



GOVERNANCE

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EQUITABLE GROWTH, FINANCE & INSTITUTIONS INSIGHT

GovTech in Fragile and Conflict Situations Trends, Challenges, and Opportunities

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Contents

Acknowledgements	v
Acronyms and Abbreviations	vi
Executive Summary	1
1. Introduction	3
1.1. Methodology	3
1.2. Setting the Stage: Defining GovTech and Fragility	5
1.3. Why GovTech in Fragile States?	6
2. Overview of FCS' Level of GovTech Maturity and of Typical Challenges and Opportunities for GovTech Reforms	9
2.1. The State of GovTech in FCS: Mining the GTMI Data	9
2.2. GovTech in FCS Faces Cross-Cutting Challenges but Can Also Build on Specific Opportunities	15
3. Supporting the Four Pillars of GovTech in FCS: Trends and Examples	19
3.1. GovTech Enablers: Policy, Legal and Regulatory Frameworks, and Skills	19
3.2. Core Government Systems to Manage Public Administration	23
3.3. Public Service Delivery and E-Services	28
3.4. Citizen Engagement and CivicTech	31
4. Conclusions	36
Notes	42
References	47
Annex 1: List of Fragile and Conflict-Affected Situations FY23	51
Annex 2: TTLs/Task Teams Interview Questions	54
Annex 3: TTLs/Task Teams Interviewed	56
Annex 4: 2022 GTMI Key Indicators	58
Annex 5: GTMI Data Analysis in FCS	61
Annex 6: Brief on GTMI and Methodology	66
Annex 7: List of Income Levels for FCS and Non-FCS (Excluding High Income Economies)	69

Figures

Figure 1. Evolution of Government Digital Transformation	5
Figure 2A. Minimum, Mean, and Maximum GTMI Scores Globally vs. FCS	10
Figure 2B. GTMI Components* in FCS-1, FCS-2 and Non-FCS Economies	10
Figure 3. Average GTMI Scores among FCS and Non-FCS Economies, in Low-Income, Lower-Middle Income, and Middle-Income Groups	11
Figure 4: Plot of GovTech Maturity against WGI - Regulatory Quality	14
Figure 5. Plot of GovTech Maturity against WGI - Political Stability No Violence	14
Figure 6. GTMI and Mobile Cellular Subscriptions, 2021	17
Figure 7. GTEI Indicator Responses for FCS (GTMI 2022 Update)	20
Figure 8. CGSI Indicator Responses for FCS 2022	25
Figure 9. PSDI Indicator Responses, FCS, 2022	28
Figure 10. DCEI Indicator Responses, FCS Economies, 2022	32
Figure 11. Citizen Engagement in a Fragile Environment	33

Tables

Table 1. Overview of GTMI Groups among FCS	13
Table 2. Sample of Data Classification Levels and Potential Impact on Confidentiality, Integrity and Availability	27
Table 3. Some Approaches for Overcoming Common Challenges in FCV	38
Table 4. Leveraging Technology for Smarter, Real Time Fiduciary Oversight of Reconstruction and Recovery Operations in FCV Contexts	41

Boxes

Box 1. The World Bank Group Is Contributing to GovTech in FCS through Sizable Investments	4
Box 2. Using Mobile Technology in Somalia to Improve Public Health Services	18
Box 3. Digital Readiness and Skills in the Civil Service in Kosovo	22
Box 4. Green Impact of Digital Public Financial Management in Bangladesh	26
Box 5. Expanding an Existing GovTech Mobile Services App to Swiftly Reach the IDP Population	29
Box 6. How Can GovTech Help Bridge the Service and Information Gender Gap in FCS?	30
Box 7. Managing Emerging Risks in GovTech	31
Box 8. The Dark Side of the Internet and the Rise of Digital Authoritarianism	34
Box 9. Geo-Enabling initiative for Monitoring and Supervision	35



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Acronyms and Abbreviations

AI	Artificial Intelligence
CBA	Cost Benefit Analysis
CGSI	Core Government Systems Index
DCEI	Digital Citizen Engagement Index
DE4A	Digital Economy for Africa
DMS	Debt Management System
FCS	Fragile and Conflict-Affected Situations
FCV	Fragility, Conflict, and Violence
FMIS	Financial Management Information Systems
GEMS	Geo-Enabling initiative for Monitoring and Supervision
GSMA	Groupe Special Mobile Association
GTEI	GovTech Enablers Index
GTMI	GovTech Maturity Index
HRMIS	Human Resources Management Information System
IaaS	Infrastructure as a Service
IDA	International Development Association
IMF	International Monetary Fund
MDA	Ministries, Departments and Agencies
MIS	Management Information System
MSME	Micro small and medium enterprises
PaaS	Platforms as a Service
PFM	Public Financial Management
PII	Personally Identifiable Information
PSDI	Public Service Delivery Index
SaaS	Software as a Service
TTL	Task Team Leader
UNDP	United Nations Development Programme
WDR	World Development Report
WoG	Whole of Government



Executive Summary

This report presents insights on implementing GovTech in fragile and conflict situations (FCS). It surveys existing applications of GovTech in such contexts and explores the rationale, the challenges and opportunities in their implementation.

Despite what could have been expected, GovTech does take place in FCS. Neither low institutional capacity nor open violence prevent governments from supporting GovTech- even if on average, as shown by the analysis of the GovTech maturity index scores, FCS rank lower than non-FCS. Many FCS countries use GovTech for core government systems, service delivery or citizen engagement. They can also benefit from GovTech features that address specific constraints in a fragile environment (limited physical access for instance).

Understanding context is crucial to operating in FCS and introducing GovTech solutions. There is no one size fits all for applications of GovTech in FCS. For this reason, this report is neither a guide nor how-to note. The report identifies several takeaways and recommendations:

The landscape of GovTech reforms in FCS is marked by several major obstacles, as well as promising opportunities. Cross-cutting challenges to GovTech reforms in FCS include the political economy of elite capture, conflicting interests, and misaligned government policies hindering GovTech reforms that enhance transparency and inclusive growth. Information Technology (IT) procurement projects, attractive for elite capture, raise corruption concerns. Limited institutional capabilities of FCS governments can stall policies and reforms. Inefficient donor coordination could lead to redundant efforts or program incompatibility. Infrastructure shortcomings and low connectivity threaten the reliability and reach of GovTech solutions due to limited electricity, connectivity, or device accessibility. Low digital literacy among public administrators and citizens, funding gaps, and increased engagement costs present further hurdles. Meanwhile, a limited market pool in FCS raises system setup and maintenance costs. Lastly, affordability issues among citizens limit their access to GovTech solutions.

Amidst the challenges, there is also tremendous opportunity for GovTech in FCS: the absence of a legacy system means that practitioners can take advantage of tested technology and leapfrog. FCS countries which have a large youth population can leverage this for greater tech adoption, innovation, and digital entrepreneurship. The prevalence of mobile technologies and mobile devices can be leveraged to increase the reach of government programs and, along with new tools like digital payments, present alternatives for delivering service, information, and aid.

Practitioners must tailor interventions to the local political economy, capacity, and incentives, and recognize the need for adaptability in rapidly changing environments. Incremental reforms (as opposed to a whole-of-government approach) can produce results and facilitate greater improvements, saving time, resources, and demonstrating effectiveness. Leadership and coordination are crucial to align support with the overall strategy and ensure system interoperability, while partnerships and peer-to-peer learning can enhance the impact of GovTech interventions and reduce risks. Sustaining momentum and celebrating incremental progress is more effective than pursuing radical changes quickly.

The paper uses the four pillars of the GTMI index to analyze FCS experience in GovTech.

- **On the GovTech enablers:** It is encouraging that GovTech strategies and GovTech-dedicated agencies are present in half of FCS countries, however it is important that these structures can effectively advance digital transformation. Exercising leadership, financial and human resources, and political clout are crucial for this. For this reason, GovTech practitioners must engage in building tech savviness from within the government as well as among the larger public—through upskilling, sourcing externally, and improving public outreach. Importantly, legal and regulatory frameworks are necessary to protect data and ensure information rights.
- **On Core Government Systems:** in early digital government initiatives, core government systems for public financial management, human resources, taxes, and investments were prioritized. These systems are often the first area for digital transformation. Prioritizing value for money can help deter the adoption of oversized digital solutions sometimes selected for the wrong reasons. Having the technical expertise and support for procurement is crucial considering the size, technical

content, and complexity of procuring IT equipment and services.

- **On supporting service delivery:** Low connectivity, weak digital skills, and social tensions or discriminations can leave some groups behind in FCS. One way to circumvent this is to assess access to GovTech solutions and employ multiple channels to address gaps. This could include mobile-based services that do not rely on internet connectivity, using SMS or call centers, and providing clear online information as a foundation before digitalizing transactional services. Governments should carefully select services for digitalization based on usage, demand, convenience gains. These strategic choices mean these countries will build on existing solutions, making GovTech development more affordable and targeted.
- **On enabling citizen engagement:** the challenges of supporting citizen engagement in fragile and conflict-affected environments are significant. In FCS, the social contract is often in flux or weak, expectations may differ across social groups, and citizen engagement can be particularly sensitive or controversial. There are however interesting examples of using GovTech to collect feedback proactively from citizens. There are also specific risks to using technology to engage citizens, as seen with the rise of ‘digital authoritarianism’.

Some GovTech features are particularly relevant to countries with high level of open violence/conflict. Utilizing drone technology and leveraging virtual means can enable progress where direct engagement opportunities are limited. Investing in cloud solutions can ensure the securitization of data against possible destruction of physical data centers. Adopting hybrid clouds, and combining government-owned and public cloud infrastructure, reduces costs, enhances reliability, uptime, and addresses data sovereignty and localization policies.



Introduction

This report takes stock of the development of GovTech solutions in Fragile and Conflict-Affected Situations (FCS), be they characterized by low institutional capacity and/or by active conflict and provides insights on challenges and opportunities for implementing GovTech reforms in such contexts. It is aimed at practitioners and policy makers working in FCS but will also be useful for practitioners working in Fragility, Conflict, and Violence (FCV) contexts, at-risk countries, or low-income countries as some similar challenges and opportunities can be present. Chapter 1 describes the methodology and provides basic definitions of FCV and GovTech as well as the rationale for the report. Chapter 2 provides an overview of GovTech in FCS, based on the analysis of GovTech Maturity Index ([GTMI](#)) data, and common challenges to GovTech in FCS. Chapter 3 analyzes the state of GovTech reforms per pillar in FCS and illustrates these with selected examples. Chapter 4 concludes with some recommendations for designing and implementing GovTech projects in these contexts based on the analysis.

1.1 Methodology

This report is informed by multiple sources, and uses GTMI data analysis, findings from semi-structured interviews of practitioners, and desk research. The primary data source is the 2022 World Bank GTMI. The index measures the key aspects of four GovTech focus areas in 198 economies—supporting core government systems, enhancing service delivery, mainstreaming citizen engagement, and fostering enablers. It is based on responses from key informants—see Annex 6 for more details. Supplemental data includes the [GovTech Dataset](#), Worldwide Governance Indicators (WGI), Groupe Special Mobile Association (GSMA), International Telecommunication Union, and United Nations Telecommunication Infrastructure Index.

Qualitative data was gathered through semi-structured interviews of 32 World Bank Task Team Leaders and team members who have direct experience implementing GovTech projects in FCS. The interviews were designed to elicit detailed information on their experiences working to design and implement GovTech projects and activities in FCS. Questions focused on primary country challenges and purpose of the technology in addressing these challenges, what FCS at different conflict phases and levels of development should prioritize, and how the World Bank and other development agencies can overcome country level constraints and effectively implement projects.

A desk review provided supplemental information to inform data analysis. The review focused on internal World Bank documents including the [World Bank Group Strategy for](#)

[FCV 2020-25](#), Project Appraisal Documents, Implementation Status and Results Reports, Implementation Completion Reports, Digital Economy Country Assessments, [Digital Economy for Africa](#) (DE4A) Assessments, relevant economic updates, and strategic policy documents.

Country examples were selected from the [GovTech Projects Database and TTL interviews](#). The database provides details of more than 1,440 investment projects funded by the World Bank in 147 countries since 1995 that include digital components and activities. The dataset was used to scan for all relevant investment projects benefiting FCS and to identify interview respondents. From 2019, the year GovTech was launched, there have been 75 investment projects with GovTech components supporting FCS.



> > >

BOX 1 - The World Bank Group Is Contributing to GovTech in FCS through Significant Investments

In fiscal year 2022 (FY22), 18 projects with digital components and activities were approved in FCS. Combined they reflect over 1 billion in investment. Most projects combine activities across all four pillars of GovTech: 17 projects include activities on core systems; 17 on service delivery; eight on citizen engagement; and 12 on enablers. The Central African Republic project (P174620), for instance, includes activities to deepen public financial management (PFM) reforms through GovTech, strengthen the legal and regulatory environment to better digital connectivity, and actions to shape the approach to shared platforms such as national identification and civil registration. Examples like this show that utilizing a phased approach while designing the intervention can target improvements in multiple areas of GovTech.

This report does not aim to provide a typology of FCS contexts or a framework for engagement. Rather, it aims to provide a foundational overview of how GovTech maturity differs between FCS and non-FCS and examples of GovTech applications in these contexts. It also presents an overview of challenges and opportunities that practitioners can reference while working on related public sector reforms in FCS.

1.2 Setting the Stage: Defining GovTech and Fragility

Defining GovTech

GovTech is a whole-of-government approach to public sector modernization and promotes simple, efficient, and transparent government with the citizen at the center of reforms.¹ The GovTech approach represents the current frontier of government digital transformation and emphasizes three aspects of public sector modernization: Citizen-centric public services; a whole-of-government approach to digital government transformation; and simple, efficient, and transparent government systems. In FCV contexts this may be an aspiration, nonetheless evidence shows that these countries may achieve success in GovTech reforms taking an incremental approach to digital transformation.

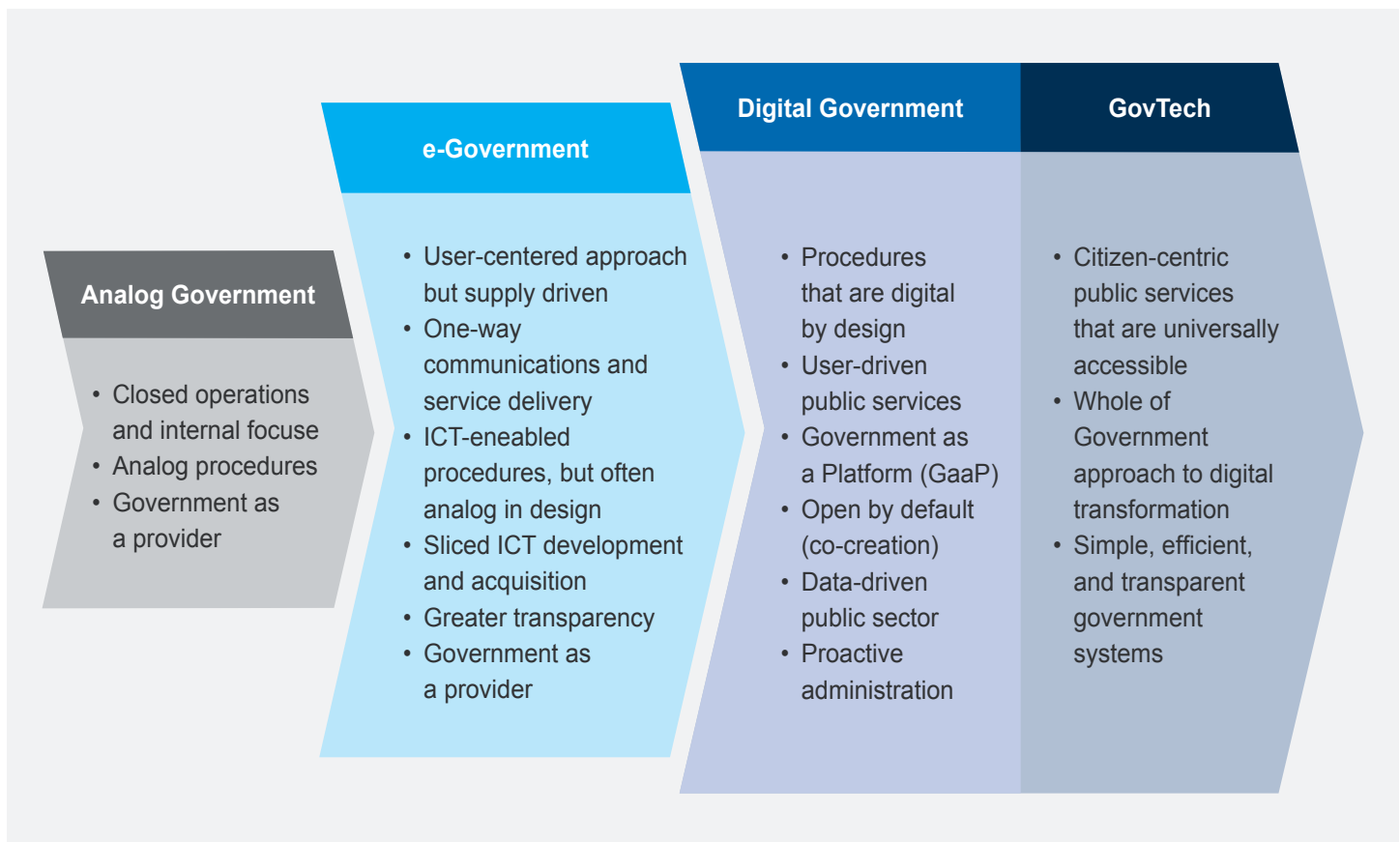
GovTech comprises four key pillars: Core Government Systems, Citizen Centric Service Delivery, Citizen Engagement/CivicTech and GovTech Enablers.² Core government systems refer to basic government functions such as public financial management or human resource

management. Citizen Centric Service Delivery highlights the need to design GovTech reforms with the user/citizen in mind, tailoring GovTech solutions to the various needs of different categories of users. CivicTech focuses on two-way communication between government and citizens, which may include participatory mechanisms, information outreach, and citizen feedback mechanisms. GovTech enablers encompass non-technological aspects of transformation, including institutions, policies, and skills.

GovTech is the latest iteration of digital government transformation reforms. While governments have been using technology to modernize their administrations for decades, GovTech represents the latest generation of these reforms. It differs from previous iterations of e-government and digital government by placing the citizen at the center of reforms. As these reforms have evolved, they have become more complex and ambitious, for example, highlighting innovation and whole-of-government coordination, as illustrated in Figure 1.

