MAPS | Methodology for Assessing Procurement Systems

e-Procurement

SUPPLEMENTARY MODULE

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Introduction

Purpose and Use of MAPS

The Methodology for Assessing Procurement Systems (MAPS) is intended to provide a harmonized tool for use in the assessment of public procurement systems. The methodology has been designed to enable a country, with or without support of external partners, to assess its procurement system to determine its strengths and weaknesses. The resulting information can serve as the basis for the design of harmonized system development and reform initiatives to improve capacity and to address weaknesses. The assessment provides the country with information it can use to monitor the performance of its system and the success of the reform initiatives in improving performance. In identifying weaknesses in the current system in a country, external partners are also provided with information that helps them determine risks to the funds they provide to partner countries.

MAPS Module on Electronic Public Procurement

The purpose of this module is to provide a harmonized tool for assessing the use of electronic public procurement (e-Procurement) in a jurisdiction, whether at the national or subnational level [1]. E-Procurement is defined as the integration of digital technologies in the replacement or redesign of paper-based procedures throughout the procurement process.[2] E-procurement entails the use of a transactional information system by government institutions and other public sector organizations in conducting and managing their procurement activities and relationships with suppliers for the procurement of works, goods, and services throughout the whole procurement cycle, from planning to contract management.

The MAPS e-Procurement module is intended to support governments in achieving public procurement policy objectives by using e-Procurement to increase the integrity, transparency and value-generation of their public procurement system. It identifies the strengths and weaknesses in the country's implementation of e-Procurement, thus allowing for the formulation of recommendations for targeted reform in the specific context of the assessed jurisdiction. This module is not a technical audit of the threats and vulnerabilities of a system, nor a complete performance audit of the e-Procurement function but could make use of past audits and assessments[3] to substantiate specific indicators. In fact, the MAPS

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[1] While the term country is used throughout the MAPS suite, including in this module, any element of the methodology may be applied to the subnational level (region, state, city, etc.).

[2] Glossary of the MAPS main module (core methodology).

[3] These include e-Procurement system assessments following the *Guide for the assessment of electronic government procurement systems intended for use under MDB-financed operations* used by several multilateral development banks (MDB) to ascertain whether the minimum requirements that they require from an e-GP system are met, in order to determine if the system can be utilised for procurement under the projects that they finance. This guide may be found in https://www.caribank.org/publications-and-resources/resource-library/guides-and-toolkits/guidance-note-assessment-electronic-government-procurement-systems-intended-use-under-mdb-financed. It is important to highlight, that the purpose of this MDB assessment is different from the MAPS e-

e-Procurement module does not replace individual technical and security system assessments or audits, which are fundamental to test the e-Procurement platforms and continuously improve them.

The application of the e-Procurement module should be carried out by a seasoned procurement expert with the experience and qualifications established by the MAPS Secretariat in its guidance regarding the suggested profile of the assessors. The estimated time to complete this assessment is between 3 and 8 months, depending on the scope and complexity of the evaluation. As the rest of the MAPS Suite, information should be analysed and collected through desk research; review of regulations, manuals, and official documents; interviews with stakeholders; surveys; and evidence from the e-Procurement platforms.

To implement e-Procurement, countries may follow different paths without one being better than the rest. More specifically, they may choose to use a variety of digital tools and solutions to carry out procurement operations, which may include some that are managed at other levels of government (national or subnational). The entire set of these different components and solutions is referred in this document as the country's e-Procurement ecosystem. As such, the e-Procurement ecosystem of a country may consist of multiple information systems and platforms (e.g. tendering platforms, online marketplaces, contract management systems, etc.).

The scope of this module is the e-Procurement ecosystem of the assessed jurisdiction. As for the rest of the MAPS suite, the analysis should be limited to the levels of government agreed upon at the concept note stage (e.g. the national level only, all levels of government, etc.). Its indicators are related to assessing the rules, institutions, standards, and conditions that enable and regulate the e-Procurement ecosystem in a jurisdiction. Although this assessment does not analyse security and technical aspects nor detailed features of specific e-Procurement platforms, evidence and examples from these platforms, especially from the principal one(s) in the country, should be sought to properly substantiate the assessment criteria, and determine whether they are completely or partially met.

This module has been designed to be used independently of the main MAPS. In any case, if a recent main MAPS of the country is available, its information will be valuable as a starting point for an e-Procurement assessment. Likewise, information resulting from the application of the e-Procurement module will be valuable if the country wishes to undertake an evaluation using the main or other MAPS modules.

This module comprises 13 indicators and 32 sub-indicators structured in the four pillars of the MAPS methodology evaluating whether:

› the country's national legal and regulatory framework sets the basis, supports and promotes e-Procurement;
› the institutional and governance structures support e-Procurement;
› the country's e-Procurement ecosystem effectively supports procurement operations for all stakeholders throughout the procurement cycle; and
› the country's e-Procurement ecosystem supports and promotes transparency, accountability, and integrity of the public procurement system.

Procurement module; and that its scope is limited to single e-procurement systems, as opposed to the entire e-Procurement ecosystem of a jurisdiction.

The indicators are expressed in qualitative and/or quantitative terms, as appropriate. These terms constitute aspirational standards that an efficient, effective, and transparent e-Procurement ecosystem should comply with and are thus intended to drive efforts in the assessed jurisdiction to achieve them.

Before embarking on a MAPS e-Procurement assessment, government authorities and any partners they are working with, should consider whether the procurement system is in a sufficient state of development with regards to e-Procurement to warrant an assessment. They should consider whether e-Procurement is already a strategic policy priority and if at least some of the main structural elements assessed in each of the four pillars of the module are present. This module should only be used in jurisdictions where e-Procurement is already being used.

When deciding whether to use the module, country authorities and partners should answer questions such as:

- Is an e-Procurement platform in place?
- Are at least some institutions procuring using the existing e-Procurement system?
- Are provisions related to e-Procurement already included in policies, legislation and/or regulation?

If the answers to these questions are negative, a MAPS e-Procurement assessment will likely show that most indicators are not met, and its recommendations will probably be limited to what is expressed in each of the indicators, without providing more specific elements to substantiate reforms.

Compliance with the MAPS Framework

This supplementary module assessment, even if used standalone, must fully comply with the latest version of the methodology. In addition to what is described in this document and annexes, compliance with the methodology includes what is prescribed in the MAPS User's Guide (core MAPS, Section I), as well as in the templates and guidance provided by the MAPS Secretariat.

Both the methodology and all associated materials, including guidance and templates, are available online on www.mapsinitiative.org

The MAPS Secretariat offers support to all users of MAPS including:

› Advice to country teams for planning and management of a MAPS assessment including quality review of concept notes and terms of references for MAPS assessments.

› Advice to MAPS assessment teams on the MAPS methodology

› Quality review of MAPS assessment reports (in collaboration with the MAPS Technical Advisory Group) to provide certification of assessments that meet the quality standards specified.

› A fully self-paced e-learning programme covering all essentials of MAPS and freely available

ASSESSMENT OF ELECTRONIC PROCUREMENT

Preamble

In this module, electronic procurement (e-Procurement) is assessed as a tool that can help to achieve transaction efficiency, increased transparency, better performance, and continuous innovation in the public procurement function. Implementation of e-Procurement implies standardization and streamlining of procurement processes and their integration in digital government, as a pathway to achieving the digital transformation of procurement. This helps in the reduction of administrative costs and processing times. Furthermore, standardization brings an increase in competition and the reduction of costs for suppliers which further promotes reductions of the prices of goods and services procured.

Standardized and streamlined e-Procurement processes, integrated in a broader digital government ecosystem, are a powerful vehicle for increased transparency, because they enable access to information about government spending by all stakeholders. In addition to this, by making procurement data accessible in a uniformly structured manner, e-Procurement can effectively support improved data-driven decision making.

This module assesses the strengths and weaknesses of any jurisdiction's e-Procurement ecosystem, regardless of income level or development status, enabling national or subnational governments to make informed decisions about where and how to prioritise actions for improving their e-Procurement ecosystem and taking full advantage of the benefits offered by integrating procurement in digital government. Indicators in this module are drafted using the same aspirational idea of the MAPS methodology and thus establish a set of end-states that countries should strive to attain.

This module is structured to assess the various aspects required for a successful implementation of e-Procurement. E-Procurement requires a comprehensive regulation to be implemented with elements that may be present both within and outside of the procurement regulation. Its strategy should ideally be part of a broader digitalization strategy and be specifically designed to support government policies to improve on topics such as sustainability and gender, among others.

Analysis of Context

The application of MAPS is preceded by a context analysis to ensure that the assessment is based on a good understanding of the context in which public procurement institutions and other stakeholders operate in a particular country. During the assessment and in developing responses to the findings, the political and institutional environment should be considered to ensure that the reforms are anchored in countries' needs.

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The country context analysis must describe these factors and their impact on the e-Procurement ecosystem. For example, if the country context analysis notes that the country has a federal form of government, with a significant portion of procurement occurring at subnational levels, this may signal the need to consider the analysis of e-Procurement beyond the national government. Topics such as lack of internet coverage or data literacy should be elements that ought to be considered when assessing the indicators included in this module.

If an up-to-date main MAPS assessment report exists, much of the information required for this section will be available there. The country context analysis should be sufficiently elaborate for these factors to be considered during the assessment and in developing responses to the findings. The analysis should also capture specific objectives related to e-Procurement and the level of ambition the government might possibly have.

For the MAPS e-Procurement module, the country context analysis must include elements that are described below:

1. **Economic and political context**
As with the public procurement system at large, the e-Procurement ecosystem depends on the basic structural characteristics of the country in question and its public procurement system. This includes economic structures (e.g. national income level, resources at the government's disposal vs. debt, geopolitical situation, main challenges for development) as well as political structures (e.g. type of government, federalism vs. centralisation, roles of the national government and sub-national governments, distinctive features in the allocation of political power, marginalised groups, levels of crime and informality, aspects of fragility or conflict, level of perception of corruption, internet coverage and availability, and data literacy).

2. **General public procurement context**
Structural elements of the procurement system should be described, strategic plans for digital transformation that include public procurement, vision statements and commitments (whether at the national or international level), as well as the degree of centralization, and the general economic layout of the system, such as procurement volume in relation to GDP, distribution across governmental sectors, the role of state-owned enterprises if relevant, and spend areas or sector markets of particular importance.

3. **Stakeholder context**
The purpose of this section is to provide an understanding of the stakeholder landscape that influences the public procurement system in the country. Assessors should take into consideration both governmental and non-governmental stakeholders. The section includes:

   i) Description of the key stakeholders and what category they belong to (e.g. government authorities including control and audit institutions, professional organisations, civil society organisations, academic institutions, media organisations, international organisations if relevant)
   ii) What their role in and influence on the procurement system is both in terms of formally assigned authority and informal sway, and the level of their influence both on the assessment and on any post-assessment reform initiatives

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4. **Context of the e-Procurement ecosystem**

Furthermore, the country context should provide a view of the general layout of the e-Procurement ecosystem, some historical background including recent legal and regulatory reforms, previous assessments where the e-Procurement ecosystem or some of its components have been analysed, as well as background on the use of the main e-Procurement system(s).

Pillar I. Legal, Regulatory, and Policy Framework

Pillar I of the e-Procurement module evaluates whether the existing legislative and regulatory framework includes adequate and clear provisions to effectively support, enable and promote e-Procurement, and the extent to which e-Procurement is embedded in a comprehensive digitisation policy framework and is aligned with broader government policies.

E-Proc-Indicator 1. The legal and regulatory framework enables e-Procurement.

This indicator assesses the extent to which the national legal and regulatory framework enables and/or mandates the use of e-Procurement. This includes primary and secondary legislation directly related to public procurement, as well as rules governing elements required for e-Procurement, such as electronic means of authentication, archiving, electronic communications, e-commerce, among others, which may be established in laws and regulations not necessarily directly related to procurement.

