is updated daily with new information, which suggests some level of data organization and presentation.

Accessibility
There is an English interface, but knowledge of Denmark is required to better navigate the information, which is structured to enable suppliers to plan their bids effectively.

Ownership and oversight
The website operates under the regulations set by the Danish government and the circular letter on government procurements. It is likely managed by a government body responsible for public procurement, ensuring adherence to national and EU procurement regulations.

3.8 Estonia (2 projects)

3.8.1 Government procurement portal (Type of project: transparency)
Estonia's main government website features a dedicated section for public procurement, which provides comprehensive information on the subject[43]. This section is designed to serve as a central point for accessing various resources related to public procurement processes within the country.

Type of data
The section on public procurement is part of the main government website, ensuring high visibility and ease of access for users. While the dashboard provides a visual summary of procurement statistics, the data presented within the Power BI dashboard is not available for download. Only data on the procurement of real estate seems to be downloadable directly [44]. The specific types of data recorded are not detailed in the description provided, but they typically include procurement statistics such as the number of tenders, values of contracts, distribution by sectors, and other relevant procurement metrics.

Presence of dashboard and analytics tools

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[43] Republic of Estonia's portal. Accessed through https://www.fin.ee/riigihanked-riigiabi-osalused-kinnisvara/riigihanked on October 20th, 2023.
[44] Estonia's portal. Accessed through https://www.fin.ee/riigihanked-riigiabi-osalused-kinnisvara/riigi-kinnisvararegister/avaandmed on October 2th, 2023.

A Microsoft Power BI dashboard is available[45], which suggests a modern and interactive approach to data presentation. The dashboard offers visualizations such as charts and graphs to summarize key procurement statistics. The use of Power BI indicates a commitment to presenting data in a user-friendly and accessible format. The inability to download data may limit detailed analysis by users, but the dashboard allows for an at-a-glance understanding of procurement activities.

Accessibility
Information is available in English.

Ownership and oversight
The public procurement section is hosted on the official government website, indicating that it is managed by a government entity, likely the Ministry of Finance or a similar body responsible for public procurement oversight. The presence of official government oversight ensures that the data and processes are in line with national regulations and standards.

3.8.2 Estonian Public Procurement Register (Type of project: open data)
In addition to this, the Estonian Public Procurement Register is a comprehensive self-service platform that facilitates the public procurement process for both contracting authorities and economic operators[46]. It serves as a central repository for all procurement-related activities and documentation in Estonia.

Type of data
The register is freely accessible to anyone interested in public procurement in Estonia. The data are machine-readable and downloadable. Users can browse through various procurement-related documents, including published procurements, notices, and contract information. The platform facilitates searches by procurement status and features several tabs for assorted categories of data. It maintains detailed records of public procurements, documenting the status of each. Notices and contract details are readily available for examination, and the decisions rendered by review committees are thoroughly recorded and open for access.

Presence of dashboard and analytics tools
The quality of the platform appears to be high, with a well-organized structure and a user-friendly interface. The register provides statistical reports and dashboards, enhancing the analytical capabilities of the platform. Graphs and visual representations of data, such as the volume of public procurements and procedures started in 2023, are available. Information on economic operators participating in procurements and the share of SMEs in 2023 is also presented visually.

Accessibility
While the platform is of great quality, some content may be in Estonian, which could limit accessibility for non-Estonian speakers.

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[45] Estonia's dashboard. Accessed through https://www.fin.ee/riigihanked-riigiabi-osalused-kinnisvara/riigihanked/kasulik-teave#kontaktid-riigihange on October 20th, 2023.
[46] Estonia's repository portal. Accessed through https://riigihanked.riik.ee/rhr-web/#/ on October 20th, 2023.

Ownership and oversight
The platform is sponsored by the Europa Liit Euroopa Regionaalarengu Fond (European Union European Regional Development Fund), indicating EU support and funding. The oversight is likely provided by a national authority, ensuring compliance with both Estonian and EU regulations for public procurement.

3.9 Finland (1 project)

3.9.1 Hankintailmoitukset.fi (Type of project: open data)
Hankintailmoitukset.fi[47] is a highly detailed and accessible service that provides extensive information on public procurement in Finland. It serves as a centralized platform where public buyers announce upcoming, ongoing, and completed tendering procedures. The service is designed to streamline the procurement process and enhance transparency by providing detailed information on each procurement notice. It stands out for its inclusion of green procurement and social equity items, reflecting Finland's commitment to sustainability and social responsibility in public procurement. The EU co-financing suggests a robust framework for transparency and quality, although the language barrier may need to be addressed to ensure wider accessibility.

Type of data
Data is readily accessible and downloadable, making it convenient for users to obtain and utilize procurement information. The service provides a wealth of detailed information, including specific procurement-related data points and criteria. Comprehensive procurement data is recorded, such as notice numbers, publication dates, buyer details, and project identifiers. Detailed information on the procurement criteria, including aspects of green procurement and social equity, is available. Data on the procurement process, such as deadlines, estimated values, and types of procurement procedures, are meticulously documented. Information on the outcomes of procurement processes, including the winning organization and the value of the procurement, is also provided.

Presence of dashboard and analytics tools
The service has a comprehensive and user-friendly interface. It also includes an overview section that presents "Hilma in numbers," offering a snapshot of new notices, ongoing procedures, and the value of ongoing procedures. This dashboard feature provides a quick analytical view of procurement activities in Finland.

Accessibility
While the platform provides extensive information, some content is available only in Finnish, which may pose a barrier to non-Finnish speakers.

Ownership and oversight
The service is co-financed by the Connecting Europe Facility of the European Union, indicating a level of European oversight and funding. The platform likely operates under the governance of a Finnish national authority or agency responsible for public procurement, ensuring adherence to both national and EU standards.

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[47] Finland's portal. Accessed through https://www.hankintailmoitukset.fi/en/ on October 20th, 2023.

3.10 France (2 projects)

3.10.1 Data.Gouv (Type of project: open data)
The French public procurement data is centralized through the data.gouv platform that
aggregates data from various sources, including the DGFiP Market PES, AIFE DUME API, and
several buyer profiles[48]. This initiative is in line with the decree from April 14, 2017, and its
amendment on July 27, 2018, which mandates the publication of essential public market data by
French public buyers.

Type of data
The data is available in XML and JSON formats, which are standard for data exchange.
However, these formats might be challenging for the general public to interpret without the use
of specialized software or technical knowledge. The dataset includes essential data on public
markets, although the specific types of data recorded are not detailed in the information
provided. In the platform discussion section, users have mentioned anomalies in the data
published by the AIFE. The accessibility seems to be technical, catering to users with a certain
level of expertise in handling XML and JSON data formats.

Presence of dashboard and analytics tools
There is no mention of a dashboard or analytics tools, suggesting that the platform serves
primarily as a data repository rather than a tool for analysis.

Accessibility
While the platform provides information in English, some content is available only in French,
which may pose a barrier to non-French speakers.

Ownership and oversight
The data is maintained by the French Ministry of Economy, Finance, and Industrial and Digital
Sovereignty, indicating government oversight and a level of official sanction.

3.10.2 PLACE (Type of project: transparency)
In addition, PLACE (Plate-forme des Achats de l'État) is the official platform used by the French
government for the digitalization of state procurement procedures. It centralizes the procurement
processes, allowing businesses to review and respond to tenders from various state entities and
public institutions[49].

Type of data
While PLACE provides a comprehensive system for viewing procurement opportunities, the data
itself does not appear to be downloadable, which may limit the ability for external analysis or
record-keeping. The platform records a variety of procurement-related data, including the public
entity issuing the tender, type of notice, procedure, main category, as well as social and
environmental considerations, place of performance, CPV (Common Procurement Vocabulary)

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[48] French portal. Accessed through https://www.data.gouv.fr/fr/datasets/5cd57bf68b4c4179299eb0e9/#/resources on
October 20th, 2023.
[49] French portal. Accessed through https://www.marches-publics.gouv.fr/entreprise on October 20th, 2023.

code, and bid submission deadlines. The lack of downloadable data may affect the overall accessibility for some users, particularly those looking for data analysis capabilities.

Presence of dashboard and analytics tools
PLACE does not seem to have a comprehensive dashboard or analytics tools for public use. However, it does offer a search function that allows users to quickly find contracts based on specific criteria such as location, category, or keywords.

Accessibility
Essential information is provided in both French and English. However, the user must have a grasp of French in order to understand certain information provided.

Ownership and oversight
The platform is overseen by the French government, indicating a centralized and official source for state procurement procedures. This suggests a level of reliability and authority in the information provided.

The French government also disseminates public tenders through the Tenders Gazette and Boamp.fr[50], which are additional resources for tracking business opportunities. These platforms offer practical tools to understand the rules of public orders in France, further supporting companies in navigating the procurement landscape.

3.11 Germany (1 project)

3.11.1 Eprocuerement platform (Type of project: transparency)
Germany's approach to public procurement is centered around eProcurement, which is the use of electronic systems to manage the procurement process from tendering to awarding contracts. The Federal Ministry for Economic Affairs and Climate Action's website provides an overview and directs users to the federal procurement portal, which facilitates the complete online handling of procurement procedures[51]. The website redirects to the federal procurement portal [52]. The move to fully digitize procurement processes by October 2018 for contracts above EU thresholds indicates Germany's commitment to streamlining procurement and making it more accessible for companies. However, the focus appears to be on operational efficiency rather than public transparency.

Type of data
The eProcurement system is focused on efficiency and ease of use for contracting authorities and bidders. The data on the federal procurement portal is not available for download, which

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[50] Bulletin officiel des annonces des marchés publics. Accessed through https://www.boamp.fr/pages/entreprise-accueil/ on October 20th, 2023.