> > >

FIGURE 1 - Evolution of Government Digital Transformation



Source: World Bank, based on the OECD's presentation of digital transformation in Digital Government Studies (2019).

Defining Fragility and Fragile Countries

The FCV concept groups three issues that are often related: (i) deep governance issues and state institutional weakness; (ii) situations of active conflict; and (iii) high levels of interpersonal and/or gang violence.³

The World Bank FCS list categorizes countries deeply affected by fragility or conflict. The list is issued by the World Bank annually, based on an established classification methodology. The most recent FCS list distinguishes between countries based on the nature and severity of the issues they face. The classification uses the following categories:

- **Countries with high levels of institutional and social fragility,** identified based on public indicators that measure the quality of policy and institutions as well as specific manifestations of fragility.
- **Countries affected by violent conflict,** identified based on a threshold number of conflict-related deaths relative to the population.

The list of FCS is not static. As the list of FCS identified by the World Bank changes annually, it must be stated that this analysis of 2022 GTMI data uses the FY23 FCS list as a reference. Country examples are selected among countries on the current list or among countries that were on the list when the project example was designed and/or implemented.

This report studies trends and examples of GovTech reforms of countries on the FCS list, but the findings can also be useful for practitioners working in countries outside this list. Some low-income countries that are not considered fragile will feature characteristics observed in FCS—low connectivity, for instance. Some middle-income countries with pockets of fragility can find the analysis of low physical access or constrained access and ways to overcome this through GovTech useful.

1.3 Why GovTech in Fragile States?

The 2016 World Development Report on Digital Dividends describes the tremendous opportunities in using digital technologies to increase reach and quality of service delivery, foster transparency and efficiency in public administration, and reduce corruption.⁴ These opportunities are backed by decades of research on digital government showing measurable impacts on governance

dimensions of service delivery, efficiency, accountability, and corruption.⁵ They were also demonstrated during the COVID-19 pandemic, when the potential of digital-based government service delivery to improve public sector efficiency and transparency⁶ became a reality in many sectors, starting with human development sectors. The pandemic accelerated the digital transformation of public sectors and demonstrated further the potential of GovTech for public administration even in challenging environments.

The potential for GovTech to be transformational may be even more promising in FCS. According to the World Bank's FCV Strategy for 2020-2025, "by 2030, more than half of the world's extreme poor will live in countries characterized by fragility, conflict and violence."⁷ With fragility, including institutional and social fragility, on the rise, GovTech can support core governance functions, the quality and accessibility of public services, the rebuilding of institutions, and even "helping address the drivers of fragility, conflict, and violence."⁸ The 2020 World Bank Group FCV Strategy highlights the potential of digital transformation to "play a positive role in promoting peace" while recognizing that it can also "widen economic gaps and drive exclusion."⁹

The provision of services is a key means to develop legitimacy, mitigate conflict, and reduce the risk of violence in fragile settings, and GovTech can support this.¹⁰ Adequate provision and access to services can impact both the well-being and economic prospects of citizens. In FCS, citizens face significant barriers to public services which can increase marginalization of the poor and vulnerable. Using GovTech solutions for online service provision can provide public services when face-to-face or onsite access cannot be provided. E-services can increase reach of services, enabling and improving access to services in rural areas, and areas of conflict, fragility and reconstruction. This is particularly relevant for FCS since unequal or disproportionate access to services can reduce trust and perceptions of legitimacy, raising grievances.¹¹ In FCS, characterized by open violence, GovTech can ensure business continuity, in case of physical restrictions to access some parts of the country, through the use of remote technology for delivering or monitoring services.

GovTech can also strengthen trust contributors of openness, integrity, and inclusiveness—all of which are particularly needed in fragile environments with low levels of trust. As service delivery is a critical component of maintaining the social contract, GovTech solutions for digital services can contribute to strengthening the social contract and reestablishing public trust, as well as improving the quality of public services.¹²

FCS can benefit from GovTech investments, and many have begun their digital transformation at the central or local levels. In FCS that are also low-income, GovTech can drive digital transformation in society, as the public sector typically plays a large role in the economy. GovTech can provide a demonstration effect for digital transformation, and can enable innovations that respond to social, economic, or political constraints. Technology can also strengthen capabilities of government entities, enable efficiencies, and reduce administrative burden. In post-conflict or political transition contexts, there might be opportunities to leapfrog technologies.

Because GovTech is not only focused on technology and solutions, but also on the complementary public sector reforms to enable their use in day-to-day administration, its introduction is accompanied by broader reforms. Matching analog and digital solutions incrementally to better the service delivery experience, manage public financial resources, and communicate with citizens can further advance GovTech reforms over time. Small innovations often can have a visible impact.

At an individual level, digital technologies and the skills to use them can support development outcomes. Internet and digital skills contribute to economic development, employment opportunities, and educational opportunities for those in FCS. However, the digital divide is real and multifaceted, and new

solutions and technology can raise new risks in terms of data protection and cybersecurity.

Yet fragile environments are considered most difficult for public sector reforms. One challenge is that FCS often have no single cause for fragility or conflict; the “root cause” is often multifaceted. This makes problem definition challenging and, in turn, poses challenges to developing purpose- or problem-driven technological solutions to ameliorate them.

Operating in FCS is far from business as usual. These contexts are often characterized by rapidly changing circumstances, differing levels of security, fragile and volatile political situations, and higher risks of violence against vulnerable populations. From the governance side, additional challenges are macroeconomic instability, low institutional capacity, and a weak enabling and investment climate for the private sector. Working in these countries poses significantly higher risks and costs of engagement which need to be considered for any operational or technical assistance projects.

Each context is different, limiting the potential applications of “best practice.” Successful GovTech reforms focus on best fit given a country’s context, drivers of fragility, and capabilities. Given the heterogeneity of FCS, this is particularly salient. For FCS with active conflict, there are challenges in physical environments as well as institutional and political weaknesses to consider.



The challenges in supporting GovTech in fragile environments cannot be understated. Governance challenges that can slow GovTech reforms are magnified in FCS contexts. GovTech in its most recent definition requires the following elements that would not be present in most FCS, because of their low institutional capacity and/or the violence occurring within their borders:

- An integrated approach to policymaking and service delivery, which presupposes a strong, coordinated government.
- A government both intent and capable of delivering services for all its users and beneficiaries; a government intent in creating an open, accountable environment that enables citizens to engage their governments and hold them accountable.

Despite the challenges, most if not all governments in countries defined as FCS pursue GovTech reforms, often incrementally. GovTech for core government functions, including an Integrated Financial Management Information System (IFMIS) or human resources management (HRM) database are often a starting point in post-conflict countries. Service delivery is also another area where GovTech reforms tend to be used, especially if the use of technology can compensate for lack of physical access, as in Ukraine for instance. Some fragile countries also embrace the whole-of-government approach to GovTech, for instance West Bank and Gaza, although it remains aspirational for most FCS; in some FCS, GovTech reforms take place at regional or subnational level (Iraq).

GovTech reforms come with specific challenges and risks in FCS. By definition, fragile countries suffer from low capacity, low legitimacy, and/or low accountability (see [WDR 2011](#)), which are likely to constrain any type of public sector modernization reform. Thus, the implementation of large-scale GovTech initiatives as a whole-of-government approach,

which requires high level of capacity and also coordination and intent to provide transparently for all groups within a country, is likely to be aspirational in most FCS, yet there are interesting examples of sequenced approaches. Furthermore, rapidly deployable low-cost digital solutions can start addressing country-specific public sector management and service delivery challenges even in very fragile environments.

GovTech reforms need to be implemented in alignment with the local political economy and with an understanding of the risks they can create. GovTech reforms can be seen as threatening to political and institutional structures, potentially upending existing bribery and corruption systems and schemes. Implementing digital technologies and changing the way governments work can face opposition from many different stakeholders, particularly those who will “lose” as a result of the reform. GovTech reforms are also vulnerable to corruption, especially with large-scale IT procurements that can be captured. It also creates new challenges in terms of data security and data protection and privacy, cybersecurity, and misuse of technology. There are growing concerns about risks around the use of technology to amplify discrimination towards marginalized groups, propagate misinformation, and exacerbate fragility and violence.¹³

The objective of this note is thus to explore which parts of the GovTech agenda are implemented in FCS and to identify specific opportunities and common challenges for such reforms to succeed, while staying away from prescribing a “how to” which, because of the diversity of FCS contexts, could be counter-productive. The heterogeneity of FCS is such that any one size fits all assertion or recommendation would be impossible. GovTech is not a silver bullet for FCS, but it can provide opportunities to improve governance outcomes. This report examines the opportunities and challenges brought about by GovTech reforms, so that support to such reforms takes into account their promises and the risks involved.



Overview of FCS' Level of GovTech Maturity and of Typical Challenges and Opportunities for GovTech Reforms

2.1 The State of Govtech in FCS: Mining the GTMI Data

Quantitative data is available to understand FCS adoption of GovTech via the GTMI.¹⁴

Covering 198 economies, including FCS, it consists of four components and 48 key indicators: the Core Government Systems Index (CGSI), based on 17 indicators; the Public Service Delivery Index (PSDI), based on nine composite indicators; the Digital Citizen Engagement Index (DCEI), based on six indicators; and the GovTech Enablers Index (GTEI), based on 16 indicators. The scoring of the GTMI¹⁵ and subindices ranges from 0-1.00. Based on the scoring the countries are grouped into four different categories of GovTech adoption: Very High (0.75-1.00); High (0.50-0.74); Medium (0.25 – 0.49) and Low (0.00-0.24). This section provides an overview of how countries in FCS differ in terms of GovTech Maturity.

GTMI can provide a snapshot of a country's GovTech maturity and help identify opportunities for improvement, however it does not capture the quality of implementation.

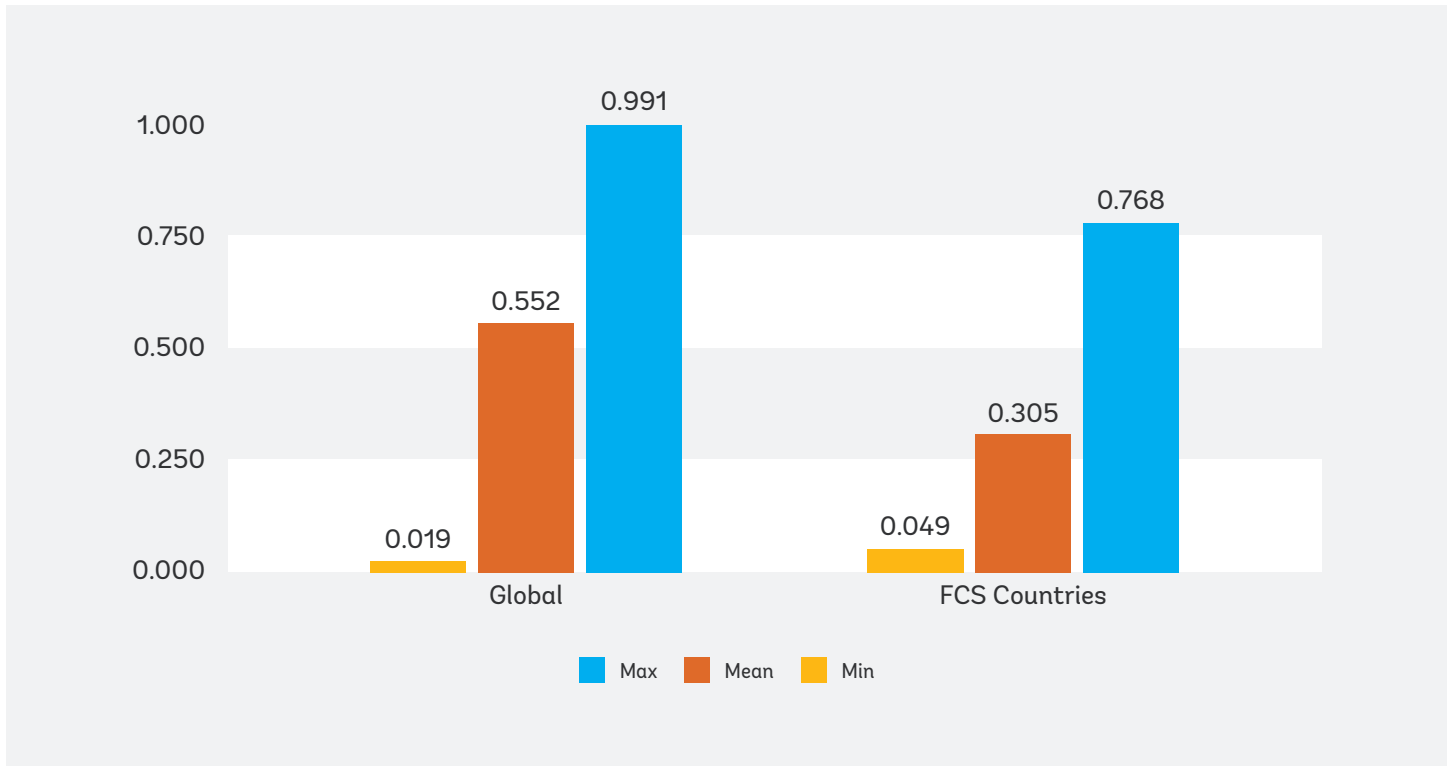
The GTMI is based on officials' answers on a questionnaire focused on whether some GovTech characteristics are present. Of the 37 FCS, a little over half participated in the 2022 GTMI online survey and provided information about their digital transformation initiatives.¹⁶ For those who did not participate, the GTMI team collected public information to approximate answers to the survey. See Annex 6 for more on GTMI methodology.

As expected, GovTech maturity in FCS is much lower than global averages (Figure 2a)

This applies to the GTMI average, the upper and lower bounds of maturity, as well as to GTMI components (Figure 2b). While this is not surprising, it is important to note that the results provide a snapshot in time and may not reflect current on the ground realities. For teams working in FCV, the GTMI provides a good starting point to identify gaps and opportunities, additional research on the context is advised.

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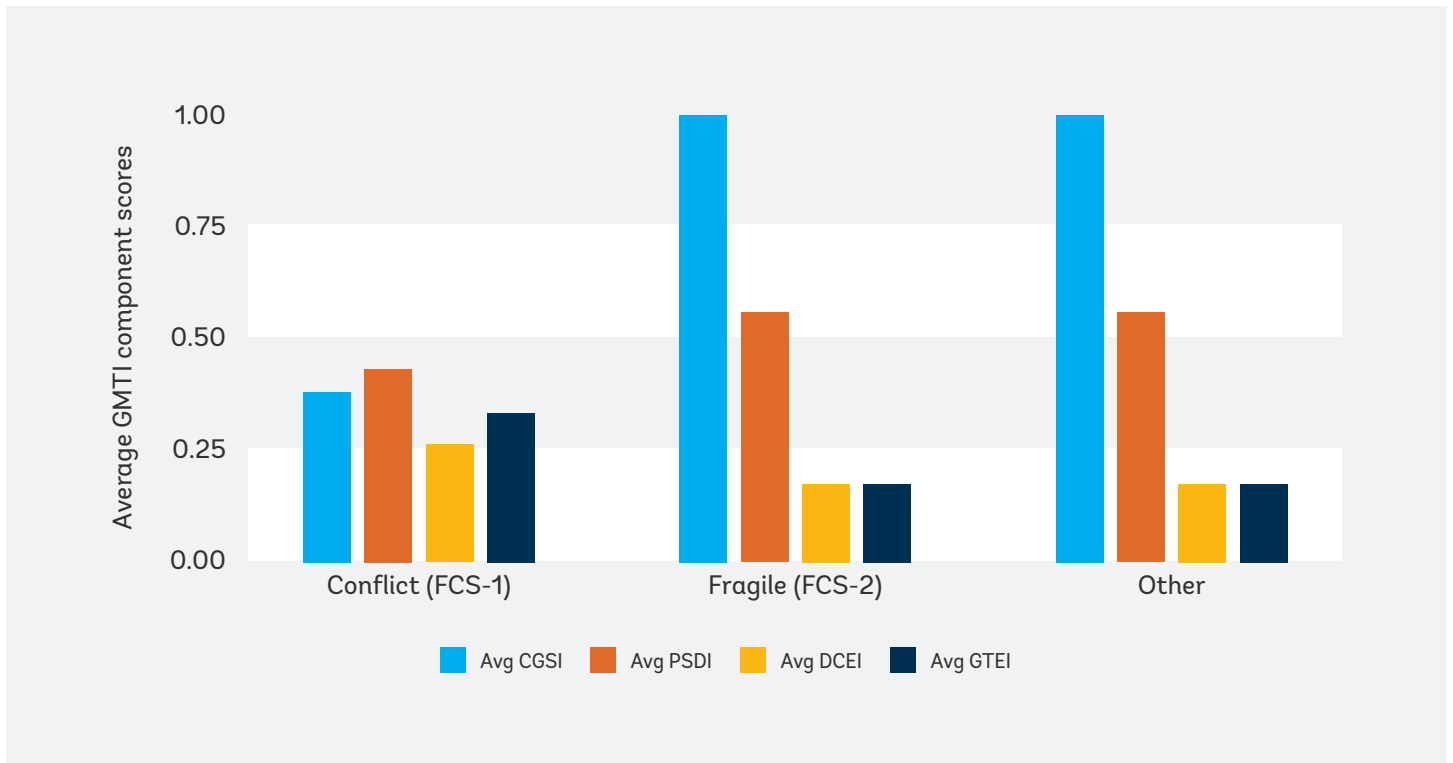
FIGURE 2A - Minimum, Mean, and Maximum GTMI Scores Globally vs. FCS



Source: GTMI 2022 data.

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FIGURE 2B - GTMI Components* in FCS-1, FCS-2 and Non-FCS Economies



Source: GTMI 2022 data.