The legislation on e-Procurement needs to be aligned with national digital government and data governance regulations and standards as applicable to the public sector.

This indicator is also related to the elements of a minimum standards framework that the digital solutions implemented in a country to roll out e-Procurement should comply with, regardless of their number and characteristics. It covers different legal and regulatory aspects of e-Procurement at varying levels, from online publication of procurement information and electronic communication between process stakeholders, to specialised digital tools enabled or mandated across the procurement cycle.

This indicator is divided into 2 sub-indicators (a-b).

E-Proc-Sub-indicator 1(a) – Regulation of the use of e-Procurement

The purpose of this sub-indicator is to assess the extent to which the legal and regulatory framework of the country enables and/or mandates e-Procurement. The framework should enable or mandate e-Procurement for the entire procurement cycle. It should also define and enable the use of e-Procurement for as many procurement methods and funding sources as possible, including MDB-financed projects and direct contracts.

Ideally, all procuring entities should be mandated to use e-Procurement. This does not only bring the benefits of e-Procurement to each entity, but also allows to collect data that can be put towards designing better procurement solutions using methods such as bulk purchasing or framework agreements. With a view of determining the coverage of e-Procurement, the assessor should describe the set of procuring

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entities that are mandated to use e-Procurement; for example, if all ministries, including works, defence and others are included, as well as other branches of government and state-owned enterprises.

As this sub-indicator deals with the legal mandate, it should be cross-checked with sub-indicator 5(c) of this module, which refers to the actual uptake of e-Procurement.

The sub-indicator also assesses the extent to which the legal framework mandates the disclosure of comprehensive procurement information (including at least tender notices and documents, award notices, and information on contracts and amendments). The assessor should describe the way this is mandated as well as if there are any enforcement mechanisms to guarantee this requirement. The way this information is disclosed is evaluated in Indicator 9 of this module.

Finally, considering that the true digital transformation of procurement requires not only the publication of documents but the actual input, use and handling of data, the assessor must verify whether model procurement documents are aligned with the workflows and features of e-Procurement, including using fillable templates rather than just static documents that are uploaded into an e-Procurement platform.

E-Proc-Sub-indicator 1(a) : Assessment criteria
a) The legal and regulatory framework defines and enables the use of e-Procurement across the entire public procurement cycle for all procurement methods. b) The legal and regulatory framework mandates all procuring entities to use e-Procurement. * c) The legal and regulatory framework mandates the disclosure of comprehensive procurement information from the e-Procurement ecosystem. d) Model procurement documents for goods, works and services are aligned with the workflows and features of e-Procurement.

* Recommended quantitative indicators to substantiate assessment of sub-indicator 1(a) Assessment criterion (b):
 	
  - Percentage of procuring entities mandated to use e-Procurement compared to total number of procuring entities.
 	
  Source: Institution(s) responsible for the e-Procurement ecosystem / Public procurement function

E-Proc-Sub-indicator 1(b) – Elements necessary for e-Procurement

The purpose of this sub-indicator is to assess how the legal and regulatory framework regulate the basic elements necessary for any e-Procurement ecosystem to function properly. These include the allowed use and legal status and validity of electronic means of communication, electronic documents, and electronic means of authenticating users.

To allow for a broad participation from suppliers and other stakeholders interested in public procurement, the legal and regulatory framework must allow an open and accessible enrolment/registration, as well as authentication, as a first step to guaranteeing that they can interact with the system without any constraint.

Furthermore, rules that regulate the way personal data is handled by the e-Procurement ecosystem digital platforms must be clearly established, including at least requirements on how personal data is collected, stored and processed.

The assessor should reference the specific provisions in laws and/or regulations that govern the basic elements of the e-Procurement ecosystem.

E-Proc-Sub-indicator 1(b): Assessment criteria

The legal and regulatory framework complies with the following conditions:
a) It clearly regulates the following elements in a way that enables their use in the e-Procurement ecosystem:
   • electronic means of communication;
   • electronic documents; and
   • electronic means of authentication.
b) It establishes that enrolment/registration and authentication on the digital platforms is open and accessible to all interested parties, including foreign bidders.
c) It establishes requirements on the collection, storage and processing of personal data.

E-Proc-Indicator 2. E-Procurement follows a strategy that is aligned with broader government policies.

The purpose of this indicator is to assess whether there is strategic focus on continuous improvement of the e-Procurement ecosystem, as well as whether e-Procurement is part of a wider digitisation strategy and supports key cross-cutting government objectives, including sustainability and innovation.

Implementing e-Procurement is by and large a long-term effort that evolves in stages of continuous expansion and improvement of the ecosystem. This should be a consciously governed process to harness synergetic effects and minimise waste and ensure that implementation is properly balanced to the maturity of involved institutions and entities.

E-Procurement should be clearly embedded in a broader policy on digitisation of government and thus considered as a factor to advance this agenda. While an individual e-Procurement system can be internally well-functioning without being embedded in a broader strategy, the ecosystem can really thrive if there is a proper strategic conception of procurement aligned with these broader policies.

By enabling structured collection of data, as well as by promoting certain types of procurement behaviour, the e-Procurement ecosystem can be supportive of cross-cutting government policy objectives. This potential should be harnessed by governments.

This indicator has two sub-indicators.

E-Proc-Sub-indicator 2(a) – e-Procurement strategy

This sub-indicator assesses whether there are strategies in place that ensure the continued expansion and development of the current e-Procurement ecosystem. Such strategies or roadmaps should include an action plan with responsible institutions, budget, timelines, milestones, and planned activities, as well as key performance indicators to measure progress.

The sub-indicator also assesses the extent to which e-Procurement is integrated with broader government policies on digitisation in a coherent manner. This can include common standards for interoperability and data transfer, change management strategies for digitisation for the whole of government, specific actions to interact with and build capacities of stakeholders in the process, among other topics.

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The assessor should reference specific policy documents, take care to note how they relate to one another and describe what role e-Procurement plays in the individual documents.

E-Proc-Sub-indicator 2(a): Assessment criteria
a) There is a national strategy or a roadmap for improving the functioning and uptake of the e-Procurement across the public sector and for engaging the private sector. b) E-Procurement is explicitly considered as a factor in broader policies on digitisation of the public sector.

E-Proc-Sub-indicator 2(b) – e-Procurement support to sustainability and innovation

This sub-indicator assesses the extent to which e-Procurement is supporting cross-cutting strategic government policy objectives. This is done by looking at whether the ecosystem enables structured data collection on parameters related to key policy areas.

The policy areas covered in this sub-indicator are all connected to sustainability according to the broad, three-dimensional definition of this concept as including both environmental, social, and economic factors. This definition is also the basis of the MAPS supplementary module on Sustainable Public Procurement (SPP), and as such, analyses from assessments carried out with that module, if available, will be relevant in the evaluation of this sub-indicator.

SPP can generate economic benefits such as innovation and job creation, social benefits such as improved working conditions and inclusion of underrepresented groups, and environmental benefits such as reduction of hazardous waste or increased energy efficiency. Cost for societies, for example caused by pollution or climate change, can be reduced.

In the context of SPP, achieving best value for money does not necessarily mean to go for the offer with the lowest purchase price, but rather to select the best offer within certain parameters set. For this reason, consideration of both price and non-price attributes as well as the application of life cycle costing are at the core of SPP.

What is assessed in this sub-indicator is if the e-Procurement ecosystem enables data related to specific government policy areas to be captured and reported. For example, are the number of jobs created by a specific contract, especially those related to infrastructure, collected in the e-Procurement ecosystem? Are tags used to identify tenders that include considerations related to climate change mitigation and environmental protection? May contracts with social inclusion clauses be traced? Is the e-Procurement ecosystem collecting information about public procurement for innovation, for example by enabling the identification of tenders that stimulate innovation? Assessors should reference specifically whether the different elements are covered and how. Information about particular e-Procurement systems and how these topics are captured and reported is also necessary.

Whether public buyers and suppliers are effectively making use of the system's capacities to capture and report these data, as well as what the results of analyses based on such data are, is important in assessing SPP more broadly, and are as such covered in the MAPS SPP module.

E-Proc-Sub-indicator 2(b): Assessment criteria
The e-Procurement ecosystem enables capturing and reporting data related to the following policy areas:

a)	Climate change mitigation and adaptation and environmental protection
b)	Innovation
c)	Job creation
d)	Social inclusion (such as diversity, gender equality, worker and minority protection etc.)

Pillar II. Institutional Framework and Management Capacity

Pillar II of the e-Procurement module assesses the governance and management structures that govern the e-Procurement ecosystem as well as the institutions that are responsible for its operation and policies, and whether these have all the capacities required for the system to operate well. With procurement being a cross-cutting government function, this pillar also analyses how coordination regarding e-Procurement works among government entities.

E-Proc-Indicator 3. The e-Procurement ecosystem has a well-established and operational governance and management structure.

This indicator refers to the governance structure of the e-Procurement ecosystem, the institution(s) responsible for its management and policies, as well as the coordination schemes among them. Three sub-indicators (a-c) are to be assessed.

To contribute to achieving the objectives of the public procurement system at large, the e-Procurement ecosystem must have a clear and functioning governance and management structure. While there is no one governance model that can be said to be the gold standard and although different combinations of centralisation and decentralisation can result in equally effective ecosystems, it is nonetheless important that the structure is not merely accidental but based on thorough consideration of the country context and its public procurement system. Depending on the design of the ecosystem and the structure of government of the country, one or several institutions might be responsible for regulating the operation of the e-Procurement ecosystem and its related services, such as helpdesks and portals, as well as the policies governing it. In any case, these institutions must be well positioned to work closely with procuring entities and other government agencies responsible for digitisation and interoperating systems. They must have enough power to regulate and manage the use of the e-Procurement ecosystem and promote its continuous improvement. Finally, there should be neither gaps nor overlaps in responsibility.

E-Proc-Sub-indicator 3(a) – Status and legal and regulatory basis of the institution(s) responsible for the e-Procurement ecosystem

To be an effective tool that enables the achievement of the objectives sought by the procurement system, the responsibilities of the institution(s) managing the e-Procurement ecosystem must be clearly defined in legislation or regulation. These responsibilities include regulating the operation of the ecosystem, that is, setting the requirements and standards for the maintenance and improvement of technical features, as well as for user support, and in general ensuring that the system runs according to the established business model (see sub-indicator 4(a)). This sub-indicator is not meant to study the actual operation of

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specific platforms that may be carried out either by a government institution directly, or through a supplier that interacts with a government institution.

In addition, the policies related to e-Procurement, including procedures, alignment with legislation and regulation should be clearly assigned to one or several institutions, which must ensure that e-procurement functionality and set up is consistent with any changes to the legal and regulatory framework.

Assessors should reference the specific laws, regulations and/or policies where the institutional responsibilities related to e-Procurement are established and take care to note their internal relationships, especially in jurisdictions where these responsibilities are assigned to more than one institution. In that case, no gaps or overlaps should happen.

E-Proc-Sub-indicator 3(a): Assessment criteria
a)   The legal and regulatory framework clearly assigns one or several government institutions the responsibility for regulating and setting the standards for the operation, implementation, and continuous improvement of the e-Procurement ecosystem, without gaps or overlaps.

E-Proc-Sub-indicator 3(b) – Coordination between the institution(s) responsible for the e-Procurement ecosystem and other relevant government entities

The institution(s) responsible for the e-Procurement ecosystem should coordinate with other government institutions to continuously improve the e-Procurement ecosystem. This coordination may happen through established communication channels to receive and process feedback and undertake joint or aligned activities.

Coordination with the normative/regulatory body (refer to descriptions provided in Indicator 5 of the main MAPS) is essential to ensure that the e-Procurement ecosystem reflects procurement regulation and enables procurements operations. In many countries, the same institution is in charge of both norms and regulation, and the e-Procurement ecosystem; in these cases, the assessor must evaluate how coordination happens within different areas of the same institution.