[51] Germany Federal Ministry for Economic Affairs and Climate Action's. Accessed through https://www.bmwk.de/Redaktion/EN/Dossier/public-procurement.html on October 20th, 2023.
[52] German portal. Accessed through https://www.evergabe-online.de/start.html?2 on October 20th, 2023.

suggests that the platform is designed primarily for direct interaction between contracting authorities and bidders rather than for public data analysis or transparency purposes. The platform records essential procurement information such as the place of delivery, CPV code, participation deadline, tender submission period, publication period, tendering framework, type of service, whether it's freelance work, the contracting authority involved, categories, and tendering types.

Presence of dashboard and analytics tools
There is no mention of a dashboard or analytics tools for public use, which implies that the platform may not provide a visual summary or analytical insights into procurement data.

Accessibility
While the website supports an English interface, a comprehensive understanding of the procurement documents requires knowledge of German, which could be a barrier for international stakeholders.

Ownership and oversight
The platform is owned and operated by the Federal Government of Germany, ensuring that the procurement process is officially regulated and standardized across federal entities.

3.12 Greece (1 project)

3.12.1 HSPPA platform (Type of project: open data)
Greece's central procurement website[53], managed by the Hellenic Single Public Procurement Authority (HSPPA), serves as a hub for information on the country's public procurement strategy, plans, and platforms. The site features the Central Electronic Public Procurement Registry (KIMDIS), which is an integral part of the National Electronic System of Public Procurement (ESIDIS). KIMDIS is designed for the registration and publication of data on public contracts for goods, services, and projects with a budget of €1,000 or more, excluding VAT. The ESIDIS platform[54] represents a significant modernization effort in Greek public procurement, aiming to bring economic benefits and transparency. However, for non-Greek speakers or international companies looking to participate, there may be challenges in navigating and understanding the platform without translation assistance.

Type of data
The system records comprehensive data on the procurement process, including tender notices, bid submissions, evaluations, contract conclusions, and contract execution details such as ordering, invoicing, and payment. It also supports advanced procurement techniques like electronic auctioning and competitive dialogue.

Presence of dashboard and analytics tools

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[53] Greece portal. Accessed through https://www.eaadhsy.gr/index.php/en/ on October 20th, 2023.
[54] Greek National Electronic System of Public Procurement (ESIDIS). Accessed through https://portal.eprocurement.gov.gr/webcenter/portal/TestPortal on October 20th, 2023.

The ESIDIS platform includes a data analytics section with visualized data on public contracts and tenders, as well as downloadable statistics for public works and related services from April 2020 onwards.

Accessibility
While the platform seems to be robust and feature-rich, the quality and accessibility for international observers or participants are hindered by the language barrier, as the documents and files are primarily in Greek.

Ownership and oversight
The platform is operated by the Directorate for Development and Support of ESIDIS under the General Secretariat of Commerce and Consumer Protection, ensuring that it is subject to Greek law and regulations, particularly Law 4412/2016, which aligns with EU directives.

3.13 Hungary (2 projects)

3.13.1 Electronic Public Procurement System (Type of project: open data)
Hungary's Electronic Public Procurement System (EKR) is the central register for public procurement, which also supports the electronic management of procurement procedures[55]. It is operated by the Minister responsible for public procurement and serves as a comprehensive system for documenting all procedural acts and accessing related documents.

Type of data
The data within the EKR is downloadable, which facilitates transparency and allows for analysis by interested parties. This feature is particularly useful for monitoring the effects of market and legislative changes on procurement processes. The EKR records extensive information on procurement procedures, including IDs, names and tax numbers of contracting authorities, types of contracting authorities and their main activities, procedure thresholds, types of procedures, scope, contract types, values, CPV and NUTS codes, quality and cost criteria, EU fund connections, contractor details, framework agreements, and dynamic purchasing systems.

Presence of dashboard and analytics tools
While the EKR contains a wealth of information, it does not appear to have visualization tools or analytics dashboards. This may limit the ability to quickly interpret and analyze the data for trends or insights.

Accessibility
The platform offers an English interface, which improves accessibility for international users, although a full understanding of the documents may require knowledge of Hungarian. The bilingual interface indicates an effort to make the system more accessible to non-Hungarian speakers, but the language barrier may still present challenges for full engagement with the procurement process.

Ownership and oversight

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[55] Hungary's portal. Accessed through https://ekr.gov.hu/portal/public/pics/ekr-logo.svg on October 20th, 2023.

The system is managed by the Hungarian government, specifically the Minister responsible for public procurement, ensuring that it adheres to national regulations and standards for public procurement.

3.13.2 Corruption Research Center Databases (Type of project: open data)
In addition to this government-led website, a research institution, Corruption Research Center Budapest, offers several databases regarding Hungarian Public Procurement[56].

Type of data
The website offers different datasets, including
- Hungarian Public Procurement Data from 2005 to 2021 in CSV and DTA format
- The list of contracts and the analysis of winning odds from 2011 to 2020 in DTA format

The datasets are all downloadable.

Presence of dashboard and analytics tools
The website does not offer a dashboard or analytics tools accessible to the public.

Accessibility
The website is in English.

Ownership and oversight
The center is an independent entity. It was established as a non-partisan think tank independent of governments, political parties or special interest groups, in response to the growing need for independent research on corruption and quality of government

3.14 Ireland (1 project)

3.14.1 ETenders (Type of project: transparency)
eTenders is Ireland's electronic tendering platform designed for the management of procurement processes[57]. It serves as a central facility for all public sector contracting authorities to advertise procurement opportunities and manage the tendering process.

Type of data
The platform seems to provide limited transparency regarding procurement data. The statistics area lacks readily available information, which suggests that data accessibility for the public or external entities might be restricted. eTenders records essential procurement details such as resource ID, contracting authority unique ID, descriptions of the procurement, types of procurement, publication dates, Common Procurement Vocabulary (CPV) codes, estimated values, titles, names of contracting authorities, workspace status, procedures, and NUTS codes for the location of the contract, as well as tender opening dates. Given the very low transparency

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[56] Corruption Research Center Budapest portal. Accessed through https://www.crcb.eu/?cat=6 on October 20th, 2023.
[57] Ireland's portal. Accessed through https://www.etenders.gov.ie/epps/home.do on October 20th, 2023.

and the lack of statistical information, it is challenging to assess the quality of the data. The platform is primarily intended for internal use and management rather than public data consumption.

Presence of dashboard and analytics tools
The platform does not appear to have a dashboard or analytics tools accessible to the public, which limits the ability to analyze procurement data or gain insights into procurement trends within the platform itself.

Accessibility
The portal is in English.

Ownership and oversight
It is operated under the aegis of the Irish Office of Government Procurement, likely with oversight from the relevant department responsible for public procurement. This ensures that the platform adheres to the procurement policies and regulations in Ireland.

The focus of eTenders on internal management rather than public data sharing suggests that its primary role is to facilitate procurement processes rather than to serve as a data source for analysis. For those looking to engage with Ireland's public procurement data, alternative sources or direct requests to contracting authorities might be necessary to obtain more detailed or analytical information.

Ireland has an open data platform[58]. Within the Office of Government Procurement, there are five datasets available, "Contracts for Mini-Competitions and Standalone Awards (2023)," related to the government initiative launched in April 2014 to assist Small and Medium Sized Enterprises (SME) in Public Sector Procurement. These datasets include details for standalone awards and mini competitions [59] that were managed outside eTenders. An additional database called "Public Procurement Processes" seems to be under construction.

3.15 Italy (5 projects)

3.15.1 ANAC portal (Type of project: open data)
Italy has several projects to promote transparency and open data in public procurement.
The Autorità Nazionale Anticorruzione (ANAC) portal in Italy serves as a comprehensive platform for public procurement data[60]. It is designed to enhance transparency, facilitate the monitoring of public contracts, and prevent corruption. The portal also emphasizes the promotion of social, environmental, and societal sustainability in public procurement. The portal's design for engagement with civil society and data journalists indicates a strong commitment to public oversight and the use of procurement data for societal benefits. The provision of APIs and visualization tools makes the data accessible to a wide range of users, from casual observers to

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[58] Ireland open data platform. Accessed through https://data.gov.ie/ on October 20th, 2023.
[59] Contracts for Mini-Competitions and Standalone Awards (2023). Accessed through https://data.gov.ie/organization/office-of-government-procuremen on October 20th, 2023.
[60] Autorità Nazionale Anticorruzione (ANAC) portal. Acccessed through https://www.anticorruzione.it/ on October 20th, 2023.

professional analysts, enhancing the platform's utility for various stakeholders interested in public procurement in Italy.

Type of data
The ANAC portal provides datasets in the Open Contracting Data Standard (OCDS) format [61], which is updated monthly. This standardization allows for easy comparison and analysis of Italian public procurement data with other global datasets. The portal also offers real-time data access through an API, which is updated more frequently than the downloadable datasets. The data recorded includes detailed information on public procurement contracts valued above €40,000. The datasets are divided by year based on the notice publication date and are available in JSON and CSV formats, in addition to being OCDS-compliant. The data format conforms to the OCDS format and passes validation checks. The portal offers monthly updates and real-time API access for up-to-date information.

Presence of dashboard and analytics tools
The portal features visualization tools that allow users to navigate and analyze data without downloading it[62]. Users can filter and view data by contract types, number of procedures, values, and types of public organizations, among other filters.

Accessibility
The portal's interface and content are presented in Italian, posing a challenge for monitoring by individuals who are not proficient in the language. This language barrier limits the accessibility of the portal's resources to a wider international audience and may hinder comprehensive engagement from non-Italian speakers seeking to utilize the portal's services or data.