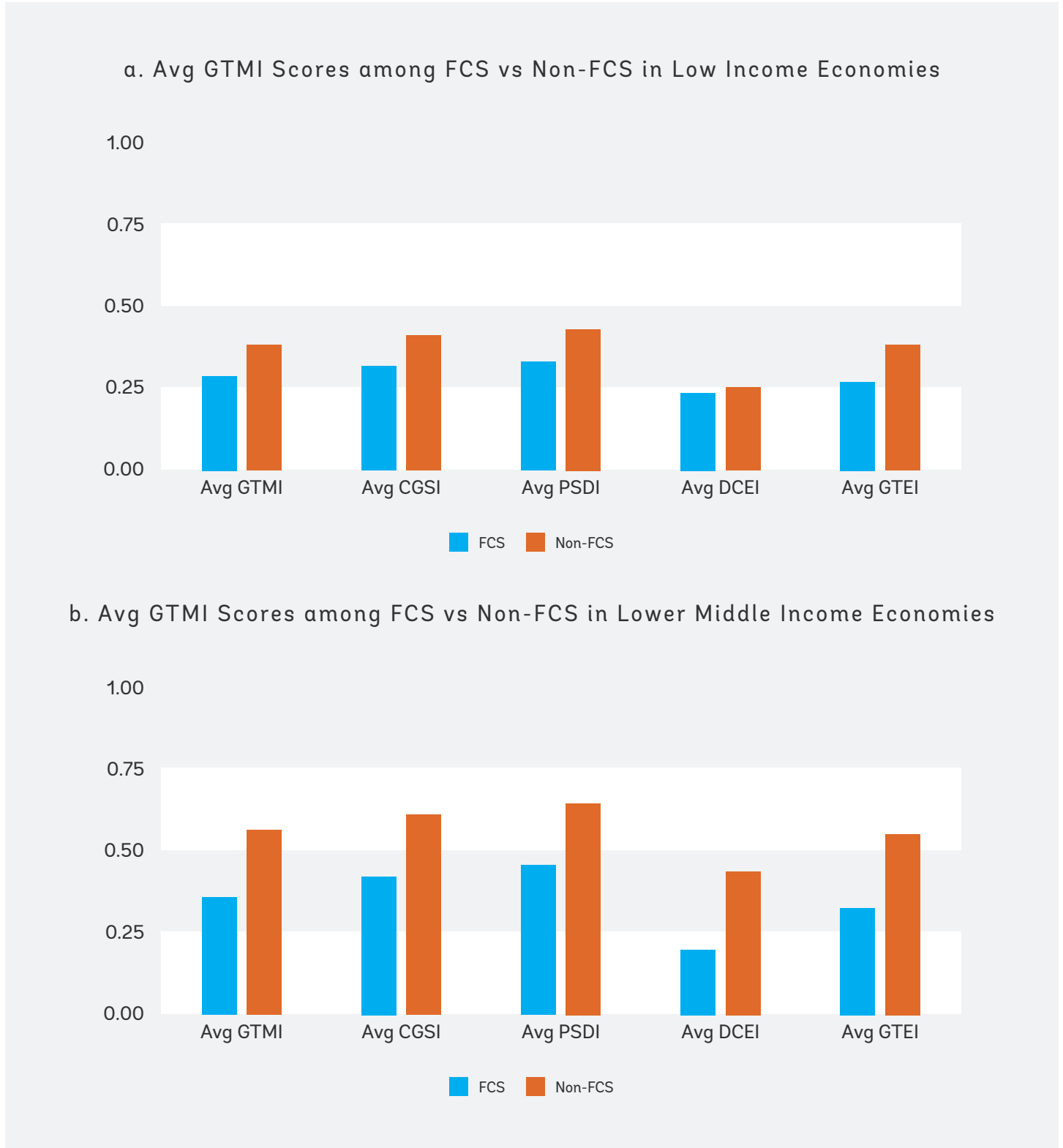
Note: *There are four GTMI components: the Core Government Systems Index (CGSI), the Public Service Delivery Index (PSDI), the Digital Citizen Engagement Index (DCEI), and the GovTech Enablers Index (GTEI).

When FCS are compared with Non-FCS within the same income level groups,¹⁷ a similar pattern emerges. However, the difference in GovTech maturity is greater between FCS and Non-FCS economies in the upper middle-income group

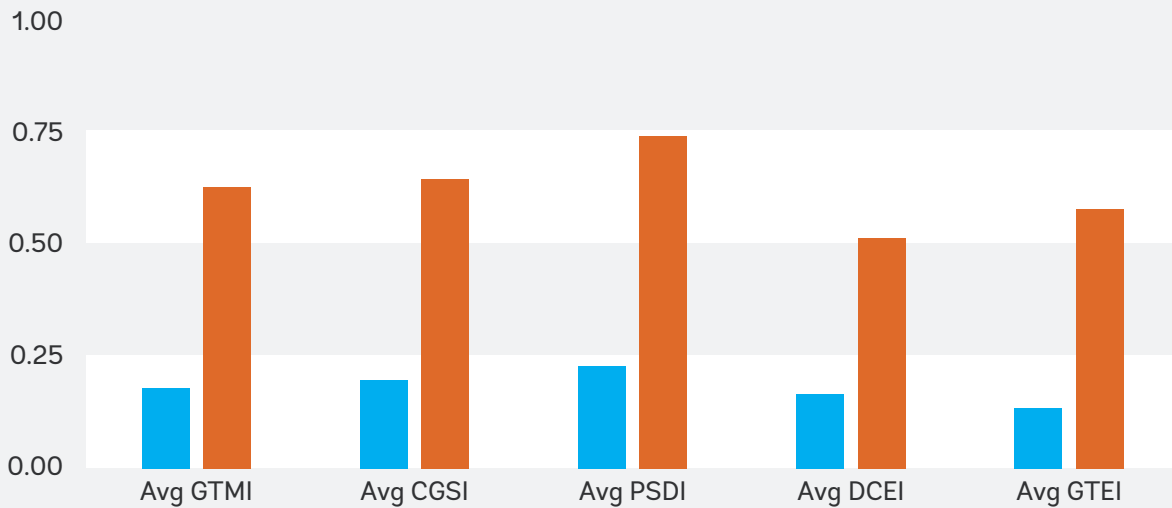
compared to low-income group, indicating a greater potential for developing GovTech with upper middle-income economy resources (Figure 3).

> > >

FIGURE 3 - Average GTMI Scores among FCS and Non-FCS Economies, in Low-Income, Lower-Middle Income, and Middle-Income Groups¹⁸



c. Avg GTMI Scores among FCS vs Non-FCS in Upper Middle Income Economies



Source: GTMI 2022 data.

Another takeaway from reviewing GTMI data is that FCS are also varied in their level of GovTech maturity. Table 1 below illustrates the distribution of the 37 2023 FCS across GovTech groups. The average GTMI score for FCS is 0.305, placing the average in Group C—labeled as “Some focus on GovTech.” Most FCS are in GTMI’s Group C (43 percent) or D (43 percent), respectively with medium or low GovTech maturity. FCS range from those in Group D (Eritrea with 0.049) to those in Group B (Burkina Faso with a 0.639 and Kosovo with 0.633.) While Ukraine is in Group A based on the 2022 GTMI, this captures the situation prior to the war.

Interestingly, while the principal characteristics of FCS-1 (low institutional development) and FCS-2 (open violence) countries differ, there is no significant difference in trend between the two subgroups as far as the GTMI is concerned. This reflects the heterogeneity of countries in each subgroup – with a large dispersion in scores – but also the fact that many of the countries in both subgroups share common characteristics: low capacity for reform planning and implementation, weak institutions, and technical/digital capacity gaps. While there may be moments of strong political leadership, power dynamics can shift quickly, which can stall digitization reforms.

TABLE 1 - Overview of GTMI Groups among FCS

GTMI group	FY23 FCS (Number of countries, % of)
A	Very High – GovTech leaders – 1 country (3%) Ukraine
B	High - Significant focus on GovTech – 4 countries (11%) Burkina Faso, Ethiopia, Kosovo, Nigeria
C	Medium - Some focus on GovTech – 16 countries (43%) Afghanistan, Burundi, Cameroon, Comoros, Democratic Republic of Congo, Lebanon, Mali, Mozambique, Papua New Guinea, Solomon Islands, Somalia, Syrian Arab Republic, Timor-Leste, Venezuela, West Bank and Gaza, Zimbabwe
D	Low - Minimal focus on GovTech – 16 countries (43%) Central African Republic, Chad, Congo, Eritrea, Guinea-Bissau, Haiti, Iraq, Libya, Marshall Islands, Federated States of Micronesia, Myanmar, Niger, South Sudan, Sudan, Tuvalu, Yemen
Total	37

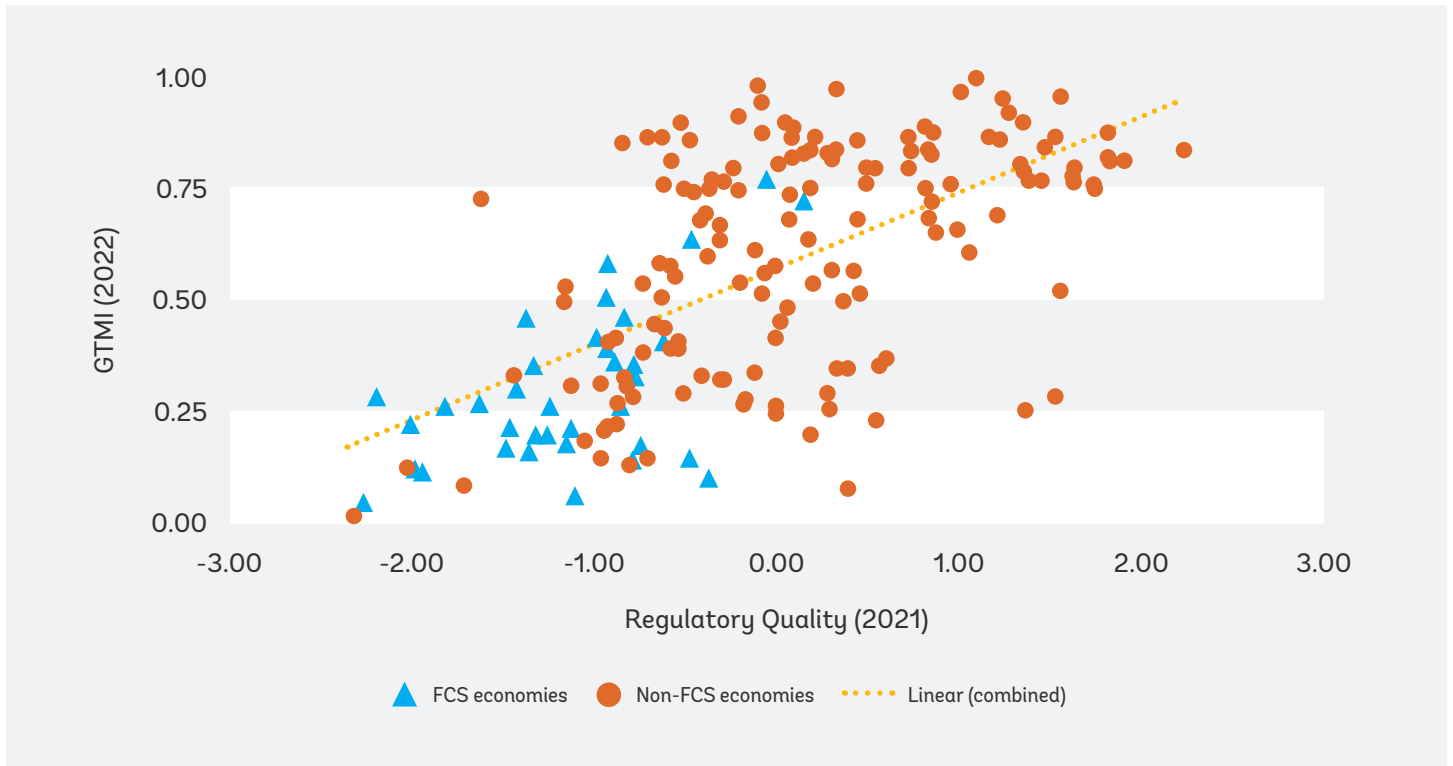
In the analysis of GTMI data, potential correlations with factors from the Worldwide Governance Indicators and World Development Indicators were also examined.¹⁹ Apart from the indicators comprising GTMI, none exhibited a correlation coefficient equal to or greater than 0.7. Nevertheless, GovTech maturity revealed a positive correlation of 0.63 with

Regulatory Quality (WGI, 2021 – Figure 4), and Political Stability and Absence of Violence (WGI, 2021 – Figure 5). This is expected, as situations of fragility and conflict make it more challenging to take on the digital transformation activities need for GovTech maturity, in the same way that it makes it difficult to take on new programs or reforms in general.



> > >

FIGURE 4 - Plot of GovTech Maturity against WGI - Regulatory Quality



Source: GTMI 2022 and World Governance Indicators (WGI) data.

> > >

FIGURE 5 - Plot of GovTech Maturity against WGI - Political Stability No Violence



Source: GTMI 2022 and World Governance Indicators (WGI) data.

While these findings provide a valuable starting point, further data analysis is required. A more extensive examination would allow for the identification of correlations and causal links, enabling a more robust understanding of the factors influencing GovTech maturity across different contexts. Chapter 3 expands further on the state of GovTech maturity for each GovTech pillar in FCS.

2.2 GovTech in FCS Faces Cross-Cutting Challenges but Can Also Build on Specific Opportunities

There are a number of key challenges as well as key opportunities to GovTech reforms in FCS. The list of challenges listed in this chapter is neither exhaustive nor universally applicable to every FCS, but includes common bottlenecks that are more likely to exist in fragile contexts, and which could limit the uptake, scope, or impact of GovTech reforms. It is important for practitioners to be cognizant of these possible challenges, so that they can assess whether any of them is applicable to the context they are engaged in and take it into account in designing and implementing GovTech reforms. It is also important to build on opportunities more likely to be present in FCS, and these are also discussed in this section. Chapter 3 includes additional challenges specific to each GovTech building block as well as examples of opportunities seized by FCS in designing and implementing their GovTech reforms.

Cross-cutting challenges to the uptake, scope, or impact of GovTech reforms in FCS:

Political economy: Fragile countries are often so because of elite capture and/or competing interests that undermine incentives to make the state more effective and accountable. In contexts where government policies are not aligned with the goals of inclusive growth and poverty reduction, and in which fragility is directly associated with exclusionary, predatory, unstable, or entrenched political settlements, GovTech reforms as defined here are unlikely to be pursued or, if pursued, unlikely to achieve the intended impact. When such reforms occur, they can serve to establish a controlling rather than an enabling environment. In fragile countries where there is impetus from the top to undergo GovTech reforms, for instance, at times of political transitions, sustained focus on driving complex reforms can be a challenge because of political and institutional instability. In such contexts, “stop-

and-go” in support for reforms, weak capacity, and possible tensions between competing priorities and interests could negatively impact GovTech reforms. Practitioners can use tools for political economy such as stakeholder mapping to better understand context and dynamics. World Bank projects can build on existing assessments and tools – Risk and Resilience Assessments, FCV filters – to better understand the context and take it into account in designing and implementing GovTech activities so that it leads to better outcomes.

Corruption: GovTech reforms can support more effective and transparent public management. However, their implementation is also prone to capture. Large information technology (IT) procurement, for example, can become desirable for the opportunities they offer for kickbacks. IT solutions may not always be chosen on the basis of a sound cost-benefit analysis, either because decision-makers in government choose not to, or because private vendors take advantage of their comparative higher knowledge of the field to sell an over-designed solution. Providing governments with relevant knowledge needed to negotiate contracts is important, in addition to enhanced support regarding procurement rules and processes and stronger avenues for accountability.

Capacity: Low capacity is one of the characteristics of FCS, and definitely a feature of FCS characterized by “low institutional development.” Pritchett, Woolcock, and Andrews (2010) use the term “state capability traps” to describe a situation in which “the implementation capability of the state is both severely limited and improving (if at all) only very slowly.” The pace of adoption of digital reforms will thus need to be tailored to the environment. Incremental reforms can foster changes, and helping countries combine analog and digital solutions to deliver best services to citizens/residents is often a good strategy. Capacity is often considered a prerequisite for policy effectiveness; however, policies may still be ineffective if groups with enough bargaining power have no incentives to pursue their adoption and implementation. Some FCS have high capacity yet lack an enabling environment in which technical skills could be developed and performance rewarded, thus preventing the public sector from being conducive to innovation.

Lack of Donor Coordination: Donors play an important role in providing necessary financing for digital transformation in FCS, many of which tend to be aid-dependent. Fragile countries, for lack of will or capacity, do not always provide strong leadership in ensuring complementarity of the programs or avoiding duplication of efforts. GovTech reforms occurring in an environment without common IT standards and mechanisms to enable interoperability of systems can lead to

a proliferation of systems operating in parallel. Donor support can also be undermined by competition among donors, aggravating the lack of coordination at government level.

Infrastructure gaps and low connectivity: Access and affordability of technology infrastructure – devices, electricity, internet – are predominant challenges in FCS. Many FCS struggle with low and/or unreliable access to power. Even in well-served cities, intermittent cuts may be common. In 2020, on average, 56.5 percent of the population in FCS had access to electricity, with huge discrepancies between urban and rural access—83.4 percent on average in urban areas compared to only 36.9 percent in rural areas. Low access to internet and poor connectivity are also significant impediments to the uptake and use of GovTech reforms. Several factors contribute to this: in low institutional capacity/low-income FCS, low levels of investment often intersect with policies that undermine competition and efficiency; indeed, in many countries, low connectivity is as much a governance problem (state monopolies) as a technical and financial problem. In FCS with open conflict or coming out of conflict, infrastructure may have been damaged or destroyed.

Low Digital Skills: Without the skills to use the technology, investments will not meet their full potential. Digital skills gaps are present on both the supply and demand sides. On the supply side, low digital skills within the public administration often coexist with poor clarity of mandates, lack of merit-based recruitment and promotions, and poor accountability for performance, which can significantly limit the benefits expected from GovTech reforms. On the demand side, citizens, if they have access to IT devices, might not be able to navigate different screens and webpages, input data, or interact with interfaces to obtain e-services. In FCS, digital skills rates tend to be low, especially for women.²⁰ Some countries also use the know-how of private operators to promote skills and capacity development through public private partnerships: the “Click on Kaduna digital skills program” developed in partnership with the World Bank, Rockefeller Foundation, Wacom, and IBM,²¹ is targeting women digital literacy, expanding the pool of potential users that can interact with digital systems.

Funding gaps and higher cost of engagement: Significant financial investments are needed to support public sector digitalization. The costs include upfront expenditure for systems and recurrent costs for maintenance, subscription and license fees. Typical challenges in FCS stem from the low level of domestic resources but can include lack of will or capacity to look for low-cost solutions due to opportunities for capture or lack of knowledge. Higher cost of engagement due to violence or instability is another structural issue for fragile

countries. In many FCS, low market depth and the lack of a developed private sector to source expertise locally leads to reliance on international firms who might be reluctant to engage and, when they do, factor in fragility and uncertainty risks in their pricing, resulting in higher costs of firms and consultants and lesser competition.