Procuring entities, including any centralised procurement bodies (refer to descriptions provided in Indicator 6 of the main MAPS), are the main users of the e-Procurement ecosystem on the public sector side and as such must have mechanisms to interact with the institution(s) responsible for the e-Procurement ecosystem.

Budgetary and treasury authorities should have access to procurement data and their systems, in particular to information about procurement planning and contract payment, and their systems should be allowed to interoperate (see sub-indicator 7(a) on the architecture of the e-Procurement ecosystem).

Monitoring and audit authorities are other main users of procurement data and should also audit the e-Procurement ecosystem itself, allowing the institution(s) responsible for the e-Procurement ecosystem to improve the system based on their recommendations.

Appeals bodies, whether of an administrative or judicial nature, in charge of reviewing decisions throughout the procurement cycle, must coordinate with the institution(s) responsible for the e-

Procurement ecosystem to perform their duties. They must have access to procurement information to substantiate their decisions; and should input information about their decisions into the e-Procurement ecosystem, including remedies or standstill periods. The best practice is for the e-Procurement ecosystem to allow for e-complaints and integrate the information on e-complaints with specific procurement transactions. These are analysed under Indicator 13 of this module.

Finally, as a government digital system, the e-Procurement ecosystem must comply with best practices and recommendations from the digitisation or e-government authorities, particularly regarding security arrangements and standards. For this to happen, a sound inter-institutional coordination must be in place.

Assessors should reference specific evidence of coordination between entities and take care to note if there are any indications of discrepancies between formal mechanisms and practical efficiency of coordinating activities.

E-Proc-Sub-indicator 3(b): Assessment criteria
There is evidence of efficient coordination mechanisms between the institution(s) responsible for the e-Procurement ecosystem and the following institutions: a)   the public procurement normative/regulatory body.   b)   procuring entities including centralised procurement bodies, if any.   c)   budgetary and treasury authorities.   d)   monitoring and audit authorities.   e)   the appeals body.   f)   digital strategy or e-government authorities.

E-Proc-Sub-indicator 3(c) – Capacity of the institution(s) responsible for the e-Procurement ecosystem

This sub-indicator focuses on the funding and staffing of the institution(s) responsible for the e-Procurement ecosystem, and whether these are enough to fulfil its objectives.

Even within the swiftly evolving world of procurement, e-Procurement is subject to particularly rapid and dynamic development due to the impact of emerging technologies on business models. For this reason, it is important that schemes are in place to ensure the continuous training of relevant staff in the institution(s) responsible for the e-Procurement ecosystem.

Assessors should describe relevant funding structures and reference specific evidence of staffing and training and make sure to note how the evaluation of sufficiency is determined.

E-Proc-Sub-indicator 3(c): Assessment criteria
a)   The institution(s) responsible for the e-Procurement ecosystem has the necessary funding to fulfil its objectives.
b)   The institution(s) responsible for the e-Procurement ecosystem is well-staffed to fulfil its objectives.
c)   The staff of the institution(s) responsible for the e-Procurement ecosystem is required to undergo regular

trainings to update their knowledge and skills.

E-Proc-Indicator 4. The e-Procurement ecosystem relies on an adequate business model.

E-Procurement platforms may be deployed and operated in different business model arrangements with varying degrees of outsourcing and government ownership of the platforms and data. Single or multiple platforms may be used, as well as diverse architecture, infrastructure, and service schemes. Regardless of the nature of the e-Procurement platforms, they should have a functioning and sustainable business model that allows them to deliver results over the long run. The ecosystem should establish the standards for this to happen.

This indicator requires gathering evidence from the main e-Procurement platform(s) to properly exemplify the assessment criteria.

This indicator has two sub-indicators (a-b).

E-Proc-Sub-indicator 4(a) – Operating business model and implementation type of the e-Procurement platform

While no single business model for an e-Procurement platform is inherently superior, it is crucial that a country's choice is based on conscious and strategic decisions to best achieve the objectives in the long run for its entire e-Procurement system. This sub-indicator assesses to which extent these decisions are present and well-documented, and determines if the most relevant operational aspects are covered. To provide the necessary evidence, examples from the main e-Procurement platform(s) should be gathered.

The business model of the e-Procurement platform(s) should be clear to the institution(s) responsible for the e-Procurement ecosystem and evidence that documents how and why the choice was made should be referenced. Assessors should describe the operating business model, referencing key characteristics of the model, including who owns the e-Procurement platform(s), who owns the data, where data is stored and how service is provided. Typical models include: Government-owned and -operated, various degrees of outsourcing, and public-private partnership (PPP). Assessors should also describe the implementation type, which could be one of following: Custom built, commercial-off-the-shelf (COTS, sometimes also referred to as standard software), or Software-as-a-Service (SaaS). A description of whether the solution is implemented as a single or multiple platform solution should be provided too. The characteristics should be described, including level of customisation in the case of COTS, and evidence that documents how and why the choice was made should be referenced. Special attention should be given to the case of outsourced solutions, where strategies should be evaluated to establish whether due consideration has been given to minimising maintenance and follow-up costs, technological debt, vendor lock-in and ownership of data. In the case of multiple platform solutions, a scheme that specifies how these interact is necessary for the purpose of maintaining a good operation.

Finally, it must be clear how changes in procurement legislation and regulation, market practices and technological developments may be incorporated into the e-Procurement ecosystem. This includes a clear process to request changes to the e-Procurement platform(s), estimated times, costs, and responsibilities.

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E-Proc-Sub-indicator 4(a): Assessment criteria
The e-Procurement ecosystem has a clear business model to operate where the following components function and interact properly, are well documented, and were chosen based on evidence and needs:
a) Ownership of platforms and data
b) Implementation type of the e-Procurement platform(s) and well-documented strategies to ensure future development and minimise vendor lock-in
c) The way in which the e-Procurement ecosystem may adapt to changes in legislation/regulation, market practices and technological developments

E-Proc-Sub-indicator 4(b) – Funding of the e-Procurement ecosystem

As a key part of public administrative infrastructure, it is important that the e-Procurement ecosystem is funded in a way that ensures stable and effective long-term operability. While closely linked with sub-indicator 3(c), this sub-indicator assesses whether such a funding model is in place specifically for the e-Procurement ecosystem in a way that allows for its uptake and use in the long run.

If fees are charged to users as part of the funding arrangement, these should not constitute a barrier to using e-Procurement nor its related services such as helpdesks. The assessor should describe any fees, who must pay for them (procuring entities and/or suppliers) and when (at the user registration phase, when using services such as helpdesks, when publishing a bid, when consulting tender documents, when bidding, when filing a complaint, etc.). The assessor should use information from sub-indicator 10(b) to analyse impacts of any fees charged.

E-Proc-Sub-indicator 4(b): Assessment criteria
a) The e-Procurement ecosystem has sustainable funding to operate.
b) If fees for financing the e-Procurement ecosystem are charged to users, these must be reasonable, transparent, payable in the e-Procurement platform(s), and not be an impediment for using e-Procurement, nor any of its related services such as helpdesks. *
* Quantitative indicators to substantiate assessment of sub-indicator 4(b) Assessment criterion (b):   - fee type and amount charged and the basis for charging (periodic or subscription-based payment or transaction-based payment)   Source: Institution(s) responsible for the e-Procurement ecosystem and publicly available information.   * Recommended quantitative indicators to substantiate assessment of sub-indicator 4(b) Assessment criterion (b):   - % of users who find that fees constitute an impediment for using e-Procurement   Source: Survey.

E-Proc-Indicator 5. The e-Procurement ecosystem has a strong capacity to develop and improve.

This indicator focuses on the strategies and ability of the e-Procurement ecosystem to develop and improve. Three aspects should be considered and relevant evidence from the main e-Procurement system(s) should be used to substantiate the assessment criteria:

i) whether strategies and programmes are in place to develop the capacity of procurement staff and other key actors involved in public procurement to use the e-Procurement ecosystem;

ii) whether mechanisms are in place to provide clear advice and guidance to users of the e-Procurement systems; and

iii) whether procedures have been established and are used to evaluate the e-Procurement ecosystem and to develop strategic plans to continuously improve it.

There are three sub-indicators (a-c) to be assessed.

E-Proc-Sub-indicator 5(a) – Capacity development for e-Procurement

The purpose of this sub-indicator is to identify whether permanent and relevant capacity building programmes on e-Procurement are available for all staff working in government procurement and other interested stakeholders such as auditors or officials from the appeals body. These may be complete training programmes on e-Procurement, or specific modules within other training. They are fundamental to maintain a staff of well-prepared officials that are up to date on the latest developments of the e-Procurement ecosystem. In addition to this, capacity building programmes should be in place for other stakeholders, including the private sector.

The content of the existing capacity building programmes, their relevance, nature, scope, and sustainability should be assessed. A well-functioning system should:

i) be based on a "skills gap inventory" to match the needs of the system;

ii) be sufficient in terms of content, format, and frequency, which is especially important referring to updates to the e-Procurement ecosystem; and

iii) provide for evaluation of the e-Procurement training programme and monitoring of progress in addressing capacity issues.

The training strategy should be closely linked to and integrated with other measures intended to develop the capacity of other key actors involved in public procurement. And it should cover the complete range of features available in the e-Procurement ecosystem according to the different user roles.

The extent to which programmes are in place to support relevant capacity building in the private sector should also be assessed. This includes not only in-person training, but also other resources, and through different channels such as face-to-face, e-learning, mobile apps, outsourced training programs and accreditations.

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Certain stakeholders, particularly civil society organisations, may be interested in analysing procurement, but do not necessarily interact with the e-Procurement ecosystem. Capacity building programmes to develop skills to use and analyse procurement data are addressed in sub-indicator 9(a).

E-Proc-Sub-indicator 5(a): Assessment criteria
The following elements are present in the e-Procurement ecosystem: a) Substantive permanent training programmes of suitable quality and content for the needs of all the users and stakeholders (including private sector entities) of the e-Procurement systems. * b) Routine evaluation and periodic adjustment of training programmes on the e-Procurement systems based on feedback and need.

* Quantitative indicators to substantiate assessment of sub-indicator 5(a) Assessment criterion (a):
 	
  - % of procurement staff trained to use the e-Procurement systems over the total number of procurement staff.
 	
  - % of suppliers trained to use the e-Procurement systems over the total number of registered suppliers.
 	
  - % of auditors trained to use the e-Procurement systems over the total number of auditors.
 	
  Source: Institution(s) responsible for the e-Procurement ecosystem.
 	
* Recommended quantitative indicators to substantiate assessment of sub-indicator 5(a) Assessment criterion (a):
 	
  - % of users who are satisfied with the quality and content of the training on e-Procurement.
 	
  Source: Survey.

E-Proc-Sub-indicator 5(b) – Advice and assistance

The implementation of e-Procurement must consider the establishment of one or more in-house or outsourced helpdesk(s) to facilitate access and use for government, private and civil society actors at least during usual working hours. This function should consider different channels to provide the best support possible, such as email, live chat, bots, and telephone lines, among others. Helpdesk staff should undergo continuous training to ensure they can provide assistance that is up to date with any developments in the e-Procurement ecosystem.

In addition to this, it is important to have clear quality assurance process standards (such as quality of services agreements (QoS) for outsourced helpdesks), which are constantly tracked and monitored, for the helpdesk to remain an effective tool to increase e-Procurement uptake and use. Some of the most usual variables measured relate to user satisfaction, response times, errors, and times to solve incidents. Furthermore, the helpdesk(s) should be explicitly mentioned in operations manuals or other similar documents if an in-house operation is implemented, or in contracts with operators in the case of an outsourced operation.

Finally, it should be possible for users of the e-Procurement ecosystem, regardless of whether they are from the public sector or not, to obtain sufficient information to access and use the e-Procurement ecosystem in a self-paced manner.