Ownership and oversight
The ANAC portal is co-financed by the Connecting Europe Facility funding program (CEF), indicating European Union involvement in its funding. The platform is likely overseen by ANAC itself, ensuring adherence to anti-corruption and transparency standards.

3.15.2 ANAC portal – corruption risks monitoring (Type of project: transparency)
The Autorità Nazionale Anticorruzione (ANAC) portal also includes a specialized area for assessing corruption risks in public contracts[63]. This section is dedicated to presenting indicators that help identify potential corruption risks associated with public procurement activities across various Italian provinces. The use of an interactive dashboard to present corruption risk indicators reflects an innovative approach to transparency and accountability in public procurement. By providing these indicators in an accessible format, ANAC empowers various stakeholders, including government officials, civil society, and the general public, to monitor and assess the integrity of public procurement processes. However, the limitation in data export

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[61] Open Contracting Data Standard. Accessed through https://dati.anticorruzione.it/opendata/ocds_en on October 20th, 2023.

[62] ANAC portal, Dashboard. Accessed through ttps://dati.anticorruzione.it/superset/dashboard/appalti/ on October 20th, 2023.

[63] ANAC portal – measuring tender corruption risks. Accessed through https://www.anticorruzione.it/rischio-corruttivo-negli-appalti on October 20th, 2023.

options may require users to rely on the dashboard for analysis rather than conducting independent evaluations with the raw data.

Type of data
While the dashboard is interactive and allows users to explore various indicators, the data export functionality is limited to image formats, which means that raw data cannot be directly downloaded for further analysis. The data encompass seventeen types of corruption risk indicators, categorized by subject (works, services, supplies), sector (ordinary and special), and year of publication. These indicators are designed to provide insights into the procurement processes and highlight areas that may be susceptible to corrupt practices. The quality of the data is implied to be robust, as it is part of the ANAC portal, which adheres to high standards of data integrity and transparency. However, the accessibility of the data for in-depth analysis is somewhat restricted due to the inability to export the data in a raw format.

Presence of dashboard and analytics tools
The portal features an interactive dashboard called the Procurement Risk Indicators Dashboard. This tool enables users to analyze the risk of corruption in procurement for each Italian province using the seventeen indicators. The dashboard is split into two screens: one that focuses on the risk threshold and another that presents the value of the indicators.

Accessibility
The website provides an English interface; however, proficiency in Italian is required to read certain documents.

Ownership and oversight
The dashboard and its indicators are likely managed and maintained by ANAC, ensuring that the data presented is relevant and accurate. The oversight by ANAC would also ensure that the indicators remain a reliable tool for assessing corruption risks in public procurement.

3.15.3 Ministry of Infrastructure and Transport portal (Type of project: open data)
The OpenData project by the Italian Ministry of Infrastructure and Transport provides a wealth of data related to infrastructure and transport sectors. It is a comprehensive resource for exploring various datasets, including those on road accidents, port infrastructure, and public spending on strategic infrastructure works. The SCP database is a key component of the OpenData project[64], managed by the General Directorate for Regulation and Public Contracts. It serves as a repository for notices, tenders, and results of public contracts in the infrastructure and transport sectors. It also includes specific data for unrealized works and infrastructure projects, which could provide insights into projects that were planned but not executed, potentially offering a window into the decision-making and planning processes within the public sector [65].

Type of data
The Italian Ministry of Infrastructure and Transport's OpenData project stands out for its commitment to data accessibility. It offers a wide array of datasets in diverse formats such as

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[64] Italy's OpenData project. Accessed through http://dati.mit.gov.it/catalog/dataset/scp on October 20th, 2023
[65] Italy data on unrealized work. Accessed through
https://dati.mit.gov.it/catalog/dataset?q=incompiute%E2%80%8B on October 20th, 2023.

CSV, XLSX, JSON, XLS, and PDF, ensuring that the information is readily available for various user needs. The inclusion of data in the Open Contracting Data Standard (OCDS) format particularly enhances accessibility, allowing for international comparison and analysis.
The SCP database within the OpenData project captures a comprehensive range of information pertaining to public contracts. This includes notices, tenders, and tender results, providing a full spectrum of data from initial announcement to final outcomes. The project also encompasses datasets on road accidents, port infrastructure, public spending, and strategic infrastructure works, offering a holistic view of the infrastructure and transport sectors.

Presence of dashboard and analytics tools
While the OpenData project provides extensive datasets, the presence of interactive dashboards or advanced analytics tools is not explicitly mentioned. However, the data's compatibility with various analytical tools due to its adherence to OCDS standards suggests that users can employ external tools to conduct their analyses.

Accessibility
The portal's interface and content are presented in Italian, posing a challenge for monitoring by individuals who are not proficient in the language. This language barrier limits the accessibility of the portal's resources to a wider international audience and may hinder comprehensive engagement from non-Italian speakers seeking to utilize the portal's services or data.

Ownership and oversight
Ownership and oversight of the OpenData project are under the purview of the General Directorate for Regulation and Public Contracts within the Italian Ministry of Infrastructure and Transport. This body is responsible for the regulation and oversight of public contracts, ensuring that the data is not only authoritative but also managed by a department with the requisite expertise and mandate.

3.15.4 MePA (Type of project: transparency)
The Electronic Marketplace (Mercato elettronico - MePA)[66] is a digital platform designed to streamline the procurement process for Public Administrations within Italy. The platform's design is primarily for operational use by Public Administrations and qualified economic operators.

Type of data
MePA records transactional data related to the procurement of goods, services, and maintenance works by Public Administrations. This includes information on the qualification of suppliers, the publication of calls for tenders, and the catalogs from which public administrations can make direct purchases or engage in negotiations with suppliers. The data on procurement activities is not openly downloadable, which limits public access. The quality of the data and the functionality of the platform are tailored to facilitate the procurement process for Public Administrations and qualified economic operators. The restricted access to the dashboard implies a focus on operational efficiency and security, ensuring that sensitive procurement data remains confidential and is only accessible to authorized users.

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[66] Electronic Marketplace (Mercato elettronico - MePA). Italy. Accessed through https://www.acquistinretepa.it/opencms/opencms/index.html on October 30th, 2023.

Presence of dashboard and analytics tools

The platform features a dashboard that provides insights into procurement activities [67]. Additional geodata regarding suppliers, buyers, and types of purchases are also available.

Accessibility

The website offers an English interface.

Ownership and oversight

The MePA platform is part of the Acquisti in Rete program, which is aimed at rationalizing public spending. The platform is overseen by the relevant Italian Public Administration authorities, ensuring that the procurement process is conducted in accordance with national regulations and standards for public spending. The ownership and oversight by these authorities guarantee that the platform operates within the legal framework intended for Public Administration procurement activities.

3.15.5 CONSIP portal (Type of project: transparency)

The CONSIP portal[68] stands as a pivotal component of Italy's public procurement landscape, offering a centralized digital gateway to a wealth of procurement information and resources. Managed by Consip S.p.A., a public company operating under the Italian Ministry of Economy and Finance, the portal is instrumental in fostering transparency and efficiency within the public procurement sector. It serves as a strategic interface for public administrations, suppliers, and other stakeholders, providing access to a range of procurement-related data, tender details, and strategic purchasing tools.

Type of data

The CONSIP portal provides a comprehensive overview of procurement activities through public notices and tender information. It serves as a central repository for various procurement-related documents, including those for tenders exceeding EU thresholds and other procurement procedures. The portal records a wide array of procurement information, such as details of Consip tenders, voluntary and prior information notices, market surveys, and procedures for purchases below the threshold. It also includes data on the types of procedures underway and the value of tenders.

The data presented on the CONSIP portal are interactive and can be analyzed through built-in data analysis tools, enhancing the user experience by allowing for a more dynamic interaction with the data. However, the data are not available for download, which may limit the ability to perform external or more in-depth analyses.

Presence of dashboard and analytics tools

A notable feature of the CONSIP portal is the Tender Dashboard, which displays key indicators related to Consip tenders, such as the number of initiatives announced and awarded, and the value of these tenders. Additionally, the portal offers market consultations and a map of offers, providing a strategic view of purchasing and trading tools available to Public Administrations.

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[67] MePA Dashboard. Italy. Accessed through https://www.acquistinretepa.it/opencms/opencms/programma_numeri.html on October 20th. 2023.

[68] CONSIP portal. Accessed through https://www.consip.it/bandi-di-gara on October 20th, 2023.

The georeferencing feature offers a geographic representation of public spending through Consip tools[69].

Accessibility
The portal's interface and content are presented in Italian, posing a challenge for monitoring by individuals who are not proficient in the language. This language barrier limits the accessibility of the portal's resources to a wider international audience and may hinder comprehensive engagement from non-Italian speakers seeking to utilize the portal's services or data.

Ownership and oversight
The CONSIP portal is managed by Consip itself, a public company supervised by the Italian Ministry of Economy and Finance. The portal's management under this authority ensures that the procurement information is maintained in line with national procurement policies and strategies, providing a reliable source of information for Public Administrations and other stakeholders in the procurement process.

3.16 Latvia (1 project)

3.16.1 Procurement Monitoring Bureau (Type of project: open data)
The Latvian Procurement Monitoring Bureau oversees a centralized public procurement database, which serves as the official platform for publishing mandatory procurement notices by contracting authorities and entities within Latvia[70].

Type of data
The database is openly accessible to the public, allowing for the viewing and searching of tender publications without the need for registration or payment. This ensures a high level of transparency and accessibility for all interested parties. The database records comprehensive details of public procurement processes, including status, publication dates, identification numbers, procurement details, contracting authority information, and submission deadlines. This data repository serves as a crucial resource for understanding public procurement dynamics in Latvia. Data are provided in machine-readable formats such as CSV and XLS, facilitating ease of use for data analysis and ensuring a high standard of data quality. The information is regularly updated according to a predefined calendar, guaranteeing the provision of up-to-date data.