Cost and affordability gap: The cost of access to the benefits provided for by GovTech, and specifically E-services or ways for citizens to engage their governments, can be prohibitively high in some fragile countries, thus creating a barrier to affordability at the risk of furthering inequality. For example, in the Democratic Republic of Congo (DRC), the cost of mobile internet is prohibitive: the cost of 1.5GB of mobile data was over 32 percent of the average per capita monthly income (~14 USD) in 2020. DRC provides a striking example of regional imbalances in access: while mobile phone penetration is over 80 percent in the capital city of Kinshasa, in rural provinces it drops below 20 percent. Mechanisms to reduce the costs of access such as subsidy payments, regulations, and supporting competition in the telecom sector may help close the affordability gap.

Opportunities:

Mitigation of some of the challenges mentioned above, such as funding gaps or low digital skills, is facilitated nowadays by the ubiquity of technology, opening up new opportunities. As digital government becomes more common, opportunities for supporting such reforms become more diverse: donor financing, public-private partnership, establishment of internal capacity, or global public goods and platforms using open-source technology. Digital skills can now be acquired through remote learning via internet, smartphone, and radio. For instance, interactive Radio Instruction was used in Somalia using digital media players or via radio broadcast. Community networks such as Murambinda Works in Zimbabwe, transformed internet cafes into digital learning centers to serve over 100,000 residents.²³

FCS also present specific opportunities, such as the absence of a legacy system. Some fragile countries do not have many digital systems or platforms in public administration. With limited or no legacy systems in place, reformers have an opportunity to “start from scratch” and utilize tested and available technology to leapfrog. This also applies to strategies, laws and regulations: countries can adapt good practice examples to their own purposes and context, building on a growing body of knowledge on key building blocks such as laws and regulations regarding e-services, e-documents, e-payments, data exchange, access and use.

Some FCS can take advantage of their demography, as there are opportunities to leverage the youth population.

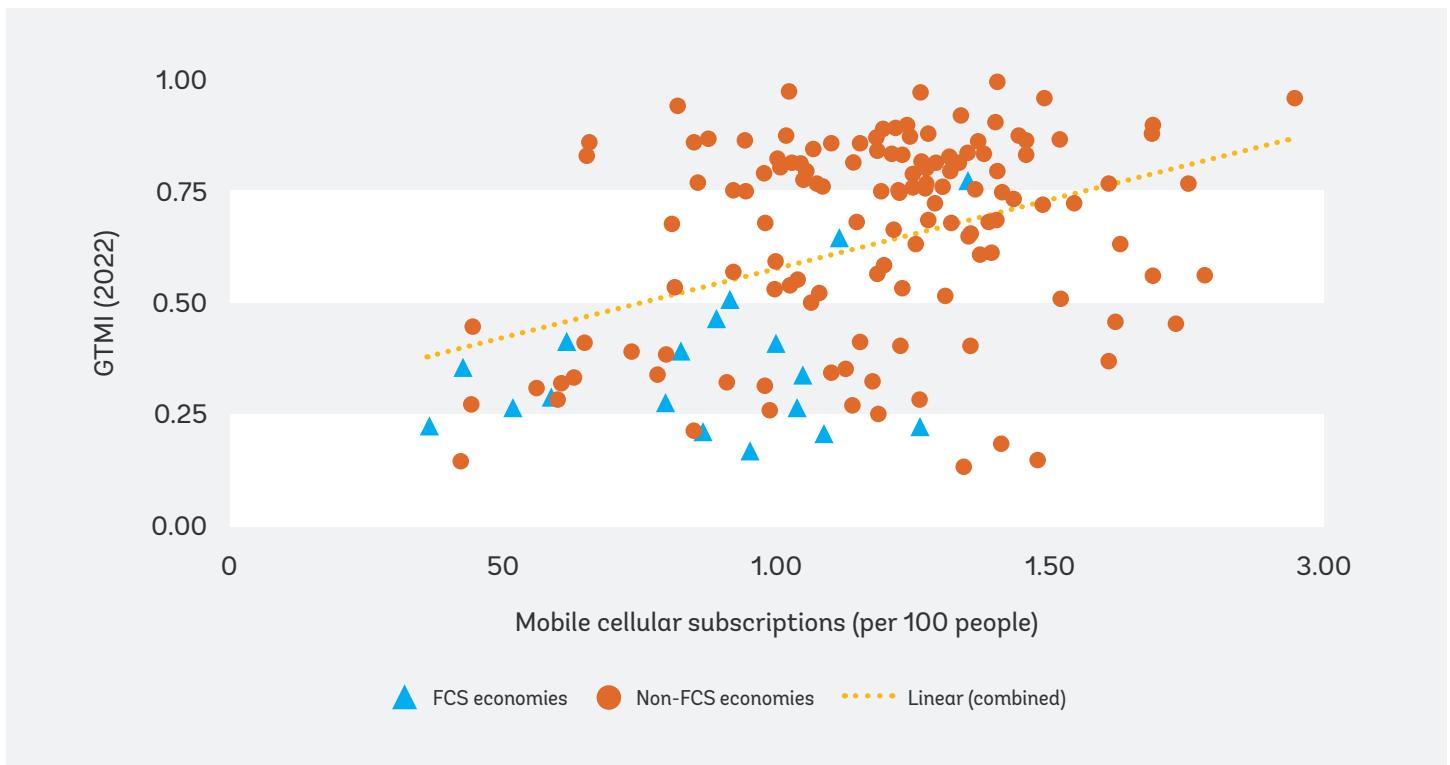
Over 600 million young people live in FCS.²⁴ Countries with a large youth population can build on so-called “digital natives” who have a higher comfort level with technology. In Zimbabwe for example, research showed that most youth had access to digital technologies (mobile phones) and the skills to operate social media applications such as WhatsApp and Facebook.²⁵ This knowledge and adoption of technology opened doors: these youth were using technology to access educational and employment opportunities outside their village.²⁶ This has impacts not just on potential adoption of

government e-services, but digital entrepreneurship and the digital economy at large.

The rise of mobile technologies and mobile internet access in FCS is promising, presenting significant opportunities for mobile government applications for service delivery and citizen participation, data collection, digital payments, and project monitoring. In FCS, the number of mobile cellular subscriptions per 100 people is 75.9, compared to 110 globally. Mobile cellular subscriptions are positively correlated with GovTech maturity—see Figure 6. Box 2 details the example of Somalia.

> > >

FIGURE 6 - GTMI and Mobile Cellular Subscriptions, 2021



Source: GTMI 2022 and World Governance Indicators (WGI) data.

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BOX 2 - Using Mobile Technology in Somalia to Improve Public Health Services

Under the World Bank's Somalia Recurrent Cost and Reform Financing Phase 3 (RCRF) project (P173731), GovTech solutions are utilized in community health service delivery to enable digital data collection, e-learning, feedback collection and behavior change. The project supports the Female Health Worker (FHW) Program to bring primary healthcare services to local communities. Somalia is a sparsely populated fragile and conflict affected country, where some communities face barriers accessing services due to poor road infrastructure, internal displacement, natural disasters and the ongoing conflict.

Through RCRF financing, about 900 FHWs were provided with smartphones, funds for monthly data use, and relevant training to enable data gathering and transmission with geo-tagging and photo evidence where necessary (provided the security situation allows such ICT use). Since January 2022, 82 percent of FHWs are using these technologies. In addition to data collection, smart phones are used to access more than two dozen health e-learning and behavior change videos that complement traditional face-to-face training and promote behavior change communication with communities.

Finally, an ICT-based citizen engagement center or a call center in Mogadishu implements feedback collection and behavior change campaigns through voice calls, SMS and WhatsApp by reaching out to female health workers, female health supervisors, household heads, pregnant women, and teachers. As of April 2023, 7,583 unique beneficiaries have been contacted. Fifty six percent of respondents were responded to with corrective actions taken by the government.

Source: World Bank RCRF project documents.

Digital payments through mobile technologies is a major global trend and opportunity in FCS. Registered mobile money accounts grew from 1.4 billion in 2021 to 1.6 billion in 2022.²⁷ The highest increase was seen in low-income countries, a country group that includes most FCS. Mobile money linked to Government-to-Person (G2Px) payments to support cash transfers for food, fuel, agriculture, utility subsidies, and social welfare payments, is often used in FCS, in particular for emergency cash transfer operations.

When mobile access is limited or unaffordable for some, FCS can also take advantage of low-technology mobile options for service delivery and communication. They can provide services through SMS, interactive voice response, and call centers which do not require smartphones and internet connectivity. The same technology can be used to share information about availability of services, deadlines, and events across different services. These types of cross-cutting solutions can enhance numerous services instantly and are relatively easy to deploy, even in contexts with limited capacity. Importantly, these foundational steps also serve to build internal capacity and gradually foster a more sustainable digital public infrastructure, paving the way for the implementation of more complex platforms in the future.

GovTech opens up specific opportunities for FCS affected by open violence, and/or with internally displaced persons (IDPs) and refugees. Mobile technologies and drones are providing opportunities. In Ukraine, the government was able to leverage its solid GovTech systems at the onset of the conflict. The Diia mobile application enables IDPs to register online for IDP status as well as to be automatically registered for any cash benefits. The registration provided via the app also removed the need for citizens to retain or carry physical documents to prove their identity and status. Development partners are also using mobile apps for IDPs. This includes the UNDP's Your Rights app that helps ministries, districts, and agencies to provide information and support to IDPs as well as those who have experienced gender-based violence and human trafficking.²⁸

New technologies such as drones offer new sets of opportunities to get information and even to deliver aid. In FCS characterized by violence, drones can be used to map and survey damage and inform infrastructure rebuilding and reconstruction plans. They can also be used for humanitarian food delivery where roads may be impassable, as has been done in South Sudan.



3

Supporting the Four Pillars of GovTech in FCS: Trends and Examples

This chapter uses GTMI data to compare performance of FCS and non-FCS with respect to the four pillars of GovTech. The four pillars are: GovTech enablers, including the skills, leadership, strategies, and policies to support GovTech development; Core Government Systems (for public financial management, human resource management, and tax and customs administration); Citizen Centric Service Delivery and Citizen Engagement/CivicTech. The chapter then illustrates reforms under each pillar with examples, drawn from World Bank-financed projects as well as other donor and private sector projects implemented in FCS.

3.1 GovTech Enablers: Policy, Legal and Regulatory Frameworks, and Skills

GovTech enablers refer to the cross-cutting drivers of the digital transformation agenda. They include strong enabling and safeguarding institutions, an appropriate and conducive legal and regulatory regime, and digital skills in the public sector. These enablers also encompass national identification systems, digital signature that can enable transactional e-service delivery, digital payments, and strategies for innovation and digital transformation. Taken together, these building blocks provide a base for GovTech to thrive. They are also an area requiring greater attention from FCS.

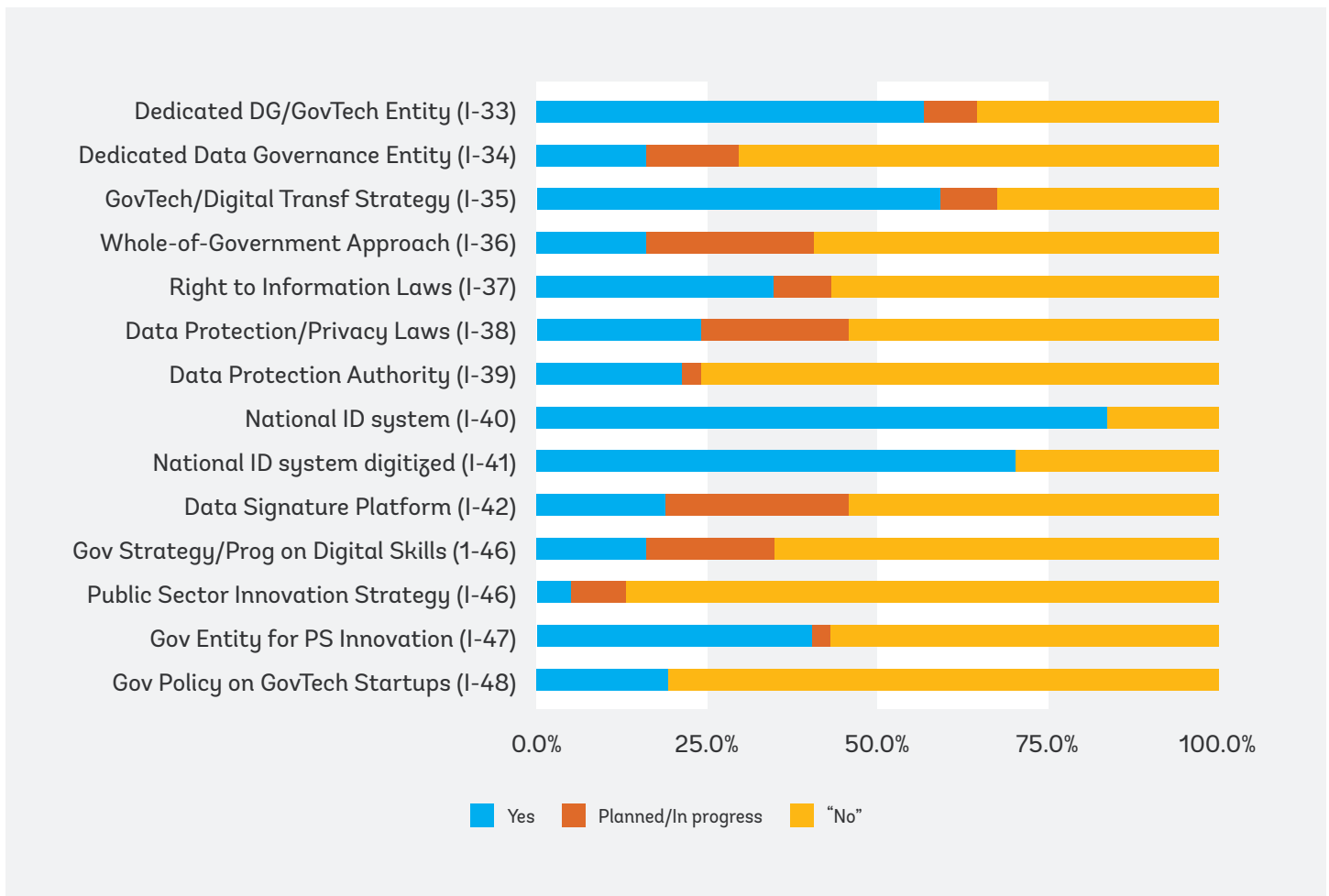
Even if infrastructure and connectivity remain a challenge in many FCS, the GovTech enablers can be addressed in anticipation of infrastructure to come. Supporting an enabling regulatory environment, institutional coordination towards common aims, support in skills to use the technology, and change management to adapt to new ways of doing things are useful starting points. These analog complements exist on both the supply and demand sides.

The GovTech Enablers Index (GTEI), a subindex of the GovTech Maturity Index (GTMI), indicates room for improvement for FCS but also significant progress (see

Figure 7). The overall average score for FCS on the GTEI is 0.276, just above the lowest scoring threshold of 0.25, and FCS range from Group B economies like Zimbabwe with 0.733 to Group D ones—Eritrea with 0.037 or Tuvalu with 0.042. The majority of GovTech enablers measured in this GTMI subcomponent are present in between a quarter and half of FCS. Interestingly national IDs or similar foundational IDs are present in over 75 percent of 2022 FCS, and over 50 percent of these countries have a digital strategy and a government entity focused on GovTech. This points to growing appetite and progress for taking on GovTech solution projects.

> > >

FIGURE 7 - GTEI Indicator Responses for FCS (GTMI 2022 Update)²⁹



Source: GTMI 2022 data.

Fragile and Conflict-Affected Situations, by definition, may lack key GovTech enablers such as strong leadership and an institutional setup conducive to reform. Three key principles underpinning the Bank's whole-of-government approach to GovTech may be weak or missing: (1) high-level political and senior civil servant leadership, (2) a top-down strategic whole-of-government orientation to digital transformation, and (3) a robust institutional and governance framework.

A complex and fragmented institutional system often undermines a whole of government approach, and in countries with low institutional capacity, the rollout of GovTech is often pursued independently by parts of the administration. By definition, a whole-of-government approach needs strong leadership and alignment towards a goal, which, in FCS, is likely to be overambitious considering the low capacity of prevailing administrative systems. Additionally, inter-ministerial coordination is often weak in FCS. It is often the case that each sector independently tries to get access to or keep control over their own technology and IT systems. Reasons for this are diverse and not mutually exclusive: sense of urgency in getting results, poor communication and coordination within the sometimes-fragmented administration, incentives in being a first mover to attract the limited pool of skilled staff, or an attempt at capturing lucrative public procurement.

The fact that a GovTech strategy and a dedicated GovTech entity are present in about half of the FCS in the GTMI indicates that fragile countries can also show leadership and dedication to adopting GovTech. Adopting a strategy and creating an organizational unit are a first step to coordinating reforms, even though the impact of such measures will depend on the political clout of the coordinating unit and its human and financial resources and, in some cases, their degree of ownership in the administration, especially if these units have been created with external project financing.

While whole-of-government approaches are good practice, in most FCS contexts this is likely to be aspirational, yet this does not mean nothing can be done. It may be more feasible to finance and implement systems in a piecemeal manner. Political and institutional barriers may be too high to implement whole-of-government systems, but progress can be made incrementally – for example, informational services on a website, pilot level transactional e-services, e-government procurement solutions, or digital payments. There may also be more potential and support for reforms in certain sectors; for example, e-education systems that can be purchased and

rolled out can kickstart digital transformation and provide a demonstration effect for other sectors.

Coalescing fragmented and disparate systems can be a greater challenge in FCS than non-FCS. In these cases, focusing on key enablers has been a way to start the digitization journey. One example is foundational ID systems: the GTMI results show over 75 percent of FCS report having this in place. In Cameroon, a recent ID and civil registration diagnostic³⁰ demonstrates the challenges of reforming such foundational shared platforms, aligning donors, and establishing the legal prerequisites. It shows that GovTech has been an enabler to increase the scope and scale of reforms.

A key challenge in FCS is the lack of a comprehensive legal and regulatory framework to support and drive digital transformation. Guinea Bissau is a case in point. The country placed e-government implementation at the center of its Global Rationalization Plan (2026) to promote efficient services and enhance participation of citizens.³¹ However, it has not adopted the necessary laws for digital government such as laws on data protection, e-signature, and cybersecurity.³²

Supporting countries in setting up the basic legal and regulatory framework for GovTech is important and needs to focus as much on the state's capacity to enforce it. A conducive legal and regulatory regime is a key enabler of digital government transformation. But in many instances regulatory frameworks are poorly enforced, which can impact security of data and systems. This effort can take a long time in FCS environments. After the Government of Cameroon established a legal framework for cyber security in 2010, the lack of a comprehensive data protection law raised concerns about the security of personal data.³³ Cameroon has recently drafted new laws on data protection and cybersecurity, including cybercrime that will be submitted for Parliamentary approval in 2023.