E-Proc-Sub-indicator 5(b): Assessment criteria
a) The e-Procurement ecosystem has multi-channel helpdesk(s) available for all users at least during usual working hours.
b) Quality assurance process standards are in place to ensure the quality service, and the process is reviewed, tracked, and monitored to guarantee an optimal operation of the helpdesk(s). *
c) The helpdesk staff is trained on regular basis and relies on up-to-date scripts to answer questions and provide support.
d) Users can rely on readily available and up-to-date information to use the e-Procurement ecosystem in an optimal manner, whether from manuals, online training material, frequently asked questions, or other similar sources.

* Quantitative indicators to substantiate assessment of sub-indicator 5(b) Assessment criterion (b):
- % of requests answered or issues resolved during the last calendar year.
- % of requests resolved on time according to the agreed quality standards
  Source: Institution(s) responsible for the e-Procurement ecosystem.

* Recommended quantitative indicators to substantiate assessment of sub-indicator 5(b) Assessment criterion (b):
  % of users who are satisfied with the service level of the e-Procurement's helpdesk(s).
  Source: Survey.

E-Proc-Sub-indicator 5(c) – Performance monitoring

This sub-indicator aims to identify whether performance is monitored to improve the e-Procurement ecosystem.

Periodic audits, both technical and performance-related, should serve to identify gaps and propose recommendations to improve key aspects of the e-Procurement ecosystem. In any case, continuous monitoring should be present to guarantee a timely correction of errors, as well as to improve functional features and increase uptake. To this end, it is fundamental to evidence whether indicators are designed and tracked to measure progress against established goals. The monitoring of technical features and vulnerabilities is dealt with in sub-indicator 7(b).

The evaluator should also look for evidence of how user feedback is received by the institution(s) responsible for the e-Procurement ecosystem, how actions are taken based on it and whether there is sufficient support for the change management processes during adoption.

The correct implementation of these actions should serve the purpose of improving the ecosystem and increase uptake for e-Procurement. The assessor should look for evidence of increased use both in number of procuring entities as well as in the share of procurement carried out through e-Procurement (in value and number). For reference, the mandate to use e-Procurement is analysed in sub-indicator 1(a).

E-Proc-Sub-indicator 5(c): Assessment criteria
a) The performance of the e-Procurement ecosystem is measured, and this monitoring serves to its continuous improvement.
b) User feedback is considered and used to improve the e-Procurement ecosystem.
c) e-Procurement is increasingly adopted for all public procurement*.

* Quantitative indicators to substantiate assessment of sub-indicator 5(c) Assessment criterion (c):

- Percentage of procuring entities using e-Procurement compared to total number of procuring entities mandated to use e-Procurement.

- % of procurements carried out through e-Procurement out of the total number of procurements done in the last year.

- % of value of procurement carried out through e-Procurement out of the total value of procurement spend in the last year.

Source: Institution(s) responsible for the e-Procurement ecosystem

Pillar III. Procurement Operations and Market Practices

Pillar III of the e-Procurement module focuses on the functional and technical features of a particular platform or platforms in the e-Procurement ecosystem, as well as how procuring entities use these features. In addition, it evaluates the interaction of the private sector with the e-Procurement ecosystem.

E-Proc-Indicator 6. The e-Procurement ecosystem enables the achievement of the country's procurement objectives.

The available functional features of the platforms that make up the e-Procurement ecosystem should allow procuring entities to achieve the objectives they seek through procurement. Depending on the configuration of the assessed jurisdiction's e-Procurement ecosystem, this can be achieved via modules in a single e-Procurement system, or through different platforms. This indicator analyses whether these functionalities enable the complete procurement cycle to be carried out through e-Procurement. A description of the main elements required at each stage of the procurement cycle are described in Indicator 9 of the main MAPS.

The assessor must focus both on identifying whether the e-Procurement ecosystem has the features necessary to carry out each stage of the procurement cycle, and whether procuring entities are using these features. For this, relevant evidence from the main e-Procurement system(s) should be used to substantiate the assessment criteria.

There are three sub-indicators (a-c) to be assessed.

E-Proc-Sub-indicator 6(a) – Planning in the e-Procurement ecosystem

Planning is a key lever for maximizing the value creation of procurement because it is the foundation of the essential elements of an effective and sustainable procurement strategy in any organisation, such as allocation of resources (both financial and human), demand management, and risk assessment. E-Procurement should facilitate procurement planning through functionalities specific to this stage of the procurement cycle.

The assessor should start by analysing if the functionalities for creating procurement plans, of an annual or multi-annual nature depending on the country's legal framework, may be created within the e-Procurement ecosystem before starting the procurement of specific goods, works or services.

Functionalities for starting individual procurements must also be analysed, including the possibility of specifying the need of the procuring entity, as well as the corresponding budget information (available budget, sources, budget lines, etc.). The ecosystem should also allow the possibility of creating or publishing market studies and referencing all other information necessary to start the procurement. In addition to analysing whether these features are present in the e-Procurement ecosystem, there must also be evidence that the procuring entities are using them. To this end, the assessor must identify if there is evidence that procuring entities are using the planning features for annual or multi-annual procurement plans, and for specific procurements.

E-Proc-Sub-indicator 6(a): Assessment criteria
The e-Procurement ecosystem supports the following elements and procuring entities use them: a)   The creation of annual or multi-annual procurement plans. * b)   The planning of individual procurements and linking to corresponding budget information. *
* Quantitative indicators to substantiate assessment of sub-indicator 6(a) Assessment criterion (a): - % of procuring entities that created their annual or multi-annual procurement plans through the e-Procurement platform(s) Source: Institution(s) responsible for the e-Procurement ecosystem. * Quantitative indicators to substantiate assessment of sub-indicator 6(a) Assessment criterion (b): - % of procurements for which the planning stage was carried out on the e-Procurement platform(s) Source: Institution(s) responsible for the e-Procurement ecosystem.

E-Proc-Sub-indicator 6(b) – Selection and contracting in the e-Procurement ecosystem

To foster both transparency and efficiency, the whole procurement cycle should be covered by the e-Procurement ecosystem. This includes the stage before the actual contract itself, namely selection and contracting.

In this stage the formal conditions of any procurement are set. It is also here where rules for selecting and awarding the contract are defined, and where interaction with bidders happens in the form of communications and submission of bids. Because of this, it is often a phase that takes up a lot of resources. Standardising and digitalising contract conditions, procurement documents, communications, evaluations, and awards, and making them readily and easily manageable and accessible through e-Procurement is therefore an important vehicle for reducing transaction costs, as well as for mitigating a range of risks.

The assessor should look at the extent to which the central elements of the selection and contracting phase are included in the e-Procurement ecosystem in a properly digitised manner, for all procurements. This means that it is insufficient that the elements are just converted into digital formats (e.g. scanned

documents). If one or more procurement methods or types of contracts are not enabled in the e-Procurement ecosystem, assessors should mark a substantive gap.

At the start of the selection and contracting stage, the e-Procurement ecosystem should allow the use of model procurement documents, as well indicating a link between individual procurement processes and the annual or multiannual procurement plan. Next, procuring authorities must be able to create drafts that will then be adjusted to become definitive tender documents; and messages and communications, including requests for clarification, must be exchanged and logged within the e-Procurement platform(s). Finally, the e-Procurement ecosystem must enable the core elements for the selection to be carried out, including the establishment of qualification requirements and award criteria by the procuring entity; the submission of bids; and the evaluation and awarding of contracts.

This sub-indicator also requires the evaluation of the practical usage of the features, that is, the analysis of whether procuring entities are really using the selection and contracting functionalities of the e-Procurement ecosystem.

Finally, the e-Procurement ecosystem must enable a clear and up-to-date view of those suppliers that have been debarred, including for reasons related to breaches of integrity. To this end, the assessor must analyse if the e-Procurement ecosystem contains or links to a list of debarred suppliers which can be updated easily by procuring entities. Furthermore, measures must have been implemented to avoid that procuring entities award contracts to debarred suppliers, in accordance with the national legislation/regulation.

E-Proc-Sub-indicator 6(b): Assessment criteria

The e-Procurement ecosystem supports the following elements and procuring entities use them:

a) The possibility of carrying out procurements through any of the procurement methods and types of contracts that are established in the legal/regulatory framework.

b) Model procurement documents or templates for standard contract clauses to facilitate the creation of procurement processes.

c) The linkage of procurement processes with planned procurements disclosed in their annual or multiannual procurement plan.

d) The management of procurement processes, from drafts to definitive tender documents.

e) The handling and logging of all communication, including questions, requests for clarifications from interested parties as well as answers from procuring entities.

f) The establishment of requirements to define the qualification of interested bidders, as well as the award criteria to be used for evaluation.

g) The submission of bids.

h) The evaluation and awarding of contracts.

i) An up-to-date list of debarred suppliers and measures to prevent procuring entities from awarding contracts to debarred suppliers. *

* Recommended quantitative indicator to substantiate assessment of sub-indicator 6(b) Assessment criterion (i):

- Percentage of suppliers in the e-Procurement ecosystem's debarred supplier list as a share of the total number of debarred suppliers.

Source: Institution(s) responsible for the e-Procurement ecosystem

E-Proc-Sub-indicator 6(c) – Contract management in the e-Procurement ecosystem

For e-Procurement to support and promote the actual realisation of the value proposition of individual procurement and achieving procurement policy objectives more generally, it is crucial that effective contract management regimes are well-integrated in the e-Procurement ecosystem.

Drawing on the information that should already be generated within the e-Procurement ecosystem during the selection and contracting phase, a successful integration of contract management through e-Procurement starts with the creation of an electronic contract, but ought to encompass all contract management dimensions such as signing, and contract administration, including the handling of amendments and extensions, and the elements necessary to follow up the progress of the proper execution and delivery of the goods, works and services contracted.

The assessor should evaluate the extent to which the e-Procurement ecosystem supports digitalized contract management in a fully integrated manner (as opposed to being handled through parallel systems, such as standard email correspondence).

Finally, the assessor must evaluate the practical usage of these features, both for handling operations in the contract management stage, as well as for drawing valuable information from the e-Procurement ecosystem, such as cost and time overruns, and reasons for delays.

E-Proc-Sub-indicator 6(c): Assessment criteria
The e-Procurement ecosystem supports the following elements and procuring entities use them: a) The generation of electronic contracts based on the selection and contracting data available. * b) The management of amendments, extensions, and contract follow-up and oversight, as well as information including overruns and reasons for delays and terminations. *
* Quantitative indicators to substantiate assessment of sub-indicator 6(c) Assessment criterion (a): - % of the value of contracts generated in the e-Procurement ecosystem over the total value of contracts of the last calendar year. - % of the number of contracts generated in the e-Procurement ecosystem over the total number of contracts of the last calendar year. Source: Institution(s) responsible for the e-Procurement ecosystem * Quantitative indicators to substantiate assessment of sub-indicator 6(c) Assessment criterion (b): - % of the value of contracts managed in the e-Procurement ecosystem over the total value of contracts of the last calendar year. - % of the value of amended or extended contracts that were modified in the e-Procurement ecosystem over the total value of amended or extended contracts of the last calendar year. Source: Institution(s) responsible for the e-Procurement ecosystem

E-Proc-Indicator 7. The e-Procurement ecosystem's technical characteristics render it effective and secure.

In a world where government affairs are increasingly conducted through digitally based tools, e-Procurement will be operating within a broader infrastructural ecosystem of e-government. As with traditional steel-and-concrete infrastructure, this entails that due consideration must be made as to the technical characteristics of digital infrastructure, and naturally the same goes for e-Procurement.

This indicator provides for a thorough evaluation of the existence and practical use of common standards for both the architecture and infrastructure of the e-Procurement ecosystem in any country with a view to assessing interoperability, resilience, operational reliability and security, as well as how the ecosystem handles contingencies.

Additionally, to gauge the standards for accessibility of the e-Procurement ecosystem, the technical aspects of user interaction are assessed.