Presence of dashboard and analytics tools
While the platform provides downloadable open data, it also features data visualization tools for public procurement and purchaser profiles[71].

Accessibility
The website provides an English interface; however, proficiency in Latvian is required to fully comprehend certain documents. Moreover, certain available tools require proficiency in Latvian to navigate and utilize effectively, which may limit their utility for non-Latvian speakers.

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[69] CONSIP Georeferencing. Accessed through https://www.consip.it/bandi-di-gara/georeferenziazione on October 20th, 2023.
[70] Latvia portal. Accessed through https://www.iub.gov.lv/en on October 20th 2023.
[71] Latvia portal data visualization. Accessed through https://info.iub.gov.lv/lv/visual on October 20th, 2023.

Ownership and oversight

The database is managed by the Latvian Procurement Monitoring Bureau, ensuring that the data is maintained with a high level of integrity and oversight. The bureau's responsibility for the platform underscores the official and authoritative nature of the information provided.

3.17 Lithuania (1 project)

3.17.1 Public Procurement Office data (Type of project: open data)

The Lithuanian Public Procurement Office hosts a "Statistics and Analysis" section on its website, which is a repository for data and reports on public procurement activities[72]. This section is instrumental in the creation of regular statistical reports and analyses that provide insights into procurement trends and compliance within the country.

Type of data

Data are made accessible primarily through the Central Public Procurement Information System, where procuring organizations publish their reports. The data are available for download, offering stakeholders the ability to engage with and analyze procurement details extensively. The recorded data encompasses a broad spectrum of procurement activities, including information on suppliers, defense contracts, and specific monitoring of oral contracts for low-value purchases. The section also includes data on contract amendments, descriptions of contract data, and measures related to COVID-19 procurement.

Presence of dashboard and analytics tools

The website features analytical tools such as the "Map of procurement executives" [73]and monitoring reports for "Single Supplier" purchases[74]. These tools provide visual representations of data and are intended to facilitate a better understanding of procurement dynamics.

Accessibility

While the data is comprehensive and updated regularly, there is a notable barrier to accessibility for those not proficient in Lithuanian, as most of the analytical tools and visualizations are provided in the local language.

Ownership and oversight

The Public Procurement Service, which operates under the oversight of national laws and regulations, manages the data and ensures its accuracy and compliance. The service also fulfills the role of reporting to the European Commission, adhering to the established standards and requirements.

3.18 Luxembourg (1 project)

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[72] Lithuania portal. Accessed through https://vpt.lrv.lt/lt/statistika-ir-analize on October 20th, 2023.

[73] Map of procurement executives. Lithuania. Accessed through https://vpt.lrv.lt/lt/statistika-ir-analize/pirkimu-vykdytoju-zemelapis-svieslente-1 on October 20th, 2023.

[74] Single Supplier. Lithuania. Accessed through https://vpt.lrv.lt/lt/statistika-ir-analize/vieno-tiekejo-pirkimu-stebesenos-ataskaita-1 on October 20th, 2023.

3.18.1 Public procurement portal (Type of project: transparency)
The Luxembourg public procurement portal serves as the official platform for publishing calls for tenders by various tendering entities within the country[75]. This includes the state government, municipalities, public institutions, and communal associations.

Type of data
While the portal provides extensive information for both suppliers and buyers on public procurement processes, principles, and updates, it does not appear to offer a dedicated section for the download of procurement data or for transparency visualization. The portal records information related to public procurement opportunities, such as tender notices, procurement procedures, and relevant news updates. However, specific details on the types of data recorded are not provided.

Presence of dashboard and analytics tools
The platform includes a subsection connected to the Portail Des Marches Publics, which lists open procurement opportunities that can be filtered through a supplier and buyer view[76]. Despite this functionality, there is no mention of dashboards or analytics tools for data transparency or download capabilities. The quality of the data and its accessibility to the public is not clear from the description. Since there is no option for data download or transparency tools, the quality and accessibility of procurement data for public analysis cannot be assessed.

Accessibility
The portal doesn't offer an English interface.

Ownership and oversight
The portal is presumably managed by the Luxembourg government, ensuring that the procurement processes align with the country's regulations and standards. The oversight mechanism is not detailed, but it would typically involve regulatory compliance with Luxembourg's public procurement laws.

3.19 Malta (2 projects)

3.19.1 Tenders published by the Department of Contracts (Type of project: transparency)
We identified two synergistic projects for the case of Malta. Due to their interconnection, we present an overview of the two projects together. The first project involves the publication of a list of tenders issued by the Department of Contracts through a traditional, manual (paper-based) system starting from the year 2014[77]. The second project is an online platform known as

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[75] Luxembourg portal. Accessed through https://marches.public.lu/fr.htm on October 20th. 2023.
[76] Open procurement opportunities. Accessed through
https://pmp.b2g.etat.lu/?page=Entreprise.EntrepriseAdvancedSearch&AllCons on October 20th. 2023.
[77] Department of Contracts list. Malta. Accessed through https://contracts.gov.mt/en/Awards/Pages/Awards.aspx on October 20th. 2023.

'electronic tendering' that allows for the searching of both open and archived tenders based on specified criteria[78].

Type of data
The list of tenders published by the Department of Contracts is not accessible due to website issues. Therefore, specific data types and the extent of information available are not clearly indicated due to website accessibility issues. The electronic tendering website offers information about tender notices, submission deadlines, award criteria, and other relevant procurement details. Neither website offers data in a downloadable format, limiting the accessibility of procurement information for further analysis or offline review.

Presence of dashboard and analytics tools
Neither of the two projects appears to provide dashboards or analytics tools for users. The 'electronic tendering' platform facilitates search functionality but lacks any advanced data visualization or analytical features.

Accessibility
The 'electronic tendering' portal is in English.

Ownership and oversight
The data on both platforms is maintained directly by Malta's Department of Contracts, ensuring that the information is managed by a central authority responsible for public procurement. Oversight would typically involve adherence to national procurement regulations and standards, although specific oversight mechanisms are not detailed.

3.19.2 MITA portal (Type of project: transparency)
Malta operates a specific portal project for IT procurement managed by the Malta Information Technology Agency (MITA). As part of its mandate, MITA oversees the execution of the Digital Malta National ICT Strategy and follows directives from the Parliamentary Secretariat for Financial Services, Digital Economy, and Innovation.

Type of data
The data provided by MITA on IT procurement is basic and includes a list of open tenders, archived awards, active awards, and canceled tenders that are still under evaluation[79]. The categories covered are Software Services, Non-IT Procurement, Infrastructure Services, IT Equipment, Licenses/Certificates, and Consultancy/Training. However, the data are presented in a raw format and are not available for download, which limits its accessibility for external analysis. MITA records data pertaining to IT procurement activities, which encompasses open tenders, awarded contracts, and canceled tenders across various IT-related categories. These data are essential for understanding government spending and priorities in the ICT sector.

Presence of dashboard and analytics tools

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[78] Electronic tendering. Accessed through https://www.etenders.gov.mt/epps/viewCFTSFromFTSAction.do?d-3680175-p=&T01_ps=100 on October 20th. 2023.
[79] Malta Information Technology Agency. Accessed through https://procurement.mita.gov.mt/awards/active-awards/ on October 20th, 2023.

The project does not currently offer any dashboards or visualization tools for the data it provides. This absence means that users cannot engage with the data interactively or extract insights through visual analysis.

Accessibility
The Malta Information Technology Agency (MITA) portal is offered in English.

Ownership and oversight
As the central driver of the Government's ICT initiatives, MITA owns and oversees the IT procurement data. This ensures that the data is managed by an authoritative body with a vested interest in the accurate and responsible representation of government IT procurement activities.

3.20 The Netherlands (1 project)

3.20.1 TenderNed (Type of project: open data)
In the Netherlands, the central government has embraced digital transparency and efficiency by publishing nearly all procurement procedures online through TenderNed. This platform serves as a one-stop-shop for businesses to submit bids for government contracts, streamlining the process by allowing companies to enter their details just once[80]. TenderNed is not only a digital management tool for the entire tender process but also a certified supplier for the European publication platform Tenders Electronic Daily (TED). The portal exemplifies a transparent and comprehensive approach to public procurement, offering both raw data and visual analytics. It caters to a wide range of users by providing sector-specific reports and addressing common concerns from entrepreneurs in the tendering process.

Type of data
The platform offers a high level of data accessibility, with datasets in Excel and JSON formats available for download every six months. These data include various types of announcements, such as market consultations, assignment announcements, corrections, and contract award notices. TenderNed records comprehensive data on procurement activities; it includes the most viewed tenders, tender datasets, and detailed analyses of procurement behaviors and outcomes from 2017 to 2022[81]. These data encompass contract durations, final award values, and the use of specific CPV codes.

Presence of dashboard and analytics tools
The platform offers an "analysis" area with interactive graphs and the ability to download data in multiple formats [82]. Users can customize views to focus on data relevant to their interests, and the platform provides insights into trends and statistics for various procurement aspects.

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[80] The Netherlands portal. Accessed through https://www.tenderned.nl/cms/nl on October 20th. 2023
[81] The Netherlands portal. Procurement Activity. Accessed through https://www.tenderned.nl/cms/nl/aanbesteden-cijfers/aanbestedingstrends on October 20th, 20203.
[82] The Netherlands portal analysis. Accessed through https://www.tenderned.nl/cms/nl/aanbesteden-cijfers/aanbestedingsmonitor-2017-2022 on October 20th, 2023.

Accessibility

The portal offers an English oversight, but proficiency in Dutch is required to read certain documents.