In cases where policies and regulations are adopted and seem fit-for-purpose, there is often a significant implementation gap. Having a legal framework or strategy in place is only the first step. Implementing a whole-of-government strategy and coordinating with multiple ministries, departments, and agencies can be particularly challenging in FCS where different factions or different governments may be in power across the country or region. Further, implementing, monitoring, and enforcing different legal frameworks can also be challenging in FCS where capacity and digital skills, such as those to monitor data protection and cybercrime, may be limited.

Digitalization of government requires adequate human capacity at the institutional, organizational, and individual levels.³⁴ Poor digital literacy and skills of public servants can hinder GovTech development. Civil servants need to have basic digital skills to complete tasks such as inputting budget numbers in financial management information systems (FMIS) systems, entering a new hire in an HRMIS, or launching a new tender on an e-GP system. Using basic interfaces to scan documents, input data, take biometric measurements and other tasks is necessary to provide face-to-face services to beneficiaries. Public servants in Kosovo point to a lack of training in the use of new systems as the biggest constraint to implementing new digital practices and e-government solutions.³⁵ Specific competencies in network management, cybersecurity, and programming may be scarce.

Digital skills are often among the scarce skills that are difficult to attract in the public sector. This is true even

in environments where public sector jobs are comparatively desirable. Because digital skills are often locally scarce, specialists can secure jobs in the private sector – sometimes with international firms or abroad. Alternatively, they may secure jobs in the donor sector, which creates distortions in the market and mobilizes domestic capacity in parallel structures that are often poorly integrated with the public administration. Investing in civil servant digital skills can foster innovation and support cultural transformation within organizations.³⁶ This culture change can enable better use of technology and can help in overcoming political and organizational pushback. Box 3 highlights interesting findings from a Civil Service survey in Kosovo that provides a snapshot of the challenges in pursuing a national e-government strategy in an FCS environment where infrastructure quality is not a major challenge in the central administration, but digital skills, resources and capacity are.

> > >

BOX 3 - Digital Readiness and Skills in the Civil Service in Kosovo

- **The importance of pursuing a national e-government strategy is not broadly recognized by heads of agencies (HOA).** Only 40 percent of HOAs stated they are convinced of the importance of the national e-governance strategy, while 60 percent do not find it important. Since the HOAs are key stakeholders in the digital transformation with key responsibility for the institutional-level implementation, this finding points to the need for strengthening activities aimed at building awareness and support behind this agenda.
- **Only 12 percent of HOAs agreed with the statement that their institution has the resources and the capacity to implement the e-government strategy.** This finding highlights the need for underpinning investments and capacity building support at the institutional level.
- **Infrastructure quality is rated good or very good by a slight majority of managers and IT-staff,** but the shares are not very high – between 49 and 60 percent for the various types of infrastructure – leaving a significant proportion of respondents having less favorable views on infrastructure quality. Unsurprisingly, on average, **managers working at the local level rate the quality of IT infrastructure significantly lower than their peers working in the central government.**
- While most respondents are satisfied with the services provided by IT staff at their institution, **a lack of IT staff resources** is flagged as an issue – 66 percent of the respondents believe that more IT staff is needed to respond to their needs effectively.
- **Kosovan public officials are generally satisfied with the quality of most information technology (IT)-related devices and the related IT-support; however, staff using IT systems more report lower satisfaction.** Similar splits are observed at both local and central government levels. Respondents who are more dependent on computers or who switched to remote work during the pandemic tend to be less satisfied with the quality of technologies and support services.

- Ninety percent of managers believe that **digital skills are a key priority for them as managers and for their institution**, but many find skills identification procedures lacking and they also recognize the challenges with recruiting digitally skilled staff. They point to **low salaries** as the main reason why their institutions have difficulties in attracting candidates with good digital skills.
- Insufficient training, infrastructure, and funding constraints are identified as key challenges in improving digital governance at the level of individual institutions, while leadership and coordination are seen as obstacles only to a lesser extent.
- **There are large differences among respondents by educational attainment levels.** Respondents with higher educational attainment are more cynical and less satisfied with the quality of infrastructure and IT support services and more critical towards the ability of their institutions to build and retain digital skills.

Source: World Bank 2021.

3.2 Core Government Systems to Manage Public Administration

According to the Core Government Systems Index (CGSI), a subindex of the GovTech Maturity Index (GTMI), FCS fare better on core government systems in comparison with other pillars. This is the GTMI focus area with the most indicators where over 60 percent of FCS report having the indicators in place—be it FMIS, tax administration, customs, or debt management. This is not a novel finding, as in early digital government initiatives, core government systems for public financial management, human resources, taxes, and investments were prioritized. These systems are often the first area for digital transformation.

FCS perform well overall on core government system indicators, with significant country differences. The average CGSI score for FCS stands at 0.352, placing them in Group C, below the global average of 0.575 in Group B. Within the group of FCS, there is significant variation in the maturity of core government systems, with countries such as Kosovo achieving a high score of 0.647 (Group B) and others like Eritrea or the Marshall Islands with a low score of 0.058 or 0.088 (Group D). This underscores a recurring theme throughout the report: FCS exhibit considerable diversity across multiple dimensions, with GovTech maturity being a prime example.

Digitization is an enabler for revenue administration, financial management, but also central banking and mobile payments. Most World Bank-supported governance projects in FCS focus on core government functions, such as

Domestic Revenue Mobilization (DRM) and Public Financial Management (PFM). In DRC, most of the digital initiatives have focused on public financial management and domestic revenue mobilization such as tax and VAT.³⁷ In Guinea Bissau, the Kontaktu tax portal facilitates communication with the Directorate General for Contributions and Taxes and allows users to pay taxes online.

To yield the full potential of core government systems for PFM, regulatory and policy levers may be necessary. In many FCS countries, projects first focus on these core functions. The success of these systems is supplemented by sector specific policies such as budget compliance regulations, treasury single accounts, commitment controls, budget classification, procurement legislation, and revenue policies. These policies can provide guidelines for use of these systems to ensure they meet their intended purpose.

Most FCS report having FMIS solutions supporting central and local government operations, but their scope and coverage varies. More than 50 percent of FCS that answered the 2022 GTMI survey report having an operational FMIS to support PFM functions, a tax MIS, a Customs MIS, a Payroll System linked with HRMIS, a Social Insurance system providing pensions, an e-procurement portal, and a debt management system. This is not a small achievement, as this means the foundation is in place, even though the data does not take into account the scope of such systems and the efficiency with which they are operated.



Modernization or replacement of existing systems is becoming less expensive with the advances in technology such as off-the-shelf systems and cloud solutions. Many FCS have adopted an off-the-shelf FMIS solution to be able to deploy and use it as quickly as possible, as in Somalia, Kosovo, Afghanistan, and Comoros. Digital public goods enable FCS to adopt technology at lower cost.

E-Government Procurement (e-GP) systems provide numerous benefits, including greater openness and transparency, and more efficient use of resources. E-GP systems can also unlock new economic opportunities for businesses by reducing barriers for companies and firms,³⁸ particularly for micro, small, and medium enterprises (MSMEs).

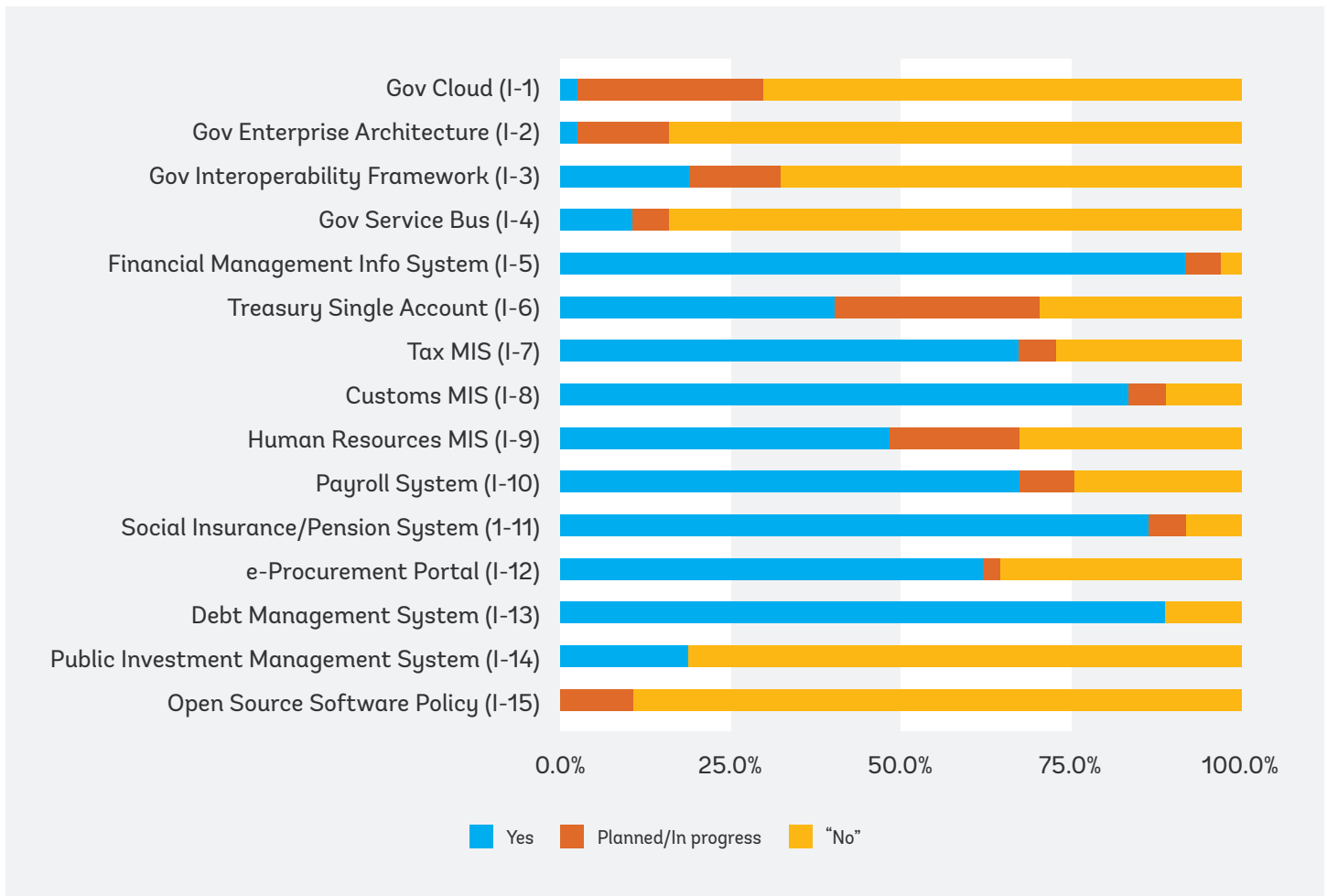
E-procurement can lower opportunities for corruption and capture. In FCS contexts, the likelihood of procurement-related corruption rises where there is entrenched cronyism.³⁹ Especially during reconstruction periods, there can be a wealth of high-value contracts and an active marketplace seeking them, making the adoption of e-procurement even more relevant as a way to limit opaque transactions.

Fifty nine percent of FCS report having an e-procurement portal in use.⁴⁰ The ProZorro e-GP system in Ukraine is based on open-source technology. ProZorro, which means transparency in Ukrainian, focuses on transparency, efficiency, and better procurement outcomes. It is an example of bottom-up grassroots efforts, which takes a collaborative

approach that includes all stakeholders such as government, NGOs, private sector, educational partners, and international development partners. It is a hybrid system that acts both as a public and private marketplace for procurement via an online portal which requires no registration, thus lowering barriers to access.⁴¹ ProZorro is credited with having helped Ukraine to save nearly US\$6 billion from 2017 to 2022.⁴²

The CGSI shows that while many of the core systems are in place, there is significant room to improve on others. These include implementation of a government enterprise architecture, a government service bus, and interoperability frameworks that would enable data exchange. Less than three percent of FCS report having a cloud, an enterprise architecture framework, a government service bus, or open-source software policy or action plans – see Figure 8. The observed gaps present valuable opportunities for harnessing GovTech solutions to enhance government efficiency and address digital divides. The gaps also suggest that FCS are in the early stages of adopting more advanced GovTech technologies, pointing to the context of limited resources, institutional challenges as well as security concerns that influence what is reasonable to expect. For instance, even in more advanced countries, it can take time to implement and effectively enforce systems for interoperability. Mandating the use of an interoperability platform, for example, can require relevant legislation or regulations which can be challenging and time consuming to pass in both FCS and non-FCS contexts.

FIGURE 8 - CGSI Indicator Responses for FCS 2022⁴³



Source: GTMI 2022 data.

Core government systems require a minimum threshold of ICT infrastructure to be of use to the public administration.

Such infrastructure however is often inadequate especially among the least developed FCS, those with active conflicts, or in post-conflict conditions where whatever infrastructure existed may have been destroyed or disabled. In poorly resourced public administrations, IT equipment may also be lacking or be outdated. Repairs and maintenance can be canceled or delayed due to a lack of budget for recurrent expenditures, the inability to reach sites, lack of trained personnel, difficulty to import spare parts, safety concerns.⁴⁴ One interviewee stated that users of their systems were frustrated with slow internet and intermittent electricity connectivity, which, in turn, affects the workflow of institutions. Other interviewers

mentioned that access to laptops and desktops being limited, many users need to go to other ministries to access core government systems.

The purchasing and operating cost of ICT infrastructure may be an issue, especially in countries with limited competition among operators and restricted market access. Limited participation from private-sector operators in the sector may be due to public policies creating barriers to entry, dominant market positions, capture and corruption, low levels of demand, small market size, low projected profitability, or higher levels of risk. The case of Kiribati (Box 4) provides an interesting example of success in addressing such challenges.

> > >

BOX 4 - Bringing in the Public Sector to Enhance Affordability of ICT

The Republic of Kiribati (FCS until 2022) was one of the least connected countries across the globe and faced challenges in developing its telecommunications sector due to limited private sector participation and affordability of ICT services. With the support of a Telecoms and ICT Development project in 2012-19, the country was able to strengthen its regulatory and institutional environment, enabling the transition to a market-driven telecommunications sector and facilitating improved connectivity for the Outer Islands. The project assisted the country to attract private telecommunications operators and businesses to invest in Kiribati's ICT sector, reducing the operating costs of IT infrastructure and improving the affordability of ICT services for its population. It speaks of the importance of proper sequencing and timely implementation of policies as these can boost the sector, even in small island states with limited ICT penetration.

Source: World Bank. Kiribati Telecommunications and ICT Development Project (P126324). <https://projects.worldbank.org/en/projects-operations/project-detail/P126324>

Procurement of ICT comes with specific challenges. In those FCS with no domestic market for ICT infrastructure and products, procuring necessary infrastructure and equipment often requires contracting large international vendors. ICT procurement is complex in nearly every context, but in FCS inflated costs and lack of transparency about recurrent cost implications of running and maintaining the systems are a common reported problem. In some cases, financial management and procurement reforms face political challenges since they threaten vested interests.⁴⁵

Cloud Solutions for Core Government Operations and Service Delivery in FCS

Cloud solutions can be a game changer for FCS, providing affordable solutions without heavy domestic investments and, in countries with open conflict, providing backup for government data and systems and enabling business continuity. They need to be accompanied by non-digital enablers, including strong guidance and oversight on data classification.

Cloud solutions can be used for data storage, disaster risk management and recovery, and business continuity, all features that would be in demand in a fragile setting. Cloud services include Platforms as a service (PaaS), Software as a Service (SaaS), and Infrastructure as a Service (IaaS).⁴⁶ Government cloud services can be deployed on private,

public, or hybrid systems⁴⁷ which present advantages such as cost savings, scalability, and high availability, thus accelerating digital transformation and data management. These cloud services reduce costs of ownership, maintenance, storage, and licensing when procured via a subscription model through a cloud provider.⁴⁸ They can support operations and service delivery at both central and local government levels.

While cloud solutions can be a game changer for GovTech, migration to cloud solutions often require non-digital enablers to be effective. These enablers may include legal and regulatory changes, change management activities, skills development, and organizational and process changes to truly harness the scalability and flexibility it offers. The use of these systems also calls for robust data protection and security protocols including data classification to evaluate what can be stored in different types of clouds. Iraq published in 2022 a draft cloud computing policy, which aims to accelerate digital transformation, boost the uptake of cloud services, and ensure the protection of government and personal data.

Digitization of government creates a wealth of data that needs to be protected. A data classification scheme is needed to use cloud technologies to enable secure access, use, and protection of data in the center or cloud. The scheme helps to determine data risks and potential impacts related to security breaches (Table 2).

TABLE 2 - Sample of Data Classification Levels and Potential Impact on Confidentiality, Integrity and Availability

Data classification	Impact level	Impact description
Public	Low	The loss of confidentiality, integrity, or availability could be expected to have a limited adverse effect on organizational operations, organizational assets, and/or individuals.
Official	Moderate	The loss of confidentiality, integrity, or availability could be expected to have a serious adverse effect on organizational operations, organizational assets, and/or individuals.
Secret	High	The loss of confidentiality, integrity, or availability of Secret Data could be expected to have a severe or catastrophic adverse effect on organizational operations, organizational assets, and/or individuals.
Top Secret	High	The loss of confidentiality, integrity, or availability for Top Secret Data could be expected to have an exceptionally grave adverse effect on organizational operations, organizational assets, and/or individuals.

Source: Adapted from World Bank. 2023. “Data Classification Matrix and Cloud Assessment Framework.”

Cloud solutions can be particularly useful in settings where key systems need to be established. In Somalia, with the support of the World Bank,⁴⁹ the federal government and five member states have utilized cloud-based solutions since 2015 for their IFMIS. The monthly budget results of the federal government are posted in open-data format on the cloud, and member states regularly post their monthly budget reports on their respective ministry of finance websites. In 2019, four member states launched cloud-based human resource management information and payroll systems (World Bank, 2021). The World Bank is currently assisting the Federal Government of Somalia, and the governments of Puntland and Somaliland in the design and implementation of cloud-based HRMIS solutions linked to FMIS.

In Sierra Leone, cloud solutions were examined as a potential option for e-Government Procurement (e-GP). To provide the government with adequate information to take a decision, a cost-benefit analysis (CBA) for potential hosting solutions for the e-GP system was conducted. The CBA reviewed the Ministry of Finance data center as well as national, regional, and international public clouds. The review examined the costs associated with each solution based on a set of requirements to identify potential solutions and costs for hosting the national e-GP system. A CBA for such a hosting solution is recommended where clients might not have the capacity to host core government systems.