Stakeholders of the e-Procurement ecosystem can only trust decisions and processes when these are carried out in a secure manner. Central to this concept is the integrity and confidentiality of the information handled and stored in the e-Procurement ecosystem, as well as all the technical arrangements that enable this.

There are five sub-indicators (a-e) to be assessed. Assessors should take care to substantiate their conclusions with evidence from specific e-Procurement platforms, so that it is demonstrated that the standards are in fact adhered to in practice.

E-Proc-Sub-indicator 7(a) – Architecture of the e-Procurement ecosystem

A variety of different architectural approaches can foster an effective e-Procurement platform. However, regardless of the specific architecture, there are some technical aspects that any platform, no matter how it is designed, should aim to fulfil. This sub-indicator assesses these common standards and its use in practice.

A crucial aspect is interoperability with other relevant government or private platforms, such as those that support budget, treasury and payments, tax information, business registries, electronic invoicing, issue of bid and performance securities and guarantees by financial institutions, and e-payment gateways. The e-Procurement ecosystem must be able to interact with other government platforms in a manner that facilitates an efficient procurement cycle. It must be designed in a way that allows the exchange and use of information in a way that is secure and efficient.

A second crucial aspect of the architecture is the way in which the platform facilitates automatic data gathering, especially for business intelligence analytics. Data must be captured, stored, and processed in a way that follows a coherent structure for it to be used for analysis.

E-Proc-Sub-indicator 7(a): Assessment criteria
There are standards in place and practical evidence that demonstrate the following:
a) The architecture of the e-Procurement platform(s) facilitates interoperability with other relevant platforms

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including those used for budget, treasury/payment, tax, business registers, invoicing, bid securities and guarantees, and e-payment gateways.

b)   The e-Procurement platform(s) capture data in an automated way that enables business intelligence analytics.

E-Proc-Sub-indicator 7(b) – Infrastructure of the e-Procurement ecosystem

An e-Procurement ecosystem can never be more effective than its fundamental building blocks permit, regardless of whether they are provided in-house or as an outsourced service. It is as such crucial that there are standards that ensure that the basic hardware and software components that make up the ecosystem's infrastructure are well-matched to its real-life operational requirements.

For the e-Procurement ecosystem to be useful and gain trust from all stakeholders involved, it must show a high level of reliability. That is, it must be designed and operate in a way that minimises vulnerabilities that may render the ecosystem unavailable or threaten the completion of procurement transactions. For the main e-Procurement platform(s), the assessor should provide a description of the standards for hosting solutions, such as on-premise servers, external data centre, Government cloud, public regional/international cloud or hybrid. This is useful to understand whether the strategies in place allow the ecosystem to maximise (i) its availability, that is the time it operates in normal conditions; and (ii) its resilience, that is its capacity to recover swiftly in case of incidents. A reliable infrastructure should guarantee that users always interact normally with the ecosystem, and that suppliers do not face any technical issues when submitting their bids. In addition to this, a complete strategy in case of incidents, or contingency plan, must be designed and implemented. This includes frequent backup of information to avoid losing data in case of malfunction, a recovery policy that enables the ecosystem to start operating again in case of failures, and particularly in case of affectation due to viruses.

In terms of security, the assessor should look for evidence of how firewalls are implemented in a way that allows or blocks traffic in the network depending on specific rules. This is necessary to avoid attacks or malicious traffic, both incoming and outgoing. Another vital element to guarantee the ecosystem's security, bearing in mind the way users interact with it when executing procurement transactions, is the requirement for all files uploaded to be scanned for viruses.

A reliable infrastructure should be complemented with a reliable telecommunications and connectivity, which includes redundancy strategies that enable network connections to keep operating in case of incidents to the main channels.

Finally, the compliance of the ecosystem vis-à-vis the current legislative framework, guidelines, requirements and security practices of the e-Procurement ecosystem must be audited to make sure that the ecosystem operates correctly, that risks are identified and minimised, and that the best security strategy is implemented. These functional process and/or technical audits should happen regularly, consider the most recent security best practices, and recommendations resulting from them should be implemented systematically.

E-Proc-Sub-indicator 7(b): Assessment criteria

There are standards in place and practical evidence that demonstrate the following:

a) The e-Procurement ecosystem has a reliable infrastructure with network and security equipment, routine data backup, recovery policy, virus policy, and those policies implemented. *

b) The e-Procurement ecosystem's telecommunications and connectivity are reliable.

c) Functional process audits and technical audits are carried out periodically to guarantee that the ecosystem complies with relevant legislative framework, guidelines, requirements, and security best practices. *

* Recommended quantitative indicators to substantiate assessment of sub-indicator 7(b) Assessment criterion (a):
- Share of time that the system was unavailable during the past calendar year
- Frequency of backups (Recovery Point Objective or RPO)
- Time needed to recover from an incident (Recovery Time Objective or RTO)
Source: Institution(s) responsible for the e-Procurement ecosystem

* Recommended quantitative indicators to substantiate assessment of sub-indicator 7(b) Assessment criterion (a):
- % of suppliers that express that they were unable to bid due to technological issues within the e-Procurement ecosystem
Source: Survey

* Recommended quantitative indicators to substantiate assessment of sub-indicator 7(b) Assessment criterion (a):
- Number of known security breaches on the e-Procurement ecosystem during the last year.
Source: Institution(s) responsible for the e-Procurement ecosystem

* Recommended quantitative indicators to substantiate assessment of sub-indicator 7(b) Assessment criterion (c):
-Number of functional process and/or technical audits of the e-Procurement ecosystem's platform(s) carried out during the last three years.
Source: Institution(s) responsible for the e-Procurement ecosystem

E-Proc-Sub-indicator 7(c) – User interaction

An e-Procurement ecosystem can only be an effective instrument for fulfilling procurement policy objectives if it is used in the intended manner. On the technical side of things, this means that the ecosystem should enable and support easy use and seamless accessibility, both in terms of initial user access and of usability inside the ecosystem.

The e-Procurement ecosystem needs to enable procurement operations as established in the legal/ regulatory framework and considering the various roles of users within procuring entities and suppliers. To this end, digital workflows should be used, where users can carry out actions depending on their role and approve stages of the process in a way that guarantees a correct flow and log of information.

A description of the actions allowed (or not) in the e-Procurement ecosystem, how information is managed and stored, what registering in the ecosystem enables users to do, and liability disclaimers are fundamental to ensure that all users understand how to interact with the platform and what their actions in it entail. These elements should be drafted in terms of use that must be available, complete, and up-to-date, and that users must explicitly agree with before interacting with the ecosystem.

With the aim of rendering it as simple for use and widespread as possible, the e-Procurement platform(s) should have an interface that is built using responsive web design, so as to enable a seamless and adequate access through standard browsers and mobile devices. Another important simplification feature that allows a better user interaction is the implementation of a single user sign-on for the e-Procurement platform(s).

E-Proc-Sub-indicator 7(c): Assessment criteria
There are standards in place and practical evidence that demonstrate the following:
a) The e-Procurement ecosystem allows the use of digital workflows.
b) The e-Procurement ecosystem has complete and up-to-date terms of use that users must agree to in order to use the platform.
c) The e-Procurement ecosystem is built using responsive web design and is accessible through common web browsers, mobile devices and platforms. *
d) The e-Procurement ecosystem requires a single sign-on for the e-Procurement platform(s).
* Recommended quantitative indicators to substantiate assessment of sub-indicator 7(c) Assessment criterion (c):
- % of users who are satisfied with the accessibility of the e-Procurement ecosystem.
Source: Survey.

E-Proc-Sub-indicator 7(d) – Integrity of the information

Trust in the e-Procurement ecosystem can only be achieved if there is a guarantee that information inputted in the platform is not altered. Particularly, for the case of tenders, no changes to the submitted bids shall be permitted by the ecosystem once the deadline for submission has passed. Furthermore, bids should be encrypted to ensure that they cannot be tampered with and remain inaccessible until the bid opening to all parties except to the bidder itself.

A second important aspect is that all stakeholders need to trust that actions are truly carried out by the person that claims to have done so. To this end, authentication of public buyers and suppliers is fundamental to minimise the risk of fraud and or the possibility that they can deny or repudiate the authenticity of their actions on the ecosystem. In addition, details about decisions taken throughout the procurement process are fundamental for audit and other types of analysis, including performance. Thus, the e-Procurement ecosystem must store time stamps and responsible users for all actions in the ecosystem, in a way that may not be altered and that may feed into a complete audit log containing all activity on the platform. These audit logs must be stored separately from the database where the procurement information is kept[4].

E-Proc-Sub-indicator 7(d): Assessment criteria
There are standards in place and practical evidence that demonstrate the following:
a) The integrity of submitted bids is ensured.
b) Public buyers and suppliers are authenticated, and their action details are recorded in an audit log along the audit trail, i.e. user name, time stamp, device identification information, to minimize the risk of fraud or repudiation of their actions, and should be available over time. *
* Recommended quantitative indicators to substantiate assessment of sub-indicator 7(d) Assessment criterion (b):

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[4] If the main MAPS has been recently applied in the jurisdiction, sub-indicator 1(k) provides valuable input about the norms for safekeeping information and records.

- % of users who trust that actions are truly carried out by the person that claims to have done so in the e-Procurement ecosystem.

Source: Survey.

E-Proc-Sub-indicator 7(e) – Confidentiality of the information

While procurement data should be accessible to stakeholders (see Indicator 9), confidentiality of information related to the evaluation of the tender must be ensured, until the moment when the evaluation report must be disclosed. Failure to do this could endanger the results sought through the procurement process.

E-Proc-Sub-indicator 7(e): Assessment criteria
a) There are standards in place and practical evidence that demonstrate that bid information and draft evaluation reports are confidential and blocked from view for all parties except the evaluation committee, until the approval of the final evaluation report by the relevant authority.

E-Proc-Indicator 8. The e-Procurement ecosystem takes advantage of additional technical and functional features available for a variety of procurement methods.

Once a basic e-Procurement ecosystem that is effective, accessible, and reliable has been established, there is a host of potential gains to be made from taking advantage of available technical and functional features, to support different procurement methods according to the needs of the procuring entities.

This includes the integration of more complex procurement procedures in the e-Procurement ecosystem in a fully digitalized manner. Although some or all the elements of this indicator remain aspirational for many countries, it delineates a trajectory for digitisation in relation to procurement that it is valuable for any country to have in mind when assessing the current state of their e-Procurement ecosystem.

There are two sub-indicators (a-b) to be assessed.

E-Proc-Sub-indicator 8(a) – Procurement methods

A jurisdiction's legal/regulatory procurement framework usually establishes a variety of procurement methods, depending on the need to be satisfied through procurement. Public buyers thus have a range of methods to choose from, depending on what they intend to contract, and variables such as their buying power and supply risk.

Low buying power and low supply risk, such as for low-value commodities or readily-available standardized goods and services, may be dealt with electronic catalogues, call-off contracts deriving framework agreements or dynamic purchasing systems. These, along with electronic reverse auctions are the most suitable methods for low-value items negotiated in a competitive market, where procuring entities have a higher purchasing power. For complex procurement, such as for public-private

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partnerships (PPPs) and concessions, complete tendering processes along with careful contract management make up the best strategy.

The e-procurement ecosystem should be able to cater for these different needs, by making available platforms for all procurement methods, each with its predefined workflow. Depending on the configuration of the assessed jurisdiction's e-Procurement ecosystem, this can be achieved via modules in a single e-Procurement platform, or through different platforms.

The assessor should evaluate the extent to which these methods, in so far as they are made available in the legal and regulatory framework, are enabled, and carried out through e-Procurement. If a particular method is not allowed in the country's legislation and regulation, the assessor should mark the corresponding criterion as not applicable.

E-Proc-Sub-indicator 8(a): Assessment criteria

If the legal and regulatory framework for procurement in the assessed jurisdiction allows for their use, the following procurement methods are carried out through e-Procurement:

a)   Electronic reverse auctions.

b)   Electronic purchases from catalogues, framework agreements, or dynamic purchasing systems.

c)   Tenders for contracting of PPPs and concessions.