Ownership and oversight

As a government-run platform, TenderNed is under the direct oversight of the central government, ensuring that the data is trustworthy, and the processes are in line with regulatory requirements.

3.21 Poland (0 projects)

Poland does not seem to have a transparency project for procurement contracts. There is a section on the government website dedicated to public contracts, which reports information regarding rules and procedures for participating in public tenders, how to submit a bid online, and how to report bid rigging, but no specific data seems to be[83].

3.22 Portugal (2 projects)

3.22.1 BASE portal (Type of project: open data)

In Portugal, the public procurement landscape is centralized and made transparent through the Portal BASE, which is designed to disseminate public information on contracts governed by the Public Contracts Code[84]. It is a critical tool for ensuring transparency and accountability in public contracting, serving as a virtual space for the publication of contract-related information.

Type of data

The portal enables users to search for contracts, announcements, and contract modifications using various filters. It allows for the export of data up to 500 lines, which can be analyzed further externally. This feature enhances the accessibility of procurement data for various stakeholders. Portal BASE records detailed information on public contracts, including contract announcements, modifications, and other pertinent details that are essential for comprehensive public oversight.

Presence of dashboard and analytics tools

The portal includes a statistics area where users can create dashboards and visualization graphs. These tools provide insights through temporal graphics[85], tables of values[86], and portal-based[87], facilitating a deeper understanding of public procurement trends and patterns. The quality of data on Portal BASE is maintained by the Institute of Public Markets, Real Estate, and Construction, I.P. (IMPIC, IP), which is responsible for preparing and submitting statistical reports to the

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[83] Poland. Accessed through https://www.gov.pl/web/your-europe/public-contracts on October 20th, 2023.

[84] Portugal portal. Accessed through https://www.base.gov.pt/Base4/en/ on October 20th. 2023.

[85] Portugal portal temporal graphics. Accessed through https://www.base.gov.pt/Base4/en/statistics/temporal-graphic/ on October 20th, 2023.

[86] Portugal portal table of values. Accessed through https://www.base.gov.pt/Base4/en/statistics/table-of-values/ on October 20th. 2023.

[87] Portugal portal based indicators. Accessed through https://www.base.gov.pt/Base4/en/statistics/portal-base-indicators/ on October 20th. 2023.

European Commission. The portal ensures that data is not only accessible but also meets the statistical obligations of the Directives.

Accessibility
The portal offers an English oversight, but proficiency in Portuguese is required to read certain documents.

Ownership and oversight
IMPIC, IP, is tasked with the oversight of Portal BASE, ensuring compliance with the Public Contracts Code and the accurate representation of public procurement activities in Portugal.

3.22.2 AnoGov (Type of project: transparency)
AnoGov is a streamlined eProcurement platform that focuses on the current opportunities within the public procurement sector in Portugal[88]. It is tailored to assist suppliers in finding relevant tenders and understanding the landscape of contracting authorities.

Type of data
The platform provides a user-friendly interface for suppliers to search for ongoing tenders. However, it does not support data download, which limits the ability to perform external analysis. AnoGov records information on active tenders across various sectors, providing suppliers with up-to-date information on potential business opportunities with the government.

Presence of dashboard and analytics tools
The platform is straightforward and does not offer advanced features such as dashboards or analytics tools. Its primary function is to list active tenders rather than to analyze or visualize procurement data.

Accessibility
The portal offers an English oversight, but proficiency in Portuguese is needed.

Ownership and oversight
AnoGov is part of the Portuguese government's Quadro de Referencia Estrategico Nacional and is supported by the European Union. Its focus is on aiding suppliers in their search for public procurement opportunities. The platform's oversight is likely geared towards maintaining a current and accurate listing of tenders rather than providing comprehensive procurement data management.

3.23 Romania (2 projects)

3.23.1 Anti-Corruption Agency's Portal (Type of project: transparency)
The Romanian Anti-Corruption Agency's[89] website features a section dedicated to public procurement, providing various documents related to contract and acquisition processes. It is designed to enhance transparency by releasing procurement-related documents to the public.

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[88] Procurement opportunities. Portugal. Accessed through https://anogov.com/r5/en/ on October 20th, 2023.
[89] Romanian Anticorruption Agency. Accessed through https://anap.gov.ro/web/ on October 20th, 2023.

Type of data

The data are made available in an unprocessed form, primarily consisting of PDF files that cater to various aspects of the procurement process. This includes annual procurement plans, purchase announcements, and documents pertaining to contract execution, as well as copies of main ongoing contracts. Many documents are scanned copies of paper records. This format can be challenging for data extraction and analysis.

Presence of dashboard and analytics tools

The platform does not offer any dashboard or analytics tools. It serves as a straightforward document repository without the capabilities for data analysis or visualization.

Accessibility

The information is only available in Romanian, which can be a barrier for non-Romanian speakers.

Ownership and oversight

The Anti-Corruption Agency oversees the platform, with the primary aim of promoting transparency in public procurement. The focus is on making procurement data publicly available rather than providing tools for data manipulation or in-depth analysis. The portal is likely developed with the support of the European Union, as the EU flag appears in several parts of the website.

3.23.2 E-procurement platform (Type of project: open data)

The e-procurement platform in Romania is an online system that facilitates the announcement and management of public procurement procedures across various sectors[90]. It aims to streamline the procurement process by providing detailed information at each step, from the call for offers to the final awarding of contracts.

Type of data

The platform meticulously captures information across the entire procurement process. This encompasses the details of offers, technical and financial evaluations, selection of winners, and the status of awards. It also includes specific procedural details like the manner of conduct, type, criteria, and buyer information. Furthermore, the platform records the initiation and awarding of procurement procedures along with the particulars of direct purchases. The data are downloadable.

Presence of dashboard and analytics tools

While the platform does provide some analytics, these are primarily limited to statistics by counties. The analytical tools are somewhat basic but offer a glimpse into procurement trends and distributions geographically.

Accessibility

The platform offers a user-friendly interface with an English version available, enhancing accessibility for international users. However, the actual procurement documents are still in Romanian, which may limit accessibility for those not proficient in the language.

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[90] Romanian e-procurement system. Accessed through https://www.e-licitatie.ro/pub on October 20th, 2023.

Ownership and oversight
The platform is likely managed by a government entity with the responsibility to ensure the integrity and efficiency of public procurement processes. The focus is on providing a transparent and accountable system that allows for public oversight of procurement activities. The portal is likely developed with the support of European Funds (given that the website links the collaborative informatics system for a performing public procurement environment to European Funds.).

3.24 Slovakia (1 project)

3.24.2 Open Communication documents (Type of project: transparency)
The Slovak Office of Public Procurement's website features an "open communication" section, which is designed to offer transparency into the workings of the Slovak Office of Public Procurement[91].

Type of data
The data presented on the website is primarily in the form of PDF documents and tables. However, the information is not available for download, which restricts the ease of data manipulation and analysis for interested parties. The website maintains a comprehensive range of data, including statistical analyses of the procurement process, the office's budget and final accounts, detailed information on contracts, orders, and invoices, data concerning assets and receivables, plans for public procurement, and access to the e-procurement platform.

Presence of dashboard and analytics tools
Currently, the website does not offer any dashboard or advanced analytics tools. The data is presented in a very unstructured format, making it challenging to use for in-depth analysis.

Accessibility
The predominance of the Slovak language further limits accessibility for non-Slovak speakers.

Ownership and oversight
The data are managed by the Slovak Office of Public Procurement, which is responsible for ensuring the transparency and efficiency of the procurement process within Slovakia.

3.25 Slovenia (1 project)

3.25.1 central Procurement Platform (Type of project: transparency)
Slovenia's central procurement platform serves as a comprehensive resource for both suppliers and contracting authorities, facilitating the search for current open tenders[92].

Type of data
The platform maintains a detailed record for each tender, documenting the number on the Public Procurement Portal, the public contract reference number, and the type of procedure. It includes

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[91] Slovakia portal. Accessed through https://www.uvo.gov.sk/otvorena-komunikacia on October 20th, 2023.
[92] Slovenia portal. Accessed through https://ejn.gov.si on October 20th, 2023.

the title and subject matter of the contract, details of the contracting authority, and the deadlines for submitting tenders. Information regarding the public opening of tenders, including dates and times, is recorded, as well as whether the tender is divided into lots. The platform also details negotiation and auction processes, outlines information on permitted variants, and provides the current status of the tender, as well as links to publications on the PJN portal. The datasets do not seem available for download.

Presence of dashboard and analytics tools
The platform includes statistics and data analysis area[93], which suggests the presence of tools for analyzing procurement data. However, the extent and functionality of these tools are not clear from the description.

Accessibility
While the platform has an English interface, which broadens its accessibility to international users, a comprehensive understanding of Slovenian is necessary to navigate and interpret the details fully. This could pose a barrier to those not proficient in the language.

Ownership and oversight
The platform is appears to be managed by the Directorate of Public Procurement in Slovenia, ensuring that the procurement process is transparent and efficient. The portal seems to have been funded with European Union funds.

3.26 Spain (1 project)

3.26.1 Plataforma de Contratación del Sector Público (Type of project: open data)
In Spain, the Plataforma de Contratación del Sector Público[94] provides a dedicated open data area that enhances transparency and accessibility in public procurement. The platform offers open data sets related to various aspects of public procurement, excluding minor contracts. It serves as a centralized repository for data on tenders published by contracting bodies and through aggregation mechanisms.