Cloud-based online collaboration tools can enable delivery of multisectoral services that may require multiple verifications, validations, or approvals. Lebanon launched a cloud-based public service delivery platform – the “IMPACT Open Data platform – through the Central Inspection Bureau (CIB).” This inter-ministerial and municipal government-wide system provides access to data across sectors, which enables the provision of sectoral digital services under CIB, including social safety net and vaccinations, to ensure fair and transparent service delivery with real-time oversight. During the pandemic, the platform was also used to manage complaints about COVID-19, including violations of lockdown measure and shortages of essential goods, while minimizing physical interactions.⁵⁰

The advantages of cloud solutions in contexts where there is a physical risk to IT infrastructure is clear. In countries where there is a risk of violence and damage to public buildings, cloud solutions can provide a higher degree of safety and security to systems. This is also seen at the municipal level in Libya.⁵¹ Adopting local or international cloud solutions can reduce the risk to core systems and services, strengthening resilience, provided safety protocols are respected. In some countries, legal changes may be necessary to enable the use of such cloud options. For example, in Kosovo, data localization policies would need to be revised to secure government data on servers based outside the country boundaries.

3.3 Public Service Delivery and E-Services

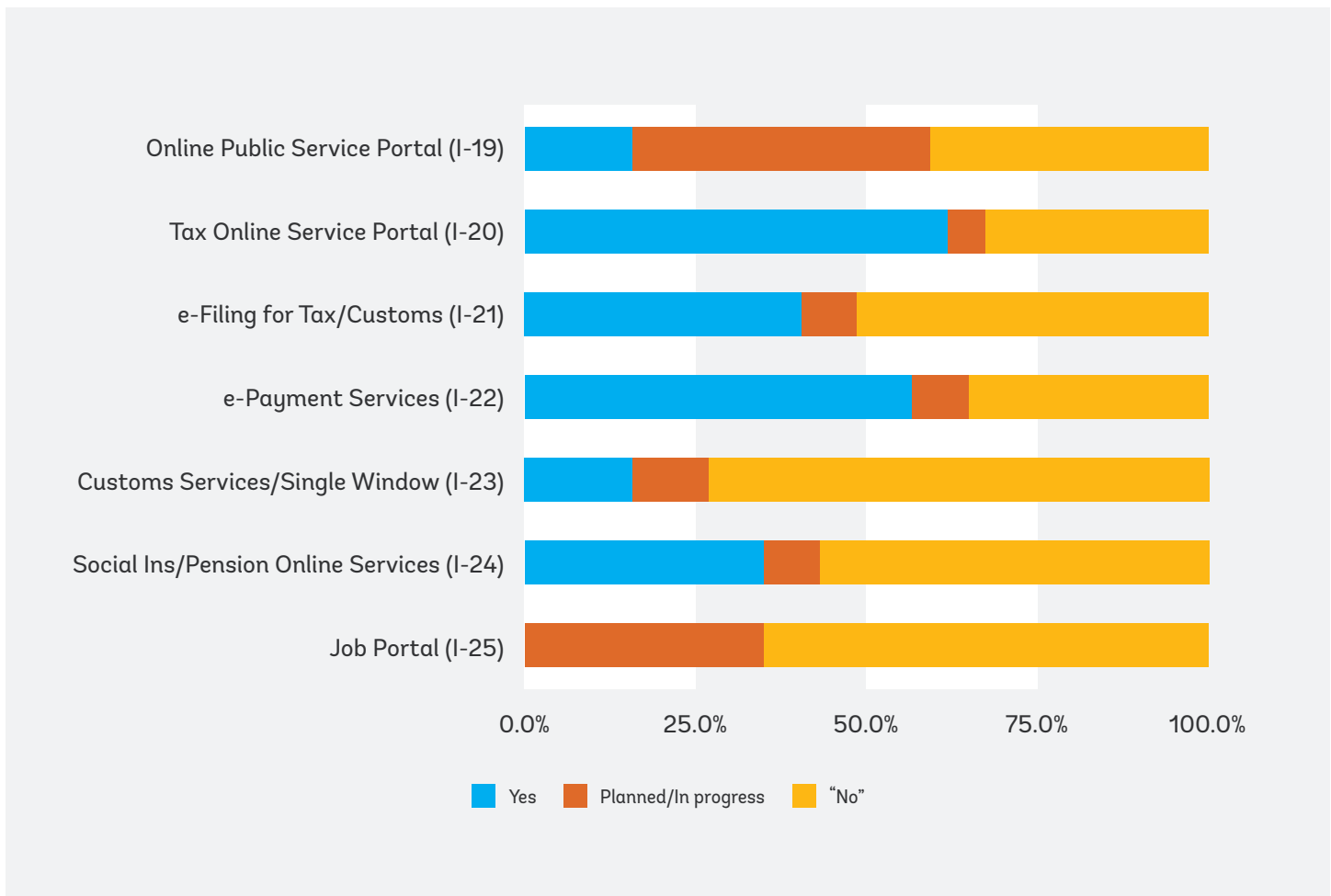
The provision of services is a key means to support legitimacy, help mitigate conflict, and reduce the risk of violence in fragile settings; e-services have tremendous potential to support this goal in FCS.⁵² Adequate provision and access to services can impact both the well-being and economic prospects of citizens. In FCS, citizens face significant barriers to public services, which can increase marginalization of the most vulnerable. Using GovTech solutions for online service provision can deliver public services when face-to-face or onsite access cannot be provided. E-services can increase reach of services, enabling and improving access to services in rural areas, areas of conflict, fragility, and reconstruction. This is particularly relevant for FCS, as unequal or disproportionate access to services can reduce trust and affect perceptions of legitimacy, raising grievances.⁵³ The potential of GovTech to support service delivery in FCS is well recognized: for

instance, use of E-services was a key recommendation for post-conflict Libya to overcome access constraints.⁵⁴

According to the Public Service Delivery Index (PSDI), a subindex of the GovTech Maturity Index (GTMI), there is significant room for improvement in the deployment and use of online public service portals in FCS. The average PSDI score for FCS is 0.375 (Group C), with a range from Group A economies (0.852, Kosovo) to Group D (0.031, Micronesia). Of the seven indicators collected, only the online tax service portal and e-payment services are present in more than half of FCS (Figure 9). The remaining range in 16 to 40 percent of reported availability. One explanation for the low average scores on online services is likely to be the low internet penetration in many FCS. Yet this does not prevent some countries to embark in services digitalization.

> > >

FIGURE 9 - PSDI Indicator Responses, FCS, 2022⁵⁵



Source: GTMI 2022 data.

FCS are investing in unified or sector-based service portals to provide access to e-services. These include Guinea-Bissau, [Ethiopia](#), [Nigeria](#), and West Bank and Gaza. Face-to-face service windows may only be available in the capital or large city centers. Requiring physical presence for service access incurs travel times and costs for the beneficiaries which can increase barriers to access and contribute to discrimination and exclusion of the poor and most vulnerable groups. E-services can eliminate travel time, reduce costs to access, eliminate touchpoints and potential for petty corruption, and reduces biases based on gender, income, ethnicity, and stigmas that may be attached to obtaining certain services and benefits such as social insurance, unemployment, or other entitlements. Conversely, they need to be deployed in a way that ensures broad accessibility to avoid increasing the digital divide.

In Kosovo, the government launched the eKosova eService platform during the pandemic and made extensive efforts to improving the quality of and user access to public services. These efforts included adopting an omnichannel approach to service delivery including citizen service centers with in-person technical support, call centers, and an outreach program to increase awareness and mobilize citizens to access eServices. They plan to implement a monitoring mechanism to measure impact and reach toward targeted youth, senior citizens, women, and community groups.⁵⁶ In Ukraine (see Box 5), the Government built on an existing App to mitigate the IDP crisis.

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BOX 5 - Expanding an Existing GovTech Mobile Services App to Swiftly Reach the IDP Population

In 2022, the **Government of Ukraine** expanded the existing mobile one-stop shop app, “Diia,” which allowed citizens to gain access to over 50 government services as of 2021.¹ The government quickly expanded the functions of the app to support people including over 8 million displaced Ukrainians by providing financial assistance, communication tools with the government, and a fundraising platform for the national armed forces.¹

Source: GovTech Forum session on Challenging Context, Washington DC May 2023.

E-services can be designed to overcome accessibility barriers and can be successful in helping to deliver public services even in the most affected fragile or remote areas, oftentimes by using both digital and analog channels. One example is the provision of services or internet through mobile buses: in Cambodia, 225 rural schools were provided Internet access by mobile bus, motorcycles, and ox cart to reach the last mile.⁵⁷ Similar initiatives have been implemented in Azerbaijan, Mauritius, Moldova, the Philippines, and Rwanda.

Building transactional services requires relevant back-office data and processes to be digitized, but progress at the frontline does not need to wait until the back-office is fully digitalized. In FCS and other countries digitizing of services has been done in phases. E-services have different sophistication, from informational to integrated. Small improvements in face-to-face services such as simplifying application procedures can promote efficiencies and quality of services without a fully digitized back-office. There are many tasks and improvements that can be done while digitization is ongoing.

Mobile services or access to portals through applications is also on the rise. It is important to note that mobile service delivery does not inherently require high-tech solutions to be effective. Basic technologies such as telephones and dumbphones can provide avenues for service delivery through call centers and via SMS. For FCS contexts which are characterized by low connectivity, mobile phones can be used to access services using apps or even SMS with a mix of offline and online use.

It is important to design these services and solutions for the local context. During the 2019-21 political transition in Sudan, the international community supported a large cash-transfers program, implemented by the transition government, which used technology to register, inform, and provide benefits to eligible beneficiaries. The program took into account various barriers to access (low literacy, multiple languages, and low financial inclusion) to offer benefits using both technology (including SMS) and analog channels to foster inclusion. Planning for low literacy, multiple languages,

and other locally relevant factors is necessary to ensure the solutions themselves do not foster exclusion.

Taking a citizen-centric approach to service delivery to ensure that services meet the needs, preferences, and capabilities of users is on the rise. For example, in Burkina Faso,⁵⁸ the government consulted over a thousand citizens and groups to design and deliver its e-Services on the data.gov.bf portal, aiming to serve an inclusive audience, with specific attention to women and girls. The early involvement of women

in service design helped to increase the overall number of users and addressed a major country level challenge.

E-services design and implementation can contribute to reduce existing fractures in fragile societies. Some groups may be excluded through a combination of identity-based discrimination or socio-economic status. Box 6 focuses on gender inequality and takes stock of how GovTech can help bridge the service and information gender gap in FCS.

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BOX 6 - How Can GovTech Help Bridge the Service and Information Gender Gap in FCS?

Gender inequality is particularly acute in FCS and is seen as a driver of fragility. Women and girls are more vulnerable to gender-based violence and often face much greater economic hardships than men in FCS contexts. While there are studies on how internet access has positive economic impacts for women such as labor force participation, IT itself is not gender neutral and women and men do not have the same level of control or access to IT such as mobile phones⁵⁹ (UNDP 2008).

Globally, women have less access or control to IT devices. According to GSMA data, the top constraints for women in accessing mobile internet and owning a mobile phone included affordability, literacy and digital skills and safety and security. But in some countries, the barriers are also social and cultural. According to GSMA data, women in lower-middle income countries were 7 percent less likely to own a mobile phone, and 18 percent less likely than men to own a smartphone. Data alone are likely to undermine the gap in access, since in some cases men register handsets on behalf of women, or women need permission to own devices and SIM cards⁶⁰ – for instance, in Nigeria and Pakistan family approval is required for women. Women are also less likely to use the internet. In 2020, only 19 percent of women used the internet in LICs, compared to 86 percent in developed countries. Across low and middle-income countries, women were 6 per cent less likely than men to use mobile internet as of 2020 (GSMA 2022).

With women facing significant challenges in access to internet and devices, how can e-services make a difference for women's participation and utilization of administrative services? Integrating specific women's needs in service design and operations for physical one-stop shops (such as those set up in Somaliland, Kosovo, Iraq) can help increase access for females. Actions may include adjusting working hours, establishing equal treatment, and gender sensitive protocols – for example, non-discriminatory language, no mandatory male's authorization, proactive sharing of relevant information on relevant services so that women receive entitlements and services they are eligible for or can participate in such as skills programs, scholarship programs, job placement services, and domestic violence response.⁶¹

Mobile services provide even greater opportunities since mobile internet is the primary way women access the internet.⁶² One benefit of e-services is that the absence of face-to-face interaction can reduce bias and stigma based on gender, income, or ethnicity. In most FCS including DRC and Zimbabwe, mobile networks are the primary means to connect to the internet. Mobile phones can be a lifeline for women in FCS, providing access to mobile money, remittances, and government cash transfers; it also enables them to access timely information or early warning notifications for natural disasters, and mobiles are being used for citizen engagement and social accountability.

Recent work by the International Monetary Fund (IMF) shows that increasing women's use of the internet can increase their labor force participation (Kumar et al 2023). In LICs countries, it is even more pronounced. But LICs countries face similar constraints as FCS: lower internet use, higher costs for connectivity, lower coverage, and lower quality of service. Programs and initiatives to reduce this gap are needed to raise awareness of the potential impacts these technologies can have for women in FCS.

To maximize investment made in e-Services and increase the number of users, trust building with citizens is crucially important. Trust can be seen as a function of usefulness, accuracy, availability, and security of services.⁶³ If users cannot trust service providers, or more generally their governments, they feel uncomfortable, for instance, entering

their personal or bank information into the government owned systems and allowing governments to hold their information afterwards. This is an important risk in FCS, especially since GTMI data shows that only 25 percent of FCS have a data protection policy—see Box 7.

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BOX 7 - Managing Emerging Risks in GovTech

Although digital technologies and the increasing use of data provide many opportunities for improved government and service delivery, they also create new risks such as bias caused by artificial intelligence (AI) in decision-making or privacy concerns. While this is not specific to FCS, growing concerns on cybersecurity and data protection can act as barriers to GovTech adoption. It is important to build and maintain societal trust through policies for managing the risks to privacy and data security.

Engaging in FCS also means working differently with data. In these settings, the data environment is often weak. But there are now innovative ways to collect data or draw on partners' datasets. In recent years, digital solutions have emerged to address data challenges. It is equally important to support governments over the long term in improving their data environment for evidence-based policy making.

Strong safeguards are needed to manage and mitigate some of the main risks associated with the digital economy's growth, including to foster trust in the utilization of digital services, and increase their uptake. These include safeguards that protect citizens from misuse of their personal data that may result in cybercrime,⁶⁴ such as breaches that can lead to personal and corporate financial losses via identity theft. Adequate data protection and cybersecurity policies are prerequisites for building trust in data systems, which is a crucial driver of the adoption of digital solutions and services.⁶⁵

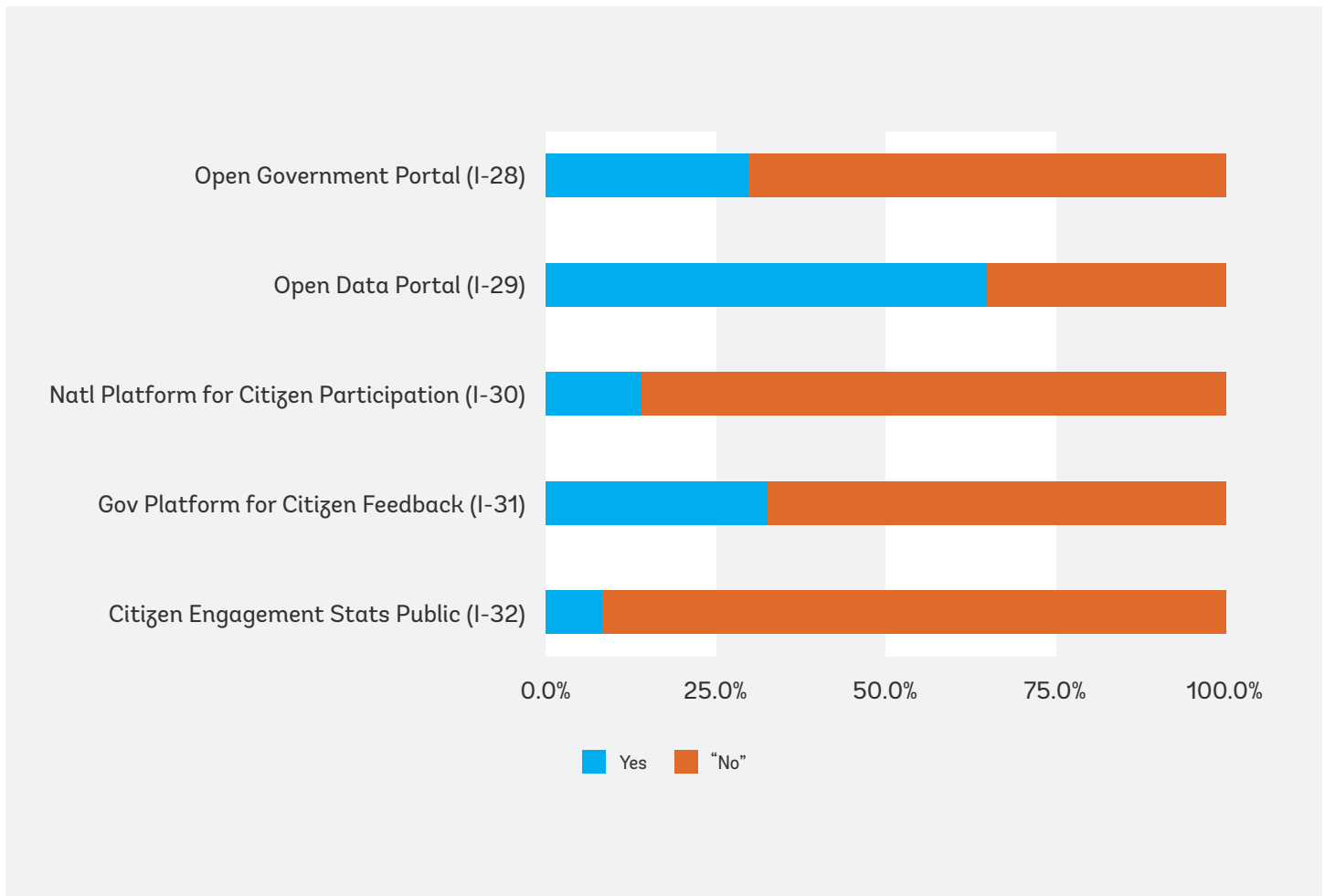
Openness and transparency in how such technologies are deployed, combined with a robust data protection and enforcement regime, will be key to maintaining confidence and trust and mitigating risks. However, the GTMI shows that only 25 percent of FCS have a data protection policy. More efforts are needed to build awareness and capacity for data protection and cybersecurity monitoring, response, and enforcement in FCS.