E-Proc-Sub-indicator 8(b) – Functionalities

Throughout the procurement cycle, there may be provisions allowing for, or even mandating, key steps in the procurement procedures to be handled by electronic means. While only some countries may have already taken steps to fully use these additional functionalities, all jurisdictions should strive to put them in use, because of the benefits they bring to make the process more efficient and transparent.

The assessor should evaluate the extent to which such functional features, in so far as they are made available in the legal/regulatory framework, are enabled, and carried out through e-Procurement. If a particular element is not allowed in the country's legislation and regulation, the assessor should mark the corresponding criterion as not applicable.

The use of these functionalities may require interoperability with other systems, including from financial institutions, tax authorities, and inventory management systems, among other. Thus, information from this sub-indicator should be crossed-checked with sub-indicator 7(a).

Eight topics are studied in this sub-indicator:

a)   Understanding procurement, and especially through category and spend analysis can help improve the system and is the basis for aggregating demand, which can bring cost and efficiency benefits. This can only be achieved through a correct **item classification**, which should be used even at the early stages of the planning of a procurement, and in annual or multi-annual procurement plans. The best choice is to use an international standard that is updated regularly and that suppliers across the world can easily understand.

b)   For large and complex contracting, including infrastructure and some consultancy services, **two-stage bidding procedures** offer numerous advantages. The e-Procurement ecosystem should

enable their use. Assessor should cross-reference this criterion with criterion 8(a)(c).

c) An important way of fostering competition and promoting SMEs is by allowing **joint ventures** or other joint supplier structures to participate in public procurement. To this end, their bids should be accepted and handled in the platforms conforming the e-Procurement ecosystem.

d) Suppliers should be allowed to submit bids providing **prices at the item level** if necessary for specific procurements. This enables analysis of item prices and facilitates contract management.

e) To allow for real access to foreign suppliers, the e-Procurement ecosystem should support the submission of **bids in different currencies and the display of information in multiple languages**. The latter refers to information of the system, as well as platform features and information, and does not necessarily include the full translation of all documents.

f) If **bid securities or bid bonds** are required for specific procurements including works, their acceptance should happen electronically. This usually requires interoperability with the systems of financial institutions.

g) Especially for the procurement of goods, the **acceptance of products** that triggers changes in available inventories (managed in other linked platforms such as Enterprise Resource Planning systems or ERPs) may be carried out through e-Procurement.

h) **Electronic invoicing** brings benefits in terms of efficiency to the procurement process and proves valuable for the tax administration. The e-Procurement ecosystem should allow its use in a seamless manner for all procurement, according with the tax regulation in the assessed jurisdiction.

i) **Artificial intelligence** may greatly improve the efficiency of process in the e-Procurement ecosystem. The assessors should identify whether artificial intelligence tools and models are in place, for uses that may range from analysis of procurement data and spending; identification of tenders with potential issues related to integrity, competition, among others; user interaction; automation of tasks for buyers and/or suppliers.

E-Proc-Sub-indicator 8(b): Assessment criteria

The e-Procurement ecosystem supports the following:

a) Classification of goods, works and services based on international standards.

b) Two-stage bidding procedures for complex contracting.

c) Bid acceptance and handling of joint ventures and other joint supplier structures, with information collected from individual suppliers as well as from the joint structure.

d) Submission of bids with prices provided at the unit level.

e) Submission of bids in different currencies and display of information in multiple languages.

f) Acceptance of bid securities and bonds.

g) Electronic acceptance of products for effective inventory management.

h) Electronic invoicing.

i) Artificial intelligence.

E-Proc-Indicator 9. Data from the e-Procurement ecosystem facilitates analysis and decision-making.

A central advantage of e-Procurement is the potential of the e-Procurement ecosystem to make data about public procurement available in a structured and accessible manner that would be close to impossible in an analogue system. Naturally, if this potential is to generate value, it needs to be both realised, meaning that data is made available, and actualised, meaning that the available data is used for decision-making.

This indicator is assessed through two sub-indicators (a-b).

E-Proc-Sub-indicator 9(a) – Characteristics of published data

One of the most important advantages of e-Procurement is the possibility of disclosing data about procurement for interested stakeholders, both within and outside of government, to use and analyse. To guarantee access to anyone wanting to analyse procurement information, it should be disclosed as open data, which is data that anyone can access, use, and share freely without incurring any fees. To be usable, it must be made available in a common, machine-readable format. Furthermore, its licence should allow any use, whether academic, journalistic, and commercial, among others[5]. Building on the analysis of sub-indicator 1(a), regarding disclosure of procurement data, assessors should establish whether the legal and regulatory framework mandates the publication of procurement data in machine-readable open format.

To be of any value, procurement information should be complete and of good quality. Ideally, information about all procurements, from all procuring entities, that are not subject to special confidentiality legislation such as for national security reasons, should be disclosed in a timely manner – preferably in real time. The data and documents disclosed should be accurate and refer to the whole procurement cycle, from planning to contract management, including data on tender notices, bids received, challenges and appeals, award, contract, amendments.

Having data published, even in open formats, is irrelevant if no one uses it. Information collected and published should match the needs of stakeholders. In addition to identifying the supply of procurement data from e-Procurement, the assessor should identify the demand for it, that is, if it is being used for analysis by stakeholders both within and outside of government. Information should serve to measure procurement performance on dimensions such as competition, timeliness, effectiveness, efficiency in execution, transparency, quality, contract management & fairness, and integrity of the procurement process. To do this, concrete evidence of data analysis used for decision making, within or outside government, should be gathered.

To foster a culture of data use and analysis, a proper capacity building programme should be put in place. Considering that the questions that auditors, public buyers or suppliers require to answer using procurement data may be very different from what academics, journalists or citizens are looking for, the needs and skills of the various stakeholders need to be considered. Capacity building should include training as well as relevant material including manuals, e-learning courses, videos, and other means to use the full range of tools available for promoting and developing the skills to use procurement data. This

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[5] https://www.europeandataportal.eu/elearning/en/module1/#/id/co-01

programme should not be confused with those intended to develop capacities to use e-Procurement systems and its functionalities, which are analysed under sub-indicator 5(a).

E-Proc-Sub-indicator 9(a): Assessment criteria

a) Publication of procurement data in machine-readable open format is mandated in the legal/regulatory framework.

b) Data stored in the e-Procurement ecosystem is disclosed as machine-readable open data in a website for anyone to download, use and share, with the appropriate license for use, and without incurring any fees.

c) Data from the e-Procurement ecosystem is published in a timely manner and provides accurate information and enough coverage of the whole procurement system. *

d) Published data from the e-Procurement ecosystem includes*:

- procurement plans

- information related to specific procurements, at a minimum, advertisements or notices of procurement opportunities, procurement method, contract awards and contract implementation, including amendments, payments and appeals decisions

- bidding documents, evaluation reports, contracts, and amendments

- linkages to rules and regulations and other information relevant for promoting competition and transparency

e) Data is used by stakeholders for analysis and decision-making, and particularly for measuring, monitoring, and evaluating procurement performance.

f) A programme to build capacities for procurement data use and analysis is implemented with suitable quality and content for the needs of all the users. *

* Quantitative indicators to substantiate assessment of sub-indicator 9(a) Assessment criterion (c):

- % of procurement disclosed as a share of the total value of procurement

- % of procurement disclosed as a share of the total number of procurement processes

- Frequency of open data publication and update

Source: Institution(s) responsible for the e-Procurement ecosystem, normative/regulatory procurement function, Ministry of Finance.

* Recommended quantitative indicators to substantiate assessment of sub-indicator 9(a) Assessment criterion (c):

- % of users who are satisfied with the timeliness, accuracy and coverage of data published from the e-Procurement ecosystem.

Source: Survey.

* Quantitative indicators to substantiate assessment of sub-indicator 9(a) Assessment criterion (d):

- % of procurement plans published (in % of the total number of required procurement plans)

- % of procurements with key information published (in % of total number of procurements)

Source: Institution(s) responsible for the e-Procurement ecosystem / recent PEFA assessment – dimension 24.3.

* Quantitative indicators to substantiate assessment of sub-indicator 9(a) Assessment criterion (f):

- Number of government officials trained in the use and analysis of procurement data

- Number of suppliers trained in the use and analysis of procurement data

- Number of citizens, academics and journalists trained in the use and analysis of procurement data

Source: Institution(s) responsible for the e-Procurement ecosystem

* Recommended quantitative indicators to substantiate assessment of sub-indicator 9(a) Assessment criterion (f):

- % of users who are satisfied with the capacity building programme to use and analyse procurement data from the e-Procurement ecosystem.

Source: Survey.

E-Proc-Sub-indicator 9(b) – Data access and presentation

In addition to the direct benefits derived from integrating procurement operations in a well-functioning e-Procurement ecosystem, there is a wide range of potential gains to be made from employing the data generated by the system using data analytics functions or tools, whether for policy development or reviews and auditing. The easier and more user-friendly it is to access and visualise data from the system, the greater is the chance that such gains can be attained.

The most basic aspect that needs to be verified is that any stakeholder, including citizens, should be able to look up up-to-date procurement data in a single online portal, at no cost.

However, countries should strive to provide easier means of presenting and explaining procurement data. One of the best ways to show information about the procurement system is through data visualisations that provide insights in an easy way for multiple stakeholders. To really be useful, visualisations should address what users need to understand from the procurement system and present up-to-date information.

The assessor should also analyse the extent to which procurement data can be searched using specific criteria, filtered for analysis and download, and whether it may be downloaded in bulk for a set of procurements, including with application programming interfaces (APIs). These are usually located in a single procurement portal or in an integrated open data portal for the whole of government.

Finally, proper documentation about the downloadable dataset must be provided and kept up to date to indicate to users at least the following aspects: the coverage of the dataset presented (in terms of entities, government levels, procurement methods, among other factors); the frequency of update of the data; any explanation required to understand terms and fields; and the license that establishes the right to download and use the data.

E-Proc-Sub-indicator 9(b): Assessment criteria
a) There is an integrated information system (centralised online portal) that provides up-to-date information and is easily accessible to all interested parties at no cost.
b) Procurement data is presented through relevant and up-to-date data visualisations, and it is analysed using data analytics functions or tools.
c) Procurement data may be easily searched, filtered, and downloaded in bulk.

d)	Proper documentation about the procurement data is provided and kept up to date.

E-Proc-Indicator 10. The private sector is fully engaged with the e-Procurement ecosystem.

This indicator provides sheds light on how the private sector, including small and medium enterprises, engage with the e-Procurement ecosystem. Three sub-indicators (a-c) are to be assessed.

E-Proc-Sub-indicator 10(a) – Dialogue between the public and private sectors

The e-Procurement ecosystem constitutes an important point of interaction between public and private sectors. As such, it requires input from the private sector, both on the very basic level of skills required to navigate and use the system, and on the level of the structure of product offerings and business models.

Continuous, open, and timely dialogue between private and public actors about the e-Procurement ecosystem is therefore imperative. To render the best results for all involved, including when it comes to fulfilling general procurement policy objectives, it is necessary that private sector needs are considered in the building and operation of the e-Procurement ecosystem.

The assessor should evaluate the extent to which continuous, open, and timely dialogue is encouraged. The dialogue should, amongst other things, concern how to reduce friction in the interaction between public and private sectors and how the public e-Procurement ecosystem can support private actors in delivering value to the public sector.

E-Proc-Sub-indicator 10(a): Assessment criteria
a)   The government encourages an open dialogue with the private sector to improve the e-Procurement ecosystem.

E-Proc-Sub-indicator 10(b) – Private sector's use of the e-Procurement ecosystem

For any e-Procurement ecosystem steps must continuously be taken to ensure that it promotes the use among private actors and that does not create unreasonable barriers, whether accidental or by design, for participation in the public procurement market. A fundamental metric of this aspect is the uptake of e-Procurement among private sector stakeholders.