Type of data
Data sets are available in open and machine-readable formats, ensuring that they can be easily accessed and processed automatically. This data is published on the Open Data Portal of the Ministry of Finance, where users can consult and download the information[95]. The platform records a comprehensive range of data, including tenders published by contracting bodies on the platform, tenders published through aggregation mechanisms, minor contracts, commissions to

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[93] Slovenia portal. Statistics and data analysis. Accessed through https://ejn.gov.si/en/statist.html on October 20th, 2023.
[94] Spain. Open Data. Accessed through https://contrataciondelestado.es/wps/portal/plataforma on October 20th. 2023.
[95] Open data portal. Spain. Accessed through: https://www.hacienda.gob.es/es-ES/GobiernoAbierto/Datos%20Abiertos/Paginas/licitaciones_plataforma_contratacion.aspx on October 20th, 2023.

own media, preliminary market consultations, and profiles of contracting bodies hosted on the platform.

The use of standardized technical formats for data distribution, such as Office Open XML, facilitates ease of use and compliance with technical specifications. To assist with data processing, the platform offers resources such as the OpenPLACSP tool for public tender data sets, a summary document of the data, and a specification document for data syndication and reuse.

Presence of dashboard and analytics tools
While the description does not mention specific dashboard or analytics tools provided by the platform, the availability of data in processable formats suggests that users can perform their own analysis using external tools.

Accessibility
While the platform has an English interface, which broadens its accessibility to international users, a comprehensive understanding of Spanish is necessary.

Ownership and oversight
The platform is managed by the General Subdirectorate for the Coordination of Electronic Contracting under the General Directorate of Heritage, ensuring that the data is maintained and updated periodically.

3.27 Sweden (0 projects)

Sweden does not seem to have a transparency project for procurement contracts. There is a section on the government website dedicated to public procurement, which reports information regarding how public procurement works in Sweden, but no specific data seems to be available[96]. There is a platform with some data available – e-Avrop – but its navigation and data availability seems tied to a submission[97].

3.28 Other notable non-country level initiatives (3 projects)

Other than country-level initiatives, it is important to highlight the characteristics of three further transparency projects in public procurement at the EU level.

3.28.1 Tenders Electronic Daily (Type of project: open data)
The TED (Tenders Electronic Daily)[98] is a significant resource for information on public procurement across the European Union and beyond. TED is the online version of the 'Supplement to the Official Journal' of the EU; it specializes on European public procurement, but it also includes notices from EEA countries, Switzerland, candidate and accession countries,

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[96] Sweden. Public procurement. Accessed through https://www.government.se/government-policy/public-procurement/ on October 20th, 2023.
[97] E-Avrop. Sweden. Accessed through https://www.e-avrop.com/e-Upphandling/Default.aspx on October 20th, 2023.
[98] TED Database. Accessed through https://ted.europa.eu/TED/browse/browseByMap.do on October 20th, 2023.

international organisations, and many others. It serves as a comprehensive source of procurement notices, including calls for tenders and contract awards.

Type of data
The TED portal is accessible online, and it provides different sections.
- Notice publication, which offers an interactive map to explore procurement opportunities by country[99].
- Information about public procurement and systems through SIMAP[100].
- Reception of notices through eNotices[101] and eSentool[102].
- Call for tenders' publication through eTendering[103] (which is now transitioning to the Funding and Tenders portal)

TED notices can be downloaded in bulk directly from the website (for registered users only)[104], or from the ftp[105].
Although separated from the TED website and portal, a subset of the TED data is also freely available for download in CSV format from the European Data Portal[106], which includes key details about contract and award notices.
Both source of data include detailed procurement information such as the contracting authority, the description of the procurement, the awarded contractor, contract value, and the procurement procedure and criteria used. While the focus is on tenders above the EU procurement thresholds, it also includes a number of below-threshold tenders. The data are standardized and provided in a format that is conducive to analysis and processing.

Presence of dashboard and analytics tools
TED is primarily a data repository, and the website does not offer built-in dashbards or other analytics tools. While some visualization is possible for open opportunities by country, users can download the data and perform their own analysis using external software or tools. The SIMAP website offers "Statistical production files" produced by the Publications Office of the European Union for information on the publication of notices in TED, in terms of number of published notices by original language, country, EU institution, and file format.[107]

Accessibility
The website has a primary English interface but it is characterized by high accessibility, as the website is also available in all EU official languages. It is available 24/7, and registration is free of charge. There are over 23,000 active registered users.

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[99] TED Database. Interactive map. Accessed through https://ted.europa.eu/TED/browse/browseByMap.do on October 20th, 2023.
[100] SIMAP. Accessed through https://simap.ted.europa.eu/en on October 20th, 2023.
[101] TED E-Notices. Accessed thoguh https://enotices.ted.europa.eu/ on November 23rd, 2023.
[102] TED Esentool. Accessed through https://esentool.ted.europa.eu/ on November 23rd, 2023.
[103] TED Etendering. Accessed through https://etendering.ted.europa.eu/general/page.html?name=home on November 23rd, 2023.
[104] https://ted.europa.eu/TED/misc/xmlPackagesDownload.do
[105] ftp://guest:guest@ted.europa.eu/
[106] EU Data Portal. Accessed through https://data.europa.eu/data/datasets/ted-1?locale=en on November 23rd, 2023.
[107] SIMAP. Accessed through https://simap.ted.europa.eu/en_GB/web/simap/statistical-production-files on November 23rd, 2023.

Ownership and oversight

TED is maintained by the European Commission, ensuring a high level of oversight and regular updates to the database.

3.28.2 OpenTender (Type of project: open data)

OpenTender is a platform that aggregates and makes searchable tender data from 35 jurisdictions, including all EU member states, several European countries, and a few countries from the broader European neighborhood[108]. It serves as a one-stop shop for accessing public procurement data across these regions. The available data spans the years between 2009 and 2022.

Type of data

The platform provides a centralized point of access where users can select a country to view data on individual national portals or explore the data more broadly. This approach simplifies the process of finding and analyzing tender data across different jurisdictions. OpenTender records comprehensive data on public procurement processes, including tender notices, contract awards, procurement volumes, and details about the contracting authorities and suppliers. The specifics of the data would depend on what is made available by each jurisdiction. Data are downloadable. The platform's commitment to covering a wide range of jurisdictions suggests a high level of data quality and accessibility. By providing a unified interface, OpenTender ensures that data from different countries is accessible in a consistent format.

Presence of dashboard and analytics tools

OpenTender features dashboards and analytics tools that allow users to filter, search, and analyze the data within the platform. These tools can provide valuable insights into procurement trends, market competition, and more.

Accessibility

The website has a primary English interface but it is characterized by high accessibility, as the website is also available in all EU official languages.

Ownership and oversight

Although OpenTender provides access to some of the data available through TED, it represents a private project initiative overseen by the Government Transparency Institute. The project received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 645852, and the portal was created by the DIGIWHIST consortium.

3.28.3 Open Contracting Partnership (Type of project: open data)

Open Contracting Partnership (OCP)[109] and its Open Contracting Data Standard (OCDS)[110] are two further private project initiatives aimed at enhancing the transparency and accountability of public contracting worldwide. The Open Contracting Partnership is an organization that

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[108] OpenTender. Accessed through https://opentender.eu/start on October 20th. 2023.

[109] Open Contracting Partnership. Accessed through https://www.open-contracting.org on October 20th, 2023.

[110] Open Contracting Data Standards. Accessed through https://standard.open-contracting.org/latest/en/ on October 20th, 2023.

collaborates with governments, businesses, and civil society to transform public contracting through open data and open governance. Its core initiative, the OCDS, provides a structured data standard for the publication of structured information on all stages of a contracting process.

Type of data
The OCDS enables the disclosure of data and documents at all stages of the contracting process by defining a common data model. This model is designed to be adaptable to different legal systems and procurement processes, making the data accessible and useful across various jurisdictions. The OCDS covers a wide range of data, including planning, tendering, awarding, contracting, and implementation of public contracts. It captures details such as the nature of the contract, the parties involved, the contract value, milestones, and progress updates.
The OCDS is designed to improve the quality of procurement data by making it more consistent and comparable across different systems. The standard supports better data quality and accessibility by providing a clear framework for data publication.

Presence of dashboard and analytics tools
While the OCP itself does not provide a dashboard or analytics tools, the standardized data format of the OCDS is designed to be machine-readable, which allows for the creation of various tools and platforms by third parties. These tools can analyze the data, create visualizations, and monitor procurement processes.

Accessibility
The website has an English interface. Additionally, Spanish and Russian interfaces are also available.

Ownership and oversight
The Open Contracting Partnership is the organization behind open-contracting.org. The OCP is an independent, non-profit organization that works with governments and organizations to promote transparency and increase access to public contracting data.

3.29 A comparison between TED and country-level initiatives
Among the non-country-level initiatives, TED stands as a paragon for country-level initiatives. Its comprehensive data coverage and standardized formats are commendable. However, it is not without limitations; the platform's utility is directly proportional to the user's data analysis capabilities, and it lacks the convenience of built-in analytics.
 When comparing the data and portal functionalities available at the country level with the data and functionalities of TED, several key points emerge that can be used to understand the trade-offs between data depth and functionality, as well as the nature and quality of the data provided. *Table 3* provides an overview across different dimensions, which are then better explained in the following.

Table 3. A comparison between country-level transparency projects and TED portal and data.

Characteristics	**Country-Level Projects (Examples)**	**TED**

Data Depth and content	• Variables across countries, e.g.,
	  ○ Portugal's Portal BASE offers detailed contract information
	  ○ Romania's e-procurement platform provides comprehensive procedure record
	  ○ other countries only report or record basic information.
		• Extensive data depth with detailed procurement notices and contract award information.
		• Includes tender notices, contract awards, and may include below-threshold tenders.

Functionalities and Analytical Tools Provided	• Some countries offer basic/advanced analytics functionalities
	  ○ Slovenia's central procurement platform offers search but no data download
	  ○ Portugal's Portal BASE has a statistics area for creating dashboards and visualization graphs.
	  ○ Italy ANAC's portal offers the possibility of creating several data views.
		• Primarily focused on search and download capabilities
		• Limited analytics/visualization tools.