3.4 Citizen Engagement and CivicTech

Citizen engagement has a cyclical relationship within GovTech and digital transformation. To adopt a citizen-centric approach to service design and delivery, governments must engage with a diverse body of beneficiaries to ensure they meet needs, preferences, and capabilities.⁶⁶ Technology can enable this engagement not only in design, but also after deployment, to measure quality of services and citizen satisfaction. That feedback can be used to adapt services and solutions to better meet citizen demands.

According to the Digital Citizen Engagement Index (DCEI), a subindex of the GTMI that measures aspects of public participation platforms, citizen feedback mechanisms, open data, and open government portals, FCS perform the lowest on citizen engagement compared to other subindices. The average DCEI score for FCS is 0.219 (Group D), but the range is quite broad—see Figure 10. It should be noted that for Non-FCS, this subindex is also the lowest on average.

FIGURE 10 - DCEI Indicator Responses, FCS Economies, 2022⁶⁷



Source: GTMI 2022 data.

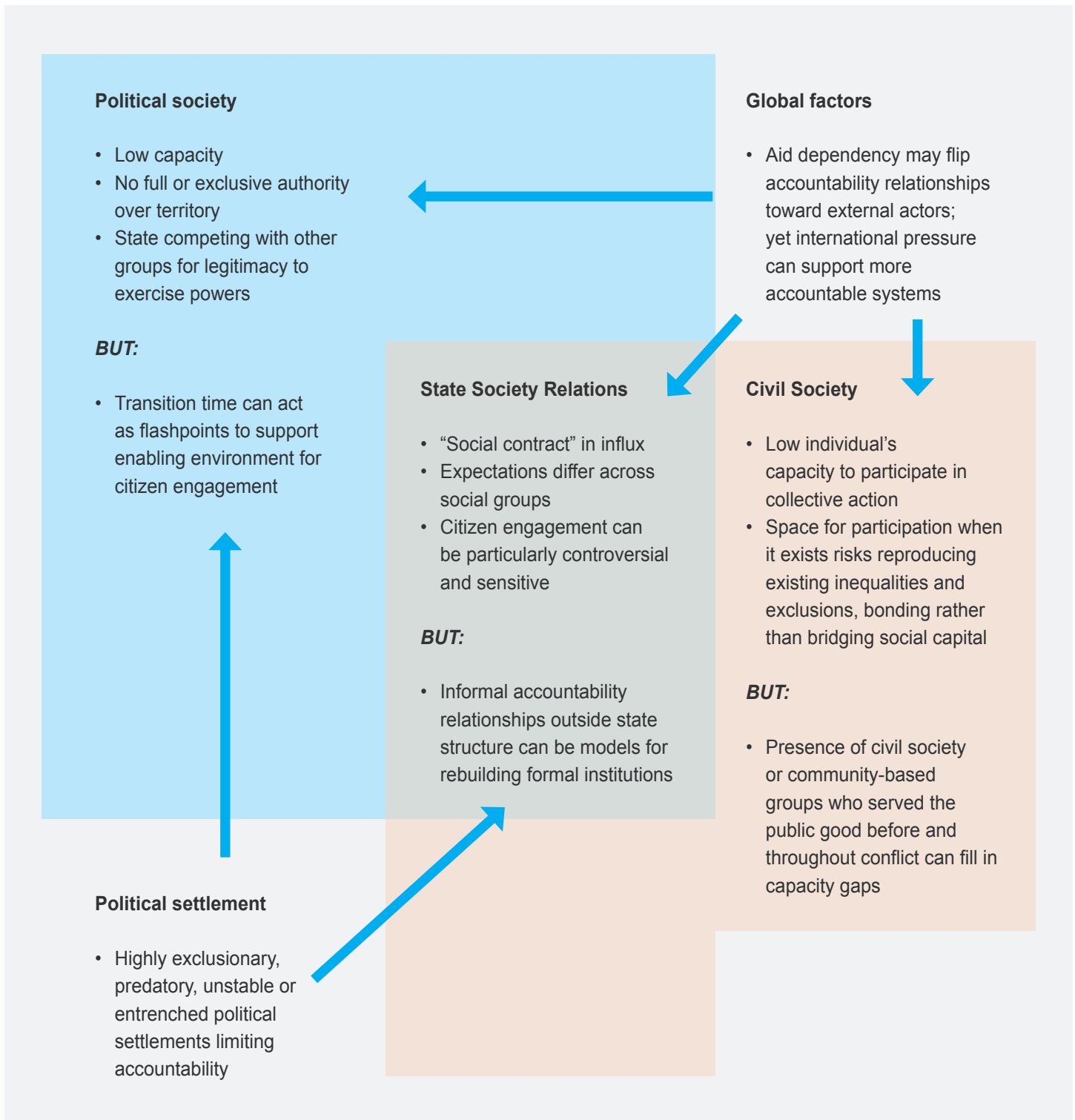
Overall, the results show significant potential for improvement. While more than half of FCS report having an Open Data portal,⁶⁸ on all other indicators FCS do not perform well. Less than 30 percent have an open government portal or a national platform that allows citizens to participate in decision-making or provide feedback on service delivery. Less than 10 percent disclose these citizen engagement statistics.

These results are not necessarily explained by lack of relevant technology, as GovTech-enabled citizen engagement solutions do not necessarily involve disruptive technology such as AI, big data, and blockchain. Functional solutions are accessible, affordable, easy to use for all, and complementary to traditional and

analog tools, so that they can be scaled quickly in the most cost-effective manner and leave no one behind. Frequently, the most effective technologies are already in use, such as community radio, television, town halls,⁶⁹ and mobile phones, which are familiar to most.

The challenges of supporting citizen engagement in fragile and conflict-affected environments are significant. In FCS, the social contract is often in flux or weak, so expectations may differ across social groups, and citizen engagement can be particularly sensitive or controversial. Figure 11 summarizes the common constraints and opportunities for citizen engagement in FCS.

FIGURE 11 - Citizen Engagement in a Fragile Environment⁷⁰



Source: Grandvoinnet, Helene, Ghazia Aslam, and Shomikho Raha. 2015. Opening the Black Box: The Contextual Drivers of Social Accountability. New Frontiers of Social Policy series. Washington, DC: World Bank.

Reforms supporting citizen engagement need to consider the factors that constrain state or citizen interest or the capacity to engage. On the government's side, in FCS where fragility is linked to closed polities and restrictions on freedom of information and freedom of speech, GovTech reforms, supporting greater transparency and accountability are not supported or actively discouraged. Concerns around privacy, internet security, and surveillance issues can take center stage. Overall, in FCS, transparency levels, for instance on key public information such as the national budget, tend to be lower than in non-FCS, thus constraining the scope for effective use of GovTech. On the citizens' side, in many fragile environments, as mentioned above, the "digital divide" might

constrain the level of participation of significant numbers of individuals or vulnerable groups.

The rise of "Digital Authoritarianism"⁷¹ has cast a shadow on the adoption of technology in some regimes. While GovTech may have positive impacts, such as facilitating citizens' voices, in some countries it can be used to silence those same voices. Shrinking civic space has translated to the online realm, with more countries limiting internet use and access. Government can use social media to inform and engage with citizens, but social media can also be used to strengthen existing power imbalances and limit inclusion, accountability, and democracy⁷² (Box 8).

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BOX 8 - The Dark Side of the Internet and the Rise of Digital Authoritarianism

Digital authoritarianism is defined as "the use of digital information technology by authoritarian regimes to surveil, repress, and manipulate domestic and foreign populations."⁷³ This includes spyware, artificial intelligence driven deepfake videos and images, social media manipulation, mass surveillance, online surveillance, and interception, blocking messaging applications, content removal, and other mechanisms. It is both a security and political issue, which has led to new action by global organizations.

Digital technologies and related policies can be used to reduce access to information, limit free expression and the ability to hold government to account, limit privacy, limit economic opportunity and access to services to businesses and citizens, limit voice and ability to interact with diaspora (Freedom House 2022). The Freedom House 2022 Freedom on the Net Index shows that globally, internet freedom has declined steadily for the past 12 years, with the sharpest drops in FCS including Libya, Myanmar, and Sudan.

Data localization and censorship are a key issue: 47 of 70 countries in the index have at times limited access to information outside national boundaries. Ten FCS are included in the Freedom on the Net Index – Ethiopia, Iraq, Lebanon, Libya, Myanmar, Nigeria, Sudan, Ukraine, Venezuela, and Zimbabwe. Of these, four are rated as "not free," while the remaining are rated as "partly free." Controlling information flows and limiting media freedom is a violation of the Universal Declaration of Human Rights. It is a reaction to the use of technologies for communication and information that can challenge state control and therefore can be threatening to the status quo (Lamoureaux and Sureau 2018).

Another issue is the use of disinformation and propaganda: authoritarian campaigns often involve accounts of real users to promote government narratives and undermine opposition.⁷⁴ Platforms such as Twitter and Facebook have been used to disseminate disinformation campaigns to undermine institutional legitimacy, influence electoral campaigns and elections, and disrupt democracy (Bennett and Livingston 2018). It should be noted that these practices are pervasive and not specific to FCV contexts, as they also have impacted presidential elections in the United States and United Kingdom's Brexit.

While international organizations are working toward policies – for instance, the European Declaration on Digital Rights and Principles⁷⁵ – the use of technology to manipulate, repress, and surveil continues to spread across countries. To curb such attempts, collaborative efforts will be needed, through new laws, regulations, and likely new technology to scan, identify, and verify legitimate use and users of the internet.

Source: Feeney and Porumbescu, 2020; Polyakova and Meserole, 2019; Lynch, 2022; and Freedom House, Freedom on the Net Index 2022: <https://freedomhouse.org/report/freedom-net/2022/countering-authoritarian-overhaul-internet>.

Still, there are real opportunities to use technology to foster Citizen Engagement in FCS; the use of mobile phones for citizen information, feedback, and participation is such an opportunity. Voice calls remain a viable and valuable method for engaging with citizens, and providing call centers for feedback, information, and participation. This channel of access is often overlooked in favor of more high-tech solutions. But in FCS contexts where mobile phone penetration is higher than internet, this remains a good option.

The increase in availability and adoption of smartphones enhance opportunities for citizen monitoring through geotagging and photography—see Box 9. Using smartphones also allows for more and new data to become available for crime and violence incidents, service gaps and issues, disaster recovery, or grievance redress. The availability of this new data can be used in FCS settings for development, response, and inclusion.

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BOX 9 - Geo-Enabling initiative for Monitoring and Supervision

The [Geo-Enabling initiative for Monitoring and Supervision \(GEMS\)](#), was launched by the World Bank FCV Group to systematically enhance monitoring and evaluation as well as supervision and third-party monitoring in FCV settings and beyond. This is achieved by building capacity among clients, partners, and World Bank teams on the ground, to leverage field-appropriate, low-cost, and open-source technology for digital real-time data collection and analysis. A central element of the method is to use “simple-enough,” low-cost tools and procedures that are appropriate for the most fragile environments with low capacity. Technically, the GEMS method is based on the use of cost-free software and common smartphones that allow for offline field data collection – no internet or network connectivity are required in the field. As of September 2022, GEMS had been implemented with close to 1,000 World Bank-funded operations in over 100 countries and more than 6,000 government staff have been trained in its use. This includes FCS of Burundi, CAR, Djibouti, Niger, Myanmar, South Sudan, and other locations.

Given the versatility of GEMS and its tools, it is also extensively used for Citizen Engagement, both in terms of gathering feedback from stakeholders as well as communicating development interventions and their outputs to citizens ([click here for specific use cases across sectors and regions](#)). As highlighted by the 2021 WBG report, *Amplifying People’s Voices: Opportunities for Mainstreaming Citizen Engagement through Digital Technologies*, the use of GEMS and KoBo has been most effective when governments or local partners have applied the skills and tools beyond the scope of World Bank projects and leveraged them for monitoring and any other citizen engagement purpose.

[Click here for specific use cases across sectors and regions.](#)

Source: World Bank Group intranet.

Mobile technology is also being used to proactively collect feedback from users, thus increasing the accountability of service providers. In Myanmar, the government took a proactive approach, reaching out to identified beneficiaries through text messages, automated calls, and agent calls to receive feedback on public services they received. Unlike standard hotline complaint mechanisms, the government managed to obtain more granular, cleaner, high volume, and actionable feedback that lends itself better to performance monitoring and systems response to problems. Ukraine implemented a similar approach as an effective mean of scaling up beneficiary engagement in a timely manner. These approaches can be applied to sectors (health and education) as well as across the whole of government and can support program design, policymaking, and service delivery.



>>> Conclusions

The findings show that, despite challenges, there are vast opportunities to improve GovTech maturity in FCS. Although there is no one-size-fits-all path for GovTech reforms in FCS, the following guidance can serve as a basis that can be adapted to each specific context.

Operating in FCV settings is far from business as usual. They are often characterized by rapidly changing circumstances, differing levels of insecurity, fragile and volatile political situations, macroeconomic instability, low institutional capacity, a weak enabling and investment climate for the private sector, and higher risks of violence against vulnerable populations. In FCS, there are significantly higher risks and costs of engagement that need to be taken into account in operational settings.

The digital divide is greater in FCS in terms of access to electricity, internet, devices, and literacy. This further constrains the level of uptake and participation of significant numbers of individuals or vulnerable groups. Barriers to access technological platforms can be financial (cost of access to platform or IT device), skill-based (digital skills), or social (literacy, gender, language). While these barriers exist across many LICs and MICs, they are likely to be higher in FCS.

Some of the following recommendations may apply to non-fragile countries, but they are even more important in fragile contexts, as described below, and thus need to be prioritized.



Overall reform design and process

GovTech reforms in FCS need to adapt the interventions to local political economy, capacity, and incentives.

Applying best practices without consideration of and adaptation to local constraints including capacity, culture, and political environment can be ineffective and contribute to failure. The examples provided show that attention to details can make a difference to the success of a GovTech initiative. GovTech interventions in FCS should match client capacity and readiness.

Unsurprisingly, the examples in this report highlight the need for project designs that can adapt to a rapidly changing environment. These changes may be political, such as a change in leadership or government that shifts priorities; resource related, opportunity to scale up or down based on available resources; or related to a change in the spread or location of open conflict, such as location of a project.

A phased approach can enable improvements across different aspects of GovTech. In environments of low GovTech maturity and active conflict, a sequential approach focused on a central part of government, such as the Ministry of Finance or a specific agency, is more likely to yield results than a whole-of-government approach. Once digitization capacity is built around core functions such as accounting and budget execution, digitization can be expanded sequentially to other parts of government. Support to service delivery could also be made a priority, since the needs are great, and the benefits could bring visibility and support both results and trust.

Overcoming country level constraints to use technology in day-to-day administration, whether institutional, political, technical, or infrastructural can be long term efforts, but incremental steps can produce desirable results. It is possible to achieve concrete results in the short term.

In addition to a phased approach, planning for scale early can save time and resources. Scalable solutions that can meet the client where they are in terms of organizational capacity and coordination, can reduce risk of large-scale projects and interventions, and provide a demonstration effect.

In all countries, the level of leadership and coordination for GovTech reforms is crucial. On the coordination front, the World Bank and more broadly the donor community need to support the government in ensuring that whatever support is provided, is in line with the government strategy and that interoperability of systems is secured or planned for.

Partnerships and peer-to-peer learning can increase the envelope and impact of GovTech interventions and reduce risk in FCS contexts. Actors contributing to violence prevention may include the state, civil society organizations, community organizations, the private sector and the donor community. Engaging a plurality of actors can support sustainability of reforms. These partnerships can provide the capacity, resources, and legitimacy which can strengthen institutions and support project implementation.⁸⁷ Working together, sharing expertise, and pooling financial resources can also reduce risks for individual donors and partners.

Focusing on change management is critical for GovTech solutions to yield efficiencies and impacts. GovTech solutions imply changes in processes, procedures, and daily operations. But in FCS contexts, it is important to manage change within the existing political context, which may be fluid. This uncertainty can make GovTech implementation more challenging. Mapping the political economy and elite bargains is advisable to comply with the motto 'do no harm'. These mappings will likely differ depending on the sector of focus and national and subnational contexts.⁷⁶ The implementation plan can be adapted based on the findings.

Table 3 below provides some approaches to address common challenges to GovTech in FCV.

TABLE 3 - Some Approaches for Overcoming Common Challenges in FCV

Common Challenges in FCV Countries	Potential approaches to address these in GovTech Efforts
<p>Political economy</p> <p>The complex interplay of politics and competing interests can undermine the government’s ability to execute and deliver GovTech reforms.</p>	<ul style="list-style-type: none"> • Conduct a stakeholder analysis, map political economy and elite bargains, and adjust implementation accordingly • Use a sequential approach focused on a central part of government to increase probability of producing results • To sustain momentum, prioritize building digitization capacity in sectors of greater need where benefits are visible and could generate support • Ensure there is a basic legal and regulatory framework to protect data and data privacy
<p>Corruption</p> <p>Complex IT procurements are attractive opportunities for corruption, and this often inhibits the successful design and rollout of GovTech initiatives.</p>	<ul style="list-style-type: none"> • Provide governments with relevant knowledge needed to negotiate contracts • Provide enhanced support on procurement rules and processes and stronger avenues for accountability. Implementation of e-procurement portals can reduce risks of corruption • Stay focused on ensuring value for money and avoid temptation to go “all digital”
<p>Capacity</p> <p>Limited state capacity can result in inadequate design, planning, procurement, management, and maintenance of GovTech initiatives.</p>	<ul style="list-style-type: none"> • Prioritize digitalization efforts by providing clear guidelines to focus efforts on a limited number of services, based on criteria such as usage and demand, convenience gains, and ease of implementation • Incorporate change management hand in hand with GovTech solutions to facilitate ownership and sustainable adoption • Leverage partnerships and peer-to-peer learning to strengthen institutions, support implementation, and reduce risks
<p>Lack of donor coordination</p> <p>This can risk duplication of efforts and fragmented and foster ineffective GovTech initiatives</p>	<ul style="list-style-type: none"> • Coordinate among donors and government to ensure that (donor) support is in line with government strategy • Ensure that interoperability of systems is secured or planned for
<p>Infrastructure gaps/Low connectivity</p> <p>Underdeveloped infrastructure can pose a challenge to GovTech initiatives that rely (too much) on widespread and stable internet access for successful deployment and use</p>	<ul style="list-style-type: none"> • Design GovTech solutions considering the digital divide —e.g., design services that do not require fast internet or smartphones to access, • Enable omnichannel access (including traditional, analog and digital) to services • Establish one stop shops or digital access points where citizens can access services with staff assistance
<p>Low digital skills</p> <p>Low levels of digital literacy among citizens may limit their ability to engage with and benefit from GovTech solutions; a lack of digital skills among civil servants limit the design and execution of GovTech</p>	<ul style="list-style-type: none"> • Training or capacity building on basic digital skills and digital literacy • Leverage youth population • Design simple user interfaces • Focus on upskilling and building capacity on both supply and demand sides to support uptake. • Outsource digital and internet-era skills that are still uncommon in the public sector

Common Challenges in FCV Countries	Potential approaches to address these in GovTech Efforts
<p>Funding Gaps/ higher costs of engagement</p> <p>Funding shortfalls impede sustainability and ability to plan into the future</p>	<ul style="list-style-type: none"> • Planning for scale early. Develop scalable solutions that meet clients where they are in terms of capacity and coordination, can reduce risk of large-scale projects and interventions, and provide a demonstration effect • Leverage digital public groups (source code of software, code books, and implementation guidance)

GovTech enablers

Many FCS have a GovTech strategy and a dedicated agency. It is important to focus efforts on functions, not forms. GovTech reforms need strong leadership, financial and human resources, and political clout to ensure that reform implementation is tailored to the needs, means, and capacity of the country. Sustaining momentum is likely to be more challenging in a fragile environment, and monitoring achievement of incremental steps is more likely to succeed than planning for radical changes in a short time.