The assessor should evaluate whether there are constraints in the e-Procurement ecosystem, or generated by it, which might inhibit private sector access. A description of the constraints should be provided and recommendations to solve them are fundamental when assessing this sub-indicator. To facilitate the assessment, possible constraints are listed in the criterion. However, any other constraint present must be analysed and described. Information analysed in other indicators of this module, including that about the use of fees in the system (sub-indicator 4(b)) provides valuable insights to determine whether some of the possible constraints are present and evidenced by private sector actors.

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E-Proc-Sub-indicator 10(b): Assessment criteria
a) The private sector is actively engaging with the e-Procurement ecosystem. *
b) No systemic constraints such as the ones listed below inhibit private sector access, including from foreign suppliers, to e-Procurement: *   ● Internet access and connectivity issues   ● Data literacy   ● Problems in the design and user interface of the platforms integrating the e-Procurement ecosystem   ● Technological issues of the platforms integrating the e-Procurement ecosystem   ● Burdensome or costly process to register as a supplier and bid   ● Burdensome or costly process to receive training and guidance to use e-Procurement   ● Difficulties particular to foreign suppliers, including those related to bidding in different currencies, access to information in multiple languages, etc.

* Quantitative indicators to substantiate assessment of sub-indicator 10(b) Assessment criterion (a):

- Number of suppliers registered in the last three years

- Number of SMEs registered in the last three years

Source: Institution(s) responsible for the e-Procurement ecosystem

* Recommended quantitative indicators to substantiate assessment of sub-indicator 10(b) Assessment criterion (b):

- Number of bids per tender for competitive processes

- Number of suppliers that were awarded contracts in the last three years

- Number of registered foreign private sector users in the last three years

Source: Institution(s) responsible for the e-Procurement ecosystem

* Recommended quantitative indicators to substantiate assessment of sub-indicator 10(b) Assessment criterion (b):

- % of private sector users who express that there are constraints that inhibit private sector access to the e-Procurement ecosystem.

Source: Survey.

E-Proc-Sub-indicator 10(c) – Use of e-Procurement for specific sectors

While e-Procurement should be extensively used for all categories of government spending, this may not necessarily be the case in the assessed jurisdiction. This sub-indicator evaluates whether e-Procurement is used to procure goods, works and services related to key sectors associated with the government's

priority areas[6]. Usual examples are the procurement of complex infrastructure projects, purchase of health goods and services, among others.

The assessor should look for evidence of how e-Procurement is used in key sectors, and whether procuring entities of these sectors use the e-Procurement ecosystem for all their procurement, including high-value procurements.

E-Proc-Sub-indicator 10(c): Assessment criteria
a)   e-Procurement is used by procuring entities from key sectors associated with the government's priority areas for all their procurement, including high-value procurements.

Pillar IV. Accountability, Integrity and Transparency of the Public Procurement System

As many aspects that relate to accountability, integrity and especially transparency have been assessed in other indicators of this module, the indicators of Pillar IV of the e-Procurement module complete the evaluation of these matters, including how civil society and audit and control institutions engage with the e-Procurement ecosystem, as well as the handling of e-complaints.

E-Proc-Indicator 11. The e-Procurement ecosystem ensures civil society engagement.

This indicator analyses the role of civil society to improve procurement, focusing exclusively on the e-Procurement ecosystem.

The e-Procurement ecosystem should respond to the needs and expectations of civil society. To that end, dialogue between citizens and the government is necessary. To foster that dialogue and the active use of procurement information, the government should deliver capacity building programmes specifically targeted to civil society.

There are two sub-indicators (a-b) to be assessed.

E-Proc-Sub-indicator 11(a) – Dialogue between government and civil society

In the same way as dialogue with the private sector is crucial (see sub-indicator 10(a)), governments should strive to consider the opinion of civil society when developing the e-Procurement eco system. Civil society is a key stakeholder that can increase the integrity of the procurement system by means of interacting with the e-Procurement systems. Changes or new features added to the e-Procurement ecosystem, including notably the way procurement data is accessed, should consider the needs and

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[6] If the main MAPS has been applied recently in the jurisdiction, indicator 10(c) will contain relevant information about key sectors.

perspectives of civil society, to ensure that information is available in the easiest and more timely way possible.

The assessor should look for evidence of established mechanisms that foster this consultation and dialogue.

E-Proc-Sub-indicator 11(a): Assessment criteria
a)   The government encourages an open dialogue with civil society to improve the e-Procurement ecosystem.

E-Proc-Sub-indicator 11(b) – Direct engagement from civil society

This sub-indicator focuses on the use of e-Procurement towards the goal of encouraging direct engagement of civil society with the public procurement system. The assessor should look for the functionalities that enable civil society to access information, as well as interact at the different stages of the procurement process, depending on what the legal/regulatory framework allows. Evidence must be collected from the e-Procurement ecosystem as proof of this use of information and interaction.

E-Proc-Sub-indicator 11(b): Assessment criteria
a)   The e-Procurement ecosystem allows citizens to access and search information of all stages of the procurement process and all procurement methods in accordance with the legal/regulatory framework.
b)   There is evidence that citizens use the opportunities available to access information of, and provide comments and feedback to specific procurements by means of the e-Procurement ecosystem, as allowed by the legal/regulatory framework. *
* Quantitative indicators to substantiate assessment of sub-indicator 11(b) Assessment criterion (b):   - Number of downloads of procurement data   - Number of comments from civil society users in the last calendar year   - Number of users who accessed the e-Procurement portal(s) in the last calendar year   Source: Institution(s) responsible for the e-Procurement ecosystem.

E-Proc-Indicator 12. The e-Procurement ecosystem enables effective treatment of risks, control and audit.

Technology and data can serve as efficient tools to support control and audit of the procurement system. Auditors may work more efficiently when conducting procurement audits if information is timely and has good quality. In consequence, the e-Procurement ecosystem needs to produce the required information, which should be used for these purposes. More recent trends in the use of these data include automated controls to detect cases which might deviate from what is usually expected in a procurement process, thus enabling swift action from control authorities.

There are two sub-indicators (a-b) to be assessed.

E-Proc-Sub-indicator 12(a) – Internal and external control

A well-functioning procurement system must have the necessary control to mitigate risks, as well as periodic and efficient audit to continuously improve. These internal and external controls work best if they rely on information technologies. For more explanation on internal and external control, see Indicator 12 of the main MAPS.

The internal audit function can make use of data gathered in the e-Procurement ecosystem to identify risks for specific procurements. It may also use data to analyse entity-level aggregated indicators to study the compliance with legislation, and the effectiveness and efficiency of the entity's procurement function.

On the other hand, e-Procurement may provide relevant insights to the external audit function, especially when aggregating data for from the entire e-Procurement ecosystem to gain a complete view of possible risks in the jurisdiction's procurement.

For this indicator, the assessor should look for evidence that the e-Procurement ecosystem can facilitate internal and external control. To this end, good quality and timely procurement data must be readily available for auditors and the officials in charge of internal control. In addition, data must be used and analysed in a way that allows the identification, mitigation, and treatment of risks in the procurement process. Evidence should also be collected about the use of transactional audit logs that describe the actions taken for specific procurements, their responsible and the exact moment when they happened, as explained in sub-indicator 7(d).

This sub-indicator should not be confused with technical audits to identify vulnerabilities in specific systems which are the topic of sub-indicator 7(b).

E-Proc-Sub-indicator 12(a): Assessment criteria
a) There is evidence that the e-Procurement ecosystem facilitates internal control.
b) There is evidence that e-Procurement ecosystem facilitates external control. *
* Recommended quantitative indicator to substantiate assessment of sub-indicator 12(a) Assessment criterion (b):   - Percentage of audits focused on procurement which used data from the e-Procurement ecosystem.
Source: Ministry of Finance / Supreme Audit Institution

E-Proc-Sub-indicator 12(b) – Identification and treatment of risks

The availability and use of data is just the first step in which technology can serve as a lever to identify and mitigate risks in the procurement system. Algorithms[7] may automate this process, allowing auditors to focus on those processes, risks, or sectors where unusual elements are spotted, thus greatly increasing their efficiency.

e-Procurement can be useful to identify and treat risks in two moments of the public procurement cycle. Ex-ante controls should serve the purpose of spotting risks before the procurement process is finalised.

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[7] These algorithms are often described as "red flags", which should not be confused with the use of the term red flags in the MAPS methodology, as described in the MAPS User Guide.

Unusual behaviour, including possible evidence of any of the following, should be raised as a possible risk to be further studied: collusion, bid rigging, bribes and kickbacks, participation of shell-company or phantom suppliers, purchases for personal use, and false or altered invoices. Public institutions, including the Supreme Audit Institution and the institution(s) responsible for the e-Procurement ecosystem, should be in charge of setting up such algorithms. Thus, the assessor should analyse for this sub-indicator whether such algorithms are in place, are maintained and are used by government and/or audit institutions.

Investigations, studies, and other analysis can be done using historical data coming out of the e-Procurement ecosystem. These may be carried out by audit institutions, as well as competition and other relevant authorities, and set the ground for sanctioning wrongdoing and improving controls and procedures in the future. Examples of these studies include reports on trends in pricing, supplier concentration, breaches to contracts, among others.

E-Proc-Sub-indicator 12(b): Assessment criteria
a) Ex-ante controls and algorithms are in place in the e-Procurement ecosystem and used to detect risks and possible wrongdoing. *
b) Ex-post investigations and risk analysis are regularly conducted using data from the e-Procurement ecosystem.
* Recommended quantitative indicator to substantiate assessment of sub-indicator 12(b) Assessment criterion (a):   - Number of processes identified as outliers or possible wrongdoing by the algorithms set in place by public institutions.   Source: Ministry of Finance / Supreme Audit Institution

E-Proc-Indicator 13. The e-Procurement ecosystem facilitates the review of complaints and appeals.

This indicator assesses whether the e-Procurement ecosystem facilitates the entire procurement review process, both for the complainant as well as for the appeals institutions.

This indicator contains one sub-indicator.

E-Proc-Sub-indicator 13(a) – E-complaints

E-complaints provide a more efficient way of handling complaints to the procurement process. These may happen directly within the e-Procurement systems, or in a separate system linked with them. In any case, the appeals body in charge of the review process should have access to the information stored in the e-Procurement systems to base its decision on all available information from the specific procurement.

The entire workflow for e-complaints should be consistent with the process established for appeals. Any standstill periods should be triggered directly in the respective e-Procurement system. Decisions should be reflected in the respective e-Procurement system, particularly remedies. Finally, complaints and decisions of the appeals body should be published as open data.

The assessor must review how e-complaints work in the assessed jurisdiction and find evidence of real cases to understand how steps from the complaint to the final decision are considered in the e-Procurement ecosystem. In case e-complaints are not allowed in the legal/regulatory framework, this sub-indicator must be marked as not applicable.