Quality of Data	• Data standards can be very variable (PDF, XLS, CSV, ODF). • Data quality is declared and analyzed in a few cases (e.g., France, Italy).	• Structured and standardized data format (XML) suitable for automated processing. • Data quality is declared and clearly presented.

Accessibility	• Website accessibility is very variable – several platforms and portals only offer the country's local language (translation features not often available; there is a possibility to use the automatic browser translation feature but with reduced effectiveness)
	• Data accessibility is low; almost all the projects make data available in the local language, e.g.,
	  ○ Bulgaria's Procurement portal offers several downloadable data and documents, but they are all in Bulgarian.
	  ○ Greece's central procurement website provides in-depth information about tender notices,
		• Multilingual access.
		• Notices can be downloaded directly from the TED website in bulk (for registered users only; part of the TED data is also freely downloadable from the EU data portal).

	bid submissions, evaluations, and contract conclusions, but they are all recorded in Greek. o Spain's Plataforma de Contratación del Sector Público offers data sets in open formats but mostly in Spanish.	
Openness of Data	• This is very variable across projects; there are countries where data is not downloadable and others that provide full data downloadability through their open datasets.	• High; data is fully downloadable and is intended for public use.
Update Frequency	• Variable: some websites/platforms explicitly declare the update frequency, while others report the information regarding the "last update." • Many projects do not clarify the frequency of the data update.	• TED data and website are regularly updated (i.e., daily) and aligned with EU reporting standards.

3.29.1 Data depth vs. functionality
The information recorded in TED offers extensive data depth. While the website provides detailed information about open and closed tenders across several countries, downloadable data includes information regarding full contract notices and award notices. This depth comes with the trade-off of limited analytic functionality directly on the platform. Users have access to raw data, which they can download and analyze independently, but the TED platform itself does not offer extensive data analysis tools other than a geographical map of open opportunities and summary reports about published notices.

In comparison, we have seen several country-level projects that have provided a good mix of data accessibility and functionality. While some projects are similar to the TED portal, some countries (e.g., Bulgaria, Estonia, Greece, Italy, Latvia, Netherlands, Portugal, and Slovenia) have built platforms and websites that offer built-in advanced analytic functionalities, which allow the user to analyze the data directly through the portal.

3.29.2 Content of data
TED's data is standardized, which allows for consistency in comparison and aggregation across countries. This standardization is crucial for users looking to analyze trends or patterns at a European level. Instead, country-level data may vary significantly in terms of structure, format, and detail. This can be due to different national regulations and languages but also the extent to which countries have digitized and opened their procurement data. Information in this regard is scattered across the country-level projects.

3.29.3 Quality and characteristics of data
The quality of data in TED is generally high, as it is maintained by the European Commission and follows strict guidelines for data collection and publication. Additionally, the EU data portal

has a dedicated section named "metadata quality,"[111] where the quality of the data is explicitly described and addressed.

The quality of country-level data can be more variable. Some countries may have robust systems in place ensuring high-quality data, while others may still be in the process of improving their data collection and publication practices. Most importantly, only in a few cases (e.g., France) was the quality of the data and its limitations explicitly addressed.

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[111] European Data Portal. Accessed through https://data.europa.eu/data/datasets/ted-1/quality?locale=en on November 23rd, 2023.

## 4. A TAXONOMY OF TRANSPARENCY AND OPEN DATA PROJECTS

In the dynamic domain of public procurement and governance, the role of transparency and open data projects is increasingly central to advancing accountability, fostering public trust, and empowering civic engagement. To navigate the multiplicity of approaches and functionalities within these projects, we introduce a taxonomy that stratifies them along two principal axes: the Level of Openness of Data and the Breadth of Data Elaboration and Analysis. This framework not only facilitates a systematic assessment and benchmarking of diverse initiatives but also offers a strategic blueprint for shaping future transparency endeavors.

The *Level of Openness of Data* evaluates how accessible and practical the data is for public use. This axis is foundational for upholding transparency and ensuring information flows freely. Open data is distinguishable by its availability in various formats, its comprehensive detail, and its readiness for download and application. The theoretical foundations of this axis are embedded in open governance ideals, which advocate for data that is not only available but also readily usable, thereby encouraging broad utilization and engagement.

The *Breadth of Data Elaboration and Analysis* measures the degree to which data undergoes processing and interpretive analysis within the project before it reaches the user. This axis is indicative of a project's capability to refine raw data into structured, meaningful insights. Its importance lies in its ability to enhance data usability, mitigate information overload, and strengthen decision-making. It represents a shift from mere data access to data comprehension, meeting the evolving demands of a diverse data consumer base.

The taxonomy we propose delineates four quadrants, each representing a distinct interplay of the two dimensions, depicted in *Figure 3* and elaborated upon in subsequent sections.

Figure 3. A taxonomy of transparency projects in public procurement.
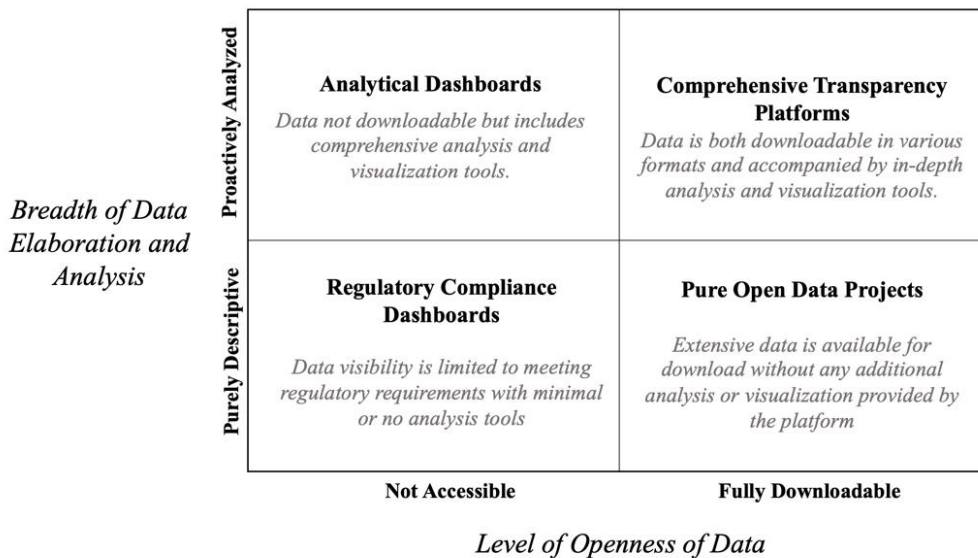
4.1. Regulatory compliance dashboards (RCD)
RCDs constitute the foundational layer of transparency initiatives, chiefly aimed at meeting statutory mandates. They offer basic data openness and little to no analytical depth. Typically functioning as internal monitors for e-procurement systems or as simple statistical aggregators, they provide only a fundamental glimpse into procurement processes. For instance, the Slovak Office of Public Procurement's "open communication" segment exemplifies this quadrant, supplying elementary statistics and documents in a non-interactive format, devoid of analytical tools or downloadable options, and serving solely to satisfy legislative transparency stipulations.

4.2 Pure open data projects (POD)
Representing the apex of data openness, PODs provide voluminous datasets in various downloadable forms. They embody the principles of open data by ensuring complete transparency in procurement dealings and contracts. Nonetheless, they entrust the entirety of data analysis to the end-user, offering no supplementary insight into procurement operations. Examples include Hungary's Corruption Research Center Databases and Spain's Plataforma de Contratación del Sector Público. These projects deliver extensive and fully downloadable datasets on contractual and procurement information but lack integrated analytical features on their platforms.

4.3 Analytical dashboards (AD)
        AD projects emphasize ease of use by offering data that has been pre-processed and visualized. While they typically do not permit downloading of raw data, they provide valuable insights through assorted analytical tools and interfaces, enabling stakeholders to grasp procurement dynamics without additional analysis. The Romanian e-procurement system serves as a case in point; it provides notifications and limited data visualization capabilities, offering insights through regional statistics but not raw data accessibility.

4.4 Comprehensive transparency platforms (CTS)
CTS platforms achieve the pinnacle of transparency and utility, presenting unprocessed data for comprehensive analysis alongside synthesized information for immediate application. They accommodate a wide audience range, from data specialists to laypersons, exemplifying a commitment to complete transparency with the bonus of providing practical insights. The Plataforma de Contratación del Sector Público in Spain, with its open datasets and tools like OpenPLACSP for tender data analysis, and Italy's ANAC portal, which merges raw data accessibility with analytical tools for instant understanding, are archetypes of this quadrant.

4.5 Transparency projects and procurement performance: where are Member States at?

Selecting a suitable project model should consider the distinct needs, technological capability, and strategic goals of a country. The capacity of stakeholders to manage and interpret data should inform this choice. Furthermore, the caliber of data is of the utmost significance; devoid of quality, even the most advanced open data project falls short of its potential.

Table 4 provides an overview of the transparency projects at the country-level classified based on the taxonomy presented in Figure 3.

Table 4. Classification of transparency projects in Member States.