Many FCS lack a legal and regulatory framework to guarantee the Right to information and protect data. Such laws are fundamental to enable GovTech and also protect users. Even when such laws exist, their enforcement can be lagging. This is an area which needs attention to ensure that GovTech reform can achieve its goals without abuse, as FCS countries are more likely to be vulnerable to infringement, because of their low institutional development and weak accountability systems.

Building adequate human capacity to sustain digitalization reform is a long-term effort. A focus on upskilling and building capacity on both supply and demand sides can support uptake. For initiatives to become successful, governments may have to source digital and internet-era skills that are still uncommon in the public sector. This includes positions such as UX researchers, agile product managers, and content designers. On the demand side, including activities to increase digital literacy and skills of beneficiaries may be necessary for citizen engagement and service delivery applications. Outreach and communications can foster demand side pressure and promote interest and excitement.

Core government functions

Understanding and managing possible vested interests determined to prevent changes is crucial as some actors have much to lose from the simplification and

automation of bureaucratic processes. Staying focused on ensuring value for money is key to fend off temptation to go “all digital” with solutions that are oversized for the context but are sometimes chosen because they offer opportunities for personal enrichment. Ensuring that a basic legal and regulatory framework is in place to protect data and data privacy is imperative.

Prioritization and sequencing of reforms is particularly important in FCS, where capacity tends to be low. It is prudent to start small and scale up. Ensuring that the enablers are present is key to facilitate future GovTech solutions. Scalable solutions that can meet the client where they are in terms of organizational capacity and coordination, can reduce risk of large-scale projects/interventions, and provide a demonstration effect.

Given the limited capacities in FCS, focusing on developing digital skills to utilize technologies is a wise investment. Ensuring civil servants have relevant skills to use the solutions can promote interest and support uptake, particularly in settings where technical capacity and digital skills are low. Low-cost training programs can be created through partnerships with vendors, reworking existing curricula, or via public administration training/partnerships with local universities.

Adequate financial and human resources are necessary to sustain a long-term digitization reform. Digitization is a long-term effort; whole-of-government as well as sector-based reforms including service modernization can take years. Adding in large ICT procurements can delay project progress and result in suboptimal technology.

Additional support to procurement is important, in light of the size and technical content of ICT equipment purchases. Procurement of ICT and GovTech solutions requires technical knowledge clients may not have. Selection and procurement of necessary systems, hardware, and software can be a barrier, as well as adapting those systems to the country

context and ensuring their compatibility. Providing support to each stage including market analysis, needs assessment, requirements, evaluations, and contract award can strengthen successful and transparent procurement and ensure solutions meet client needs.

Service delivery and/or citizen engagement

Using the most relevant channel to reach beneficiaries, keeping the digital divide in mind. The digital divide is likely to be more pronounced in a fragile country. Fragile countries are often LICs, with higher poverty rates and often large discrepancies between urban and rural areas in terms of digital skills or/and connectivity. They also tend to suffer from social tensions that are reflected in polarization or discrimination that can leave some people behind. It is therefore crucial to always assess which individuals or groups will be able to access any advance provided by GovTech reform, and to put in place ways for increasing the numbers that can benefit through larger access or use of different types of channels.

The use of omnichannel access to services can help bridge the gap for those without connectivity, devices, or literacy to access administrative services. One-stop shop approaches or digital access points that are staffed can provide guidance to those who need assistance or are uncomfortable with technology. Providing multiple entry points can also ensure service delivery is uninterrupted and can support accessibility.

Omnichannel is considered ideal, but also the most difficult and expensive, so consistently matching traditional and analog with digital solutions is likely to be needed at least initially. As internet access is often limited in most FCS – sometimes to a small fraction of the population – governments should prioritize mobile-based services that do not rely on internet connectivity, for example, SMS, Interactive Voice Response systems, and call-centers.

Provide information first as a foundation to providing services. Governments often prematurely embark on transactional services without first mastering the provision of clear, accessible online information. This normally leads to repeating past failures instead of achieving technological leapfrogging. Beyond its logical progression, this initial step of identifying and providing necessary information to citizens is crucial to building government capacity for citizen-centric services and citizen engagement.

Digitalizing the “right” service. Governments often struggle to decide which services to digitalize, many times leading

to hasty and ineffective or failed digitalization of services. Providing clear guidelines that encourage focusing on a limited number of services, based on criteria such as usage and demand, convenience gains, and ease of implementation, could be beneficial.

Use “digital public goods.” In fragile contexts with limited resource and capacity, leveraging digital public goods can significantly streamline digital service implementation, freeing up time and resources for governments to address other challenges. The increasing availability of the source code of software, code books, and implementation guidance that is free to access, can allow FCS and other countries at a low GovTech development level to leapfrog, building on existing lessons and solutions in an affordable manner.

Specific recommendations for countries with limited access or high levels of violence

In extreme FCV situations and those with active conflict, there may be limited opportunities to engage. In these cases, relying on partners such as UN agencies on the ground, utilizing drone technology, and engaging through virtual means can facilitate progress. The COVID-19 pandemic proved the value of virtual meetings for policy dialogue, implementation support, and capacity building. These lessons are applicable to FCV contexts.

Investing in cloud solutions such as IaaS, SaaS, and PaaS can support development and deployment of GovTech solutions, particularly in FCS that are characterized by violence. Cloud solutions for core government systems such as those adopted in Libya, Sierra Leone, Somalia, and West Bank and Gaza show that with a small recurrent operational cost, solutions can stay up to date by reducing upfront costs. The use of hybrid clouds, combining government owned and public cloud infrastructure, can also reduce costs, increase reliability and uptime, and reduce the impact of data sovereignty and data localization policies. The application of cloud solutions for core government systems, service delivery, and data management and storage provide many opportunities for FCS to apply recent technology for efficient digital government.

Leveraging technology for smarter, real time fiduciary oversight of reconstruction and recovery operations in FCV contexts is another avenue for GovTech in FCV. Table 4 below summarizes possible techniques that can be used in such situations.

TABLE 4 - Leveraging Technology for Smarter, Real Time Fiduciary Oversight of Reconstruction and Recovery Operations in FCV Contexts

Technique or approach	Pros	Cons
Geo- tagging of project activities (assigning geographic coordinates to activities in order to be able to monitor their progress on a map)	Helps ensure equity of interventions across communities, facilitates citizen feedback and oversight thereby promoting inclusion; can be combined with third-party monitoring (including geo-localized pictures taken by TPMS, etc.) and technical audit. Lessons can be learnt from early adopters of this technology in the Bank, when applying in a fiduciary context.	Requires precise geo-localizations of activities, not suitable for highly distributed projects that cannot be assigned geographical coordinates (e.g. cash transfers)
Satellite remote sensing (using latest generation remote-sensing technology from satellites or drones for daily coverage of the entire planet)	Allows for daily, high definition monitoring of physical changes in the natural or built environment.	Not suitable for projects with no visible physical outputs; Depends on reduced cloud cover; price TBD.
Distributed ledger / Blockchain (provides assurances that each transaction makes its way to the final beneficiary, as opposed to audit which works on a sample basis)	Allows direct control of activities involving multiple small transactions (such as cash transfers, Community driven development projects)	Not appropriate for large civil works projects
Big data analysis of social media postings	Allows proactive, real-time analysis of the citizen perception of projects; identification of red flags for fraud, corruption and unequal treatment of communities; complement to complaints handling mechanism	Requires an active social media scene (present in Yemen and Iraq).
Interactive feedback from users of services, via apps or social media	Allows real-time, two-way communication with beneficiary communities; targeted follow-up of red flags and complaints	May require specific software design and implementation support. Requires action on the part of the Bank/ authorities to sustain citizen interest.
Social media-based complaints handling systems	Promotes transparency accountability and inclusion	Requires necessary infrastructure and internet coverage.
Using mobile based payment applications	Facilitates implementation monitoring and control of small payments, purchases and cash handouts	Needs to be designed based on the requirements, and the banking system of the host community needs to allow it.



Notes

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2. For more information, see *GovTech: the New Frontier in Digital Government Transformation*, 2020. <https://documents1.worldbank.org/curated/en/898571612344883836/pdf/GovTech-The-New-Frontier-in-Digital-Government-Transformation.pdf>; A GovTech glossary is available from: <https://thedocs.worldbank.org/en/doc/f829445034f5f493da4d1a0b33e1b734-0350052022/original/GovTech-Glossary-022822.pdf>.
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6. “Digitalization and Development,” April 2022 – Development Committee meeting presentation to IMF-WBG Board.
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10. Brinkerhoff, 2011 and UN 2022. The UN report is available from: https://www.un.org/osaa/sites/www.un.org.osaa/files/un_advocacy_brief_en_final_justified_0.pdf.
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13. https://www.devcommittee.org/sites/dc/files/download/Documents/2022-04/Final%20on%20Digitalization_DC2022-0002.pdf.
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15. The similarities and differences of the GTMI findings as compared to other global indexes are discussed in the GTMI 2020 and 2022 Update reports, which also present the GTMI methodology in detail.
16. The participating countries are Burkina Faso, Burundi, Cameroon, Comoros, Democratic Republic of Congo, Ethiopia, Iraq, Kosovo, Lebanon, Mali, Federated States of Micronesia, Papua New Guinea, Somalia, Timor-Leste, Ukraine, Bolivarian Republic of Venezuela, West Bank and Gaza, and Zimbabwe. Meanwhile, the following economies' governments did not participate in the survey: Afghanistan, Central African Republic, Chad, Republic of Congo, Eritrea, Guinea-Bissau, Haiti, Libya, Marshall Islands, Mozambique, Myanmar, Niger, Nigeria, Solomon Islands, South Sudan, Sudan, Syrian Arab Republic, Tuvalu, and Yemen.
17. In the following GTMI graphs, the economies that are referred to as FCS are those based on the [World Bank's FY23 list](#) – see Annex 1. Based on that list, those affected by violence include Afghanistan, Burkina Faso, Cameroon, Central African Republic, Congo, Dem. Rep., Ethiopia, Iraq, Mali, Mozambique, Myanmar, Niger, Nigeria, Somalia, South Sudan, Syrian Arab Republic, Ukraine, Yemen. Meanwhile, those affected by institutional and social fragility include Burundi, Chad, Comoros, Congo, Rep., Eritrea, Guinea-Bissau, Haiti, Kosovo, Lebanon, Libya, Marshall Islands, Micronesia, Fed. Sts., Papua New Guinea, Solomon Islands, Sudan, Timor-Leste, Tuvalu, Venezuela, RB, West Bank and Gaza, Zimbabwe. Note that the 2022 GTMI data was collected prior to the Russian invasion of Ukraine, so the data for Ukraine does not yet reflect the impact of the war.
18. See Annexes for full list of countries and income level groups.
19. All Worldwide Governance Indicators were examined, that is Voice and Accountability, Political Stability No Violence, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. World Development Indicators examined include access to electricity, mobile money account ownership, broadband subscriptions, GDP per capita, mobile subscriptions, and tax revenue.
20. The literacy rate for women 15 and above in 2020 in FCS was only 58.4 percent. Source: UNESCO Institute for Statistics (UIS). UIS.Stat Bulk Data Download Service. apiportal.uis.unesco.org/bdds. Accessed October 24, 2022, via data.worldbank.org.
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28. <https://www.undp.org/ukraine/press-releases/updated-version-your-rights-mobile-application-has-been-launched-internally-displaced-persons-and-people-who-have-suffered>.
29. For indicator I-42, the category “Planned/In progress” captures countries which report that “Regulation [for data signature platforms are] approved; no Infrastructure yet” and “Regulation and Infrastructure in place. Not used yet/in progress.” “Yes” captures countries which report that data signature platforms are operational and used in practice for e-Services. See Annex 4 of the 2022 GTMI key indicators for the full list of GTMI questions.
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40. GTMI 2022.
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43. See Annex 4, 2022 GTMI key indicators, for the full list of GTMI questions.
44. Kelly et al 2023.
45. International Institute for Sustainable Development, 2012.
46. SaaS examples include Google docs and collaboration tools such as shared team files. PaaS includes both hardware and software options such as Windows Azure, Google App Engines and others. IaaS includes virtual hardware and infrastructure such as for data storage and servers.

47. Public clouds are most common and are owned and operated by a third-party service provider such as Google, Microsoft, HP, IBM and others. Private clouds are owned exclusively by one organization such as government and can be used when there are specific data sovereignty and locality regulations in place. Hybrid clouds combine public clouds with private clouds on premises which allow data exchange and applications to move across the two different cloud environments.
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67. See Annex 4 of the 2022 GTMI key indicators for the full list of GTMI questions.
68. It should also be noted that the DCEI only measures the presence of the tools and does not capture data in use, update frequency, datasets on the portals, etc.
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**Annex 1.
List of Fragile and
Conflict-Affected Situations
FY23**

#	Code	Country	FY23 FCS Status
1	AFG	Afghanistan	Conflict
2	BFA	Burkina Faso	Conflict
3	BDI	Burundi	Institutional and social fragility
4	CMR	Cameroon	Conflict
5	CAF	Central African Republic	Conflict
6	TCD	Chad	Institutional and social fragility
7	COM	Comoros	Institutional and social fragility
8	COD	Congo, Dem. Rep.	Conflict
9	COG	Congo, Rep.	Institutional and social fragility
10	ERI	Eritrea	Institutional and social fragility
11	ETH	Ethiopia	Conflict
12	GNB	Guinea-Bissau	Institutional and social fragility
13	HTI	Haiti	Institutional and social fragility
14	IRQ	Iraq	Conflict
15	KSV	Kosovo	Institutional and social fragility
16	LBN	Lebanon	Institutional and social fragility
17	LBY	Libya	Institutional and social fragility
18	MLI	Mali	Conflict
19	MHL	Marshall Islands	Institutional and social fragility
20	FSM	Micronesia, Fed. Sts.	Institutional and social fragility
21	MOZ	Mozambique	Conflict
22	MMR	Myanmar	Conflict
23	NER	Niger	Conflict
24	NGA	Nigeria	Conflict
25	PNG	Papua New Guinea	Institutional and social fragility
26	SLB	Solomon Islands	Institutional and social fragility

#	Code	Country	FY23 FCS Status
27	SOM	Somalia	Conflict
28	SSD	South Sudan	Conflict
29	SDN	Sudan	Institutional and social fragility
30	SYR	Syrian Arab Republic	Conflict
31	TLS	Timor-Leste	Institutional and social fragility
32	TUV	Tuvalu	Institutional and social fragility
33	UKR	Ukraine	Conflict
34	VEN	Venezuela, RB	Institutional and social fragility
35	WBG	West Bank and Gaza	Institutional and social fragility
36	YEM	Yemen	Conflict
37	ZWE	Zimbabwe	Institutional and social fragility



**Annex 2.
TTLs/Task Teams
Interview Questions**

1. What were the main FCV-related challenges that the project faced and how did the project address them?
2. What advice would you give TTLs who are about to prepare a GovTech project in FCV settings?
3. Which types of GovTech reform should the Bank prioritize in FCV settings (i.e. contexts of (1) prevention; (2) active crises and conflicts; and (3) situations of post-crisis transition and recovery)?
4. In your view, what is the Bank's comparative advantage in supporting GovTech projects in FCV settings? What should it do more/less of?
5. Can you think of a particularly successful GovTech project/reform in an FCV country?



Annex 3.

TTLs/Task Teams Interviewed

1. Bernhard Metz, Senior Operations Officer/FCV Digital Lead.
2. Kathrin Plangemann, Operations Manager.
3. Constantin Rusu, Senior Public Sector Specialist.
4. Jerome Bezzina, Senior Digital Development Specialist.
5. Dolele Sylla, Senior Governance Specialist.
6. Leonard Mutuku Matheka, Senior Financial Management Specialist.
7. Davit Melikyan, Senior Public Sector Specialist.
8. Nicholas Timothy Smith, Senior Financial Sector Specialist.
9. MacDonald Nyazvigo, Senior Financial Management Specialist.
10. Runyararo Gladys Senderayi, Senior Public Sector Specialist.
11. Heriniaina Mikaela Andrianasy, Senior Public Sector Specialist.
12. Tiago Carneiro Peixoto, Senior Governance Specialist.
13. Alma Nurshaikhova, Senior Public Sector Specialist.
14. Shomikho Raha, Senior Governance and Public Sector Specialist.
15. Narae Choi, Senior Urban Development Specialist.
16. Jerome Bezzina, Senior Digital Development Specialist.
17. Francesca Lamanna, Senior Economist.
18. Kamila Anna Galeza, Social Development Specialist.
19. Matthew Thomas Hulse, ETC, (Health GP).
20. Ali Habib, ETC, (Health GP).
21. Mari Shojo, Senior Education Specialist.
22. Saki Kumagai, Governance Specialist.
23. Pascaline Wanjiku Ndungu, Senior Water Supply and Sanitation Specialist.
24. Donald Mphande, Lead Financial Management Specialist.
25. Zubair Khurshid Bhatti, Lead Public Sector Specialist.
26. Naimur Rahman, Senior Consultant.
27. Saeeda Sabah Rashid, Lead