E-Proc-Sub-indicator 13(a): Assessment criteria
a) Complaints and/or appeals can be lodged through or linked to the e-Procurement systems. *
b) The appeals body has access to the e-Procurement systems and uses its information for decision making.
c) The e-complaint workflow is consistent with the process used to handle appeals, including standstill periods for review, if any.
d) Remedies are reflected in the e-Procurement systems.
e) Complaints and decisions of the appeals body are published as open data.
* Quantitative indicator to substantiate assessment of sub-indicator 13(a) Assessment criterion (a):   - % of e-complaints out of the total number of complaints in the last year.   Source: appeals body

Annexes

Annex 1 – MAPS e-Procurement module indicator system

Pillar I – Legal, Regulatory, and Policy Framework	
1	**The legal and regulatory framework enables e-Procurement.**
	1(a) - Regulation of the use of e-Procurement 1(b) - Elements necessary for e-Procurement
2	**e-Procurement follows a strategy that is aligned with broader government policies.**
	2(a) – e-Procurement strategy 2(b) - e-Procurement support to sustainability and innovation
Pillar II – Institutional Framework and Management Capacity	
3	**The e-Procurement ecosystem has a well-established and operational governance and management structure.**
	3(a) – Status and legal/regulatory basis of the institution(s) responsible for the e-Procurement ecosystem 3(b) – Coordination between the institution(s) responsible for the e-Procurement ecosystem and other relevant government entities 3(c) – Capacity of the institution(s) responsible for the e-Procurement ecosystem
4	**The e-Procurement ecosystem relies on an adequate business model.**
	4(a) – Operating business model and implementation type of the e-Procurement platform 4(b) – Funding of the e-Procurement ecosystem
5	**The e-Procurement ecosystem has a strong capacity to develop and improve.**
	5(a) – Capacity development for e-Procurement 5(b) – Advice and assistance 5(c) – Performance monitoring
Pillar III – Public Procurement Operations and Market Practices	
6	**The e-Procurement ecosystem enables the achievement of the country's procurement objectives.**
	6(a) – Planning in the e-Procurement ecosystem 6(b) – Selection and contracting in the e-Procurement ecosystem 6(c) – Contract management in the e-Procurement ecosystem
7	**The e-Procurement ecosystem's technical characteristics render it effective and secure.**
	7(a) – Architecture of the e-Procurement ecosystem 7(b) – Infrastructure of the e-Procurement ecosystem

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	7(c) – User interaction
	7(d) – Integrity of the information
	7(e) – Confidentiality of the information
8	**The e-Procurement ecosystem takes advantage of additional technical and functional features available for a variety of procurement methods.**
	8(a) – Procurement methods
	8(b) – Functionalities
9	**Data from the e-Procurement ecosystem facilitates analysis and decision-making.**
	9(a) – Characteristics of published data
	9(b) – Data access and presentation
10	**The private sector is fully engaged with the e-Procurement ecosystem.**
	10(a) – Dialogue between the public and private sectors
	10(b) – Private sector's use of the e-Procurement ecosystem
	10(c) – Use of e-Procurement for specific sectors
Pillar IV – Accountability, Integrity and Transparency of the Public Procurement System	
11	**The e-Procurement ecosystem ensures civil society engagement.**
	11(a) – Dialogue between government and civil society
	11(b) – Direct engagement from civil society
12	**The e-Procurement ecosystem enables effective treatment of risks, control and audit.**
	12(a) – Internal and external control
	12(b) – Identification and treatment of risks
13	**The e-Procurement ecosystem facilitates the review of complaints and appeals.**
	13(a) – e-complaints

Annex 2 – Assessment criteria expressed in quantitative terms

Sub-indicator		Minimum Quantitative Indicators	Recommended Quantitative Indicators
1(a)	Regulation of the use of e-Procurement		1(a) Assessment criterion (b): - Percentage of procuring entities mandated to use e-Procurement compared to total number of procuring entities. Source: Institution(s) responsible for the e-Procurement ecosystem / Public procurement function
4(b)	Funding of the e-Procurement ecosystem	**4(b) Assessment criterion (b):** **- Fee type and amount charged and the basis for charging (periodic or subscription- based payment or transaction- based payment)** **Source: Institution(s) responsible for the e-Procurement ecosystem and publicly available information.**	4(b) Assessment criterion (b): - % of users who find that fees constitute an impediment for using e-Procurement Source: Survey.
5(a)	Capacity development for e-Procurement	**5(a) Assessment criterion (a):** - **% of procurement staff trained to use the e-Procurement systems over the total number of procurement staff.** - **% of suppliers trained to use the e-Procurement systems over the total number of registered suppliers.** - **% of auditors trained to use the e-Procurement systems over the total number of auditors.** **Source: Institution(s) responsible for the e-Procurement ecosystem.**	5(a) Assessment criterion (a): - % of users who are satisfied with the quality and content of the training on e-Procurement. Source: Survey.
		5(a) Assessment criterion (b): **- % of requests answered or issues resolved during the last calendar year.**	5(a) Assessment criterion (b): % of users who are satisfied with the service level of the e-Procurement's helpdesk(s). Source: Survey.

		- **% of requests resolved on time according to the agreed Quality of Services agreements.** **Source: Institution(s) responsible for the e-Procurement ecosystem.**	
		5(a) Assessment criterion (c): **- Percentage of procuring entities using e-Procurement compared to total number of procuring entities mandated to use e-Procurement.** **- % of procurements carried out through e-Procurement out of the total number of procurements spend in the last year.** **- % of value of procurement carried out through e-Procurement out of the total value of procurements done in the last year.** **Source: Institution(s) responsible for the e-Procurement ecosystem**	
6(a)	Planning in the e-Procurement ecosystem	**6(a) Assessment criterion (a):** **- % of procuring entities that created their annual or multi-annual procurement plans through the e-Procurement platform(s)** **Source: Institution(s) responsible for the e-Procurement ecosystem.**	
		6(a) Assessment criterion (b): **- % of procurements for which the planning stage was carried out on the e-Procurement platform(s)** **Source: Institution(s) responsible for the e-Procurement ecosystem.**	
6(b)	Selection and contracting in the e-Procurement ecosystem		6(b) Assessment criterion (i): - Percentage of suppliers in the e-Procurement ecosystem's debarred supplier list as a share of the total number of debarred suppliers.

			Source: Institution(s) responsible for the e-Procurement ecosystem
6(c)	Contract management in the e-Procurement ecosystem	**6(c) Assessment criterion (a):** **- % of the value of contracts generated in the e-Procurement ecosystem over the total value of contracts of the last calendar year.** **- % of the number of contracts generated in the e-Procurement ecosystem over the total number of contracts of the last calendar year.** **Source: Institution(s) responsible for the e-Procurement ecosystem**	
		6(c) Assessment criterion (b): **- % of the value of contracts managed in the e-Procurement ecosystem over the total value of contracts of the last calendar year.** **- % of the value of amended or extended contracts that were modified in the e-Procurement ecosystem over the total value of amended or extended contracts of the last calendar year.** **Source: Institution(s) responsible for the e-Procurement ecosystem**	
7(b)	Infrastructure of the e-Procurement ecosystem		7(b) Assessment criterion (a): - Share of time that the system was unavailable during the past calendar year - Frequency of backups (Recovery Point Objective or RPO) - Time needed to recover from an incident (Recovery Time Objective or RTO) Source: Institution(s) responsible for the e-Procurement ecosystem

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			- % of suppliers that express that they were unable to bid for technological issues of the e-Procurement ecosystem
			
			  Source: Survey
			
			- Number of known security breaches on the e-Procurement ecosystem during the last year.
			
			  Source: Institution(s) responsible for the e-Procurement ecosystem

			7(b) Assessment criterion (c): - Number of functional process and/or technical audits of the e-Procurement ecosystem's platform(s) carried out during the last three years. Source: Institution(s) responsible for the e-Procurement ecosystem
7(c)	User interaction		7(c) Assessment criterion (c): - % of users who are satisfied with the accessibility of the e-Procurement ecosystem. Source: Survey.
7(d)	Integrity of the information		7(d) Assessment criterion (b): - % of users who trust that actions are truly carried out by the person that claims to have done so in the e-Procurement ecosystem. Source: Survey.
9(a)	Open data	**9(a) Assessment criterion (c):** **- % of procurement disclosed as a share of the total value of procurement** **- % of procurement disclosed as a share of the total number of procurement processes** **- Frequency of open data publication and update** **Source: Institution(s) responsible for the e-Procurement ecosystem,**	9(a) Assessment criterion (c): - % of users who are satisfied with the timeliness, accuracy and coverage of data published from the e-Procurement ecosystem. Source: Survey

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		normative/regulatory procurement function, Ministry of Finance.	
		9(a) Assessment criterion (d): **- % of procurement plans published (in % of the total number of required procurement plans)** **- % of procurements with key information published (in % of total number of procurements)** **Source: Institution(s) responsible for the e-Procurement ecosystem / recent PEFA assessment – dimension 24.3.**	
		9(a) Assessment criterion (f): **- Number of government officials trained in the use and analysis of procurement data** **- Number of suppliers trained in the use and analysis of procurement data** **- Number of citizens, academics and journalists trained in the use and analysis of procurement data** **Source: Institution(s) responsible for the e-Procurement ecosystem**	9(a) Assessment criterion (f): - % of users who are satisfied with the capacity building programme to use and analyse procurement data from the e-Procurement ecosystem. Source: Survey.
10(b)	Private sector's use of the e-Procurement ecosystem	**10(b) Assessment criterion (a):** **- Number of suppliers registered in the last three years** **- Number of SMEs registered in the last three years** **Source: Institution(s) responsible for the e-Procurement ecosystem**	
			10(b) Assessment criterion (b): - Number of bids per tender for competitive processes - Number of suppliers that were awarded contracts in the last three years

			- Number of registered foreign private sector users in the last three years Source: Institution(s) responsible for the e-Procurement ecosystem - % of private sector users who express that there are constraints that inhibit private sector access to the e-Procurement ecosystem. Source: Survey
11(b)	Direct engagement from civil society	**11(b) Assessment criterion (b):** **- Number of downloads of procurement data** **- Number of comments from civil society users in the last calendar year** **- Number of users who accessed the e-Procurement portal(s) in the last calendar year** **Source: Institution(s) responsible for the e-Procurement ecosystem.**	11(b) Assessment criterion (b): - % of users who are satisfied with the opportunities provided in the e-Procurement ecosystem to access information of, and provide comments and feedback to specific procurements. Source: Survey.
12(a)	Internal and external control		12(a) Assessment criterion (b): - Percentage of audits focused on procurement which used data from the e-Procurement ecosystem. Source: Ministry of Finance / Supreme Audit Institution
12(b)	Identification and treatment of risks		12(b) Assessment criterion (a): - Number of processes identified as outliers or possible wrongdoing by the algorithms set in place by public institutions. Source: Ministry of Finance / Supreme Audit Institution
13(a)	e-complaints	**13(a) Assessment criterion (a):** **- % of e-complaints out of the total number of complaints in the last year.**	

		Source: appeals body	

Glossary

Algorithm	A set of instructions for solving a problem or accomplishing a task. In connection to information technology, algorithms are usually digitised and automated.
API	An application programming interface (API) connects computers of computer programs allowing them to interact. This contrasts with a user interface, which connects a computer or computer program to a person (the user).
Architecture	The overall design of a computing system and the logical and physical interrelationships between its components. The architecture specifies the hardware, software, access methods and protocols used throughout the system.
Artificial intelligence	"An AI system is a machine-based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. Different AI systems in their levels of autonomy and adaptiveness after deployment." [8]
Authentication	The process of proving an assertion, such as the identity of a computer system user or of documents or files relied on in a process.
Business model	The description of how an organization creates, delivers, and captures value, in economic, social, cultural, or other terms.
Contingency plan	A pre-established plan for restoration of the services of a given information system after a disruption.
Digital workflows	Digital workflow is a sequential, predictable combination of digitised data, guidelines, and tasks that make up everyday processes in an organisation.
Digitisation	The process of changing from analogue to digital form, also known as digital enablement. Digitisation takes an analogue process and changes it to a digital form without any different-in-kind changes to the process itself.
Disaster recovery plan	A formal policy containing detailed instructions on how to respond to unplanned incidents in a system.
E-government	The use of information technology to deliver government services more effectively and efficiently to citizens and businesses.
Infrastructure	The components required to operate and manage information technology environments.
Responsive web design	An approach to web design that adapts web-page layout to different viewing environments, e.g. varying screen sizes.

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[8] https://oecd.ai/en/wonk/definition

Quality of Service	The description or measurement of the overall performance of a service, particularly the performance seen by the users of the network. To quantitatively measure quality of service, several related aspects of the network service are often considered, such as packet loss, bit rate, throughput, transmission delay, availability, jitter, etc.