	Number of transparency projects	Classification of transparency projects			
		RCD	AD	POD	CTP
Austria	0	0	0	0	0
Belgium	1	1	0	0	0
Bulgaria	1	0	0	0	1
Croatia	1	0	0	0	1
Cyprus	1	1	0	0	0
Czech Rep.	2	0	1	0	1
Denmark	1	0	0	1	0
Estonia	2	0	1	0	1
Finland	1	0	0	0	1
France	2	1	0	1	0
Germany	1	1	0	0	0
Greece	1	0	0	0	1
Hungary	2	0	0	2	0
Ireland	1	1	0	0	0
Italy	5	0	3	1	1
Latvia	1	0	0	0	1
Lithuania	1	0	0	0	1
Luxembourg	1	1	0	0	0
Malta	2	2	0	0	0
Netherlands	1	0	0	0	1
Poland	0	0	0	0	0
Portugal	2	1	0	0	1
Romania	2	1	0	0	1
Slovakia	1	1	0	0	0
Slovenia	1	0	1	0	0
Spain	1	0	0	1	0
Sweden	0	0	0	0	0
Total	**35**	**11**	**6**	**6**	**12**

By examining the data in *Table 5*, the variety in the number and types of projects reflects the diverse approaches each member state takes towards open data and its elaboration.
At the forefront of this endeavor are the CTP projects, which have emerged as the most frequently adopted model. The twelve instances of CTPs underscore a significant trend toward full transparency and enhanced usability in public procurement. This suggests that a number of EU countries are recognizing the value of providing both raw and processed data, ensuring that information is not only available but also accessible and actionable for all stakeholders.
In contrast, RCD and AD projects have a more moderate presence with eleven and six instances, respectively. This moderate distribution indicates a balancing act between the need to fulfill legal

requirements and the desire to provide data in a more user-friendly manner, with pre-analyzed data for convenience. Meanwhile, POD projects stand on equal footing with AD projects. The six instances of PODs illustrate a commitment to the ethos of open data, ensuring that transparency in procurement transactions is not just a concept but a practice.

At the country level, based on our analysis, Italy distinguishes itself with the most diverse engagement, showcasing a range of projects across three different categories. This reflects a multifaceted approach to transparency, suggesting that Italy may serve as a case study for other nations looking to diversify their transparency efforts. Conversely, Hungary's focus on PODs indicates a strong emphasis on the openness of data, positioning the nation as a proponent of complete transparency in public contracts and procurement transactions.

There is, however, a notable absence of any projects in Austria, Poland, and Sweden. This gap highlights potential areas for development and raises questions about the transparency mechanisms these countries employ, which may not fit into the defined categories or may represent an opportunity for growth and development in line with European standards.

The presence of AD projects in countries such as Belgium and Luxembourg emphasizes a trend towards creating platforms that are not only informative but also intuitive and user-centric. These projects cater to stakeholders by simplifying the interpretation and utilization of data, thereby enhancing the decision-making process.

The tableau of transparency projects across the EU does not point to a single dominant model. Instead, it reflects the varying digital maturity levels, regulatory frameworks, and strategic priorities across the member states. This diversity highlights the region's multifaceted approach to public procurement transparency and underscores the absence of a one-size-fits-all solution. Furthermore, the analysis suggests that the quantity of projects in a given country does not necessarily correlate with the quality of transparency. For instance, Malta's two RCD projects fulfill basic transparency requirements but may not provide the depth of insight offered by a single CTP project elsewhere. This observation calls for a nuanced understanding of how transparency is operationalized and the impact of these projects on public engagement and accountability.

Lastly, the landscape of transparency projects in the EU has significant policy implications. The inclination towards CTPs could inform future EU policies, encouraging member states to adopt more comprehensive platforms. This trend could also catalyze the sharing of best practices, particularly from those countries that have successfully implemented CTPs. Moreover, the data raises important considerations for future development of transparency taxonomies, suggesting that additional dimensions of transparency and usability may need to be considered to better capture the progress and efficacy of such projects. To better support public managers and policy decision-makers in selecting the most suitable transparency projects for their organizations, *Table 5* summarizes the main strengths and weaknesses of each typology.

Table 5. Public procurement transparency project types: strengths and weaknesses.

Type of project	Strengths	Weaknesses
Regulatory compliance dashboards	• Customized for internal stakeholders, ensuring adherence to compliance and regulatory frameworks. • Often feature essential, user-friendly dashboards that provide immediate insights into procurement processes.	• External transparency is compromised, limiting the scope for public scrutiny and independent analysis. • The absence of downloadable data restricts thorough, independent research and analysis
Pure open data projects	• Exemplary transparency with data availability for extensive analysis. • Downloadable, standardized data formats enable comprehensive studies and facilitate international comparisons.	• Demands significant data processing and analytical capabilities from users. • Built-in analytics tools are minimal, placing the onus of data interpretation on the user.
Analytical dashboards	• Ready-made analytics and visualizations make data accessible to non-specialists. • Intuitive for stakeholders lacking advanced data analysis skills.	• Raw data is often non-downloadable, limiting the potential for detailed independent research. • May not delve as deeply into data as pure open data projects do.
Comprehensive transparency platforms	• Combine the advantages of dashboards for immediate insights with the depth offered by raw data access. • Enable both surface-level understanding and in-depth research.	• Resource-intensive to maintain, requiring robust data management systems. • The complexity of offering both functionalities can be challenging to navigate.

5. CONCLUSIONS: TECHNICAL AND POLICY RECOMMENDATIONS FOR ADVANCING PUBLIC PROCUREMENT TRANSPARENCY

In the realm of public procurement, transparency is not just a regulatory requirement but a cornerstone for good governance. The variegated landscape of procurement practices across EU Member States, as revealed by our analysis, suggests that while there is a movement towards transparency, the path is still being charted. The conclusion of this analysis yields actionable recommendations that can serve to elevate national procurement systems to a new standard of openness.

The path toward more transparent public procurement systems (and thus more capable of creating public value) is represented in *Figure 4*.

Figure 4. The path toward more transparent public procurement systems.
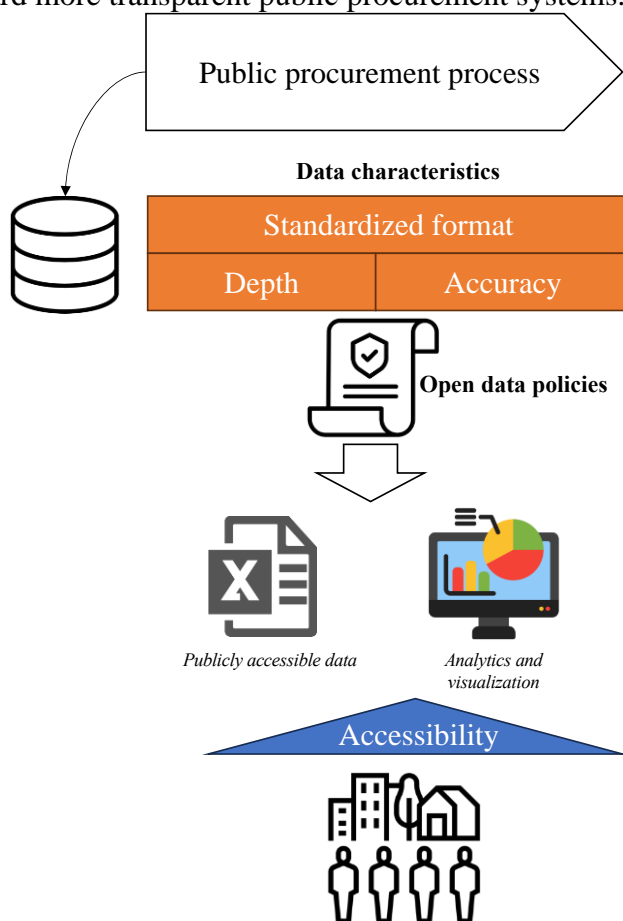
The standardization of data formats emerges as a fundamental prerequisite for transparent procurement systems. A unified approach to data (e.g., exemplified by the TED's use of XML formats), greatly facilitates the exchange and analysis of data. It is a linchpin for interoperability, which is crucial for a coherent integration of information across the EU. But beyond the homogenization of formats, the emphasis must be on the utility and clarity of data. The challenge lies in presenting detailed data that is not overwhelming, fostering an environment where data is not just abundant but also intelligible and readily applicable.

With data standardization in place, it is imperative to establish robust open data policies. Such policies would mandate the release of procurement data in formats that are not just machine-readable but also amenable to complex analysis, ensuring that open data becomes a pervasive practice, embedded in the ethos of transparency and accountability. The presentation of procurement data is equally important. Interactive dashboards serve as a powerful medium to communicate complex data in a visual and user-friendly manner. They enable stakeholders to quickly grasp trends and insights, obviating the need for sophisticated analytical capabilities. To do so, accessibility is another critical dimension. The provision of multilingual support and intuitive search features is key to making procurement data truly accessible, especially in a global economy with cross-border stakeholders. The European Commission's eTranslation service is a step in the right direction, offering a machine translation service that, while not a substitute for professional translation, enhances the accessibility of procurement information across languages[112].

Forging partnerships with civic technology organizations can further enhance transparency. These collaborations can result in innovative tools that utilize open data to monitor public spending, identify irregularities, and promote participatory governance. Such tools not only make data actionable but also serve to connect data with its real-world implications. Transparency should extend through all phases of the procurement process. While not evident in several of the transparency projects analyzed, the disclosure of contract awards, changes, and performance data ensures a continuous loop of accountability. It enriches the procurement ecosystem, empowering citizens and stakeholders to engage actively and meaningfully with public institutions.

The final piece of the transparency puzzle is data literacy. By investing in the development of data management and analysis skills among public officials and stakeholders, we empower them to harness the full potential of open data for informed governance.

In essence, these recommendations are more than technical solutions; they are a manifesto for a procurement system that is transparent, accountable, and inclusive. By adopting these measures, national procurement systems can forge their own procurement identity in the quest for an open and more equitable procurement framework.

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[112] European Commission, n.d. eTranslation. Accesssed from https://commission.europa.eu/resources-partners/etranslation_en on October 20th, 2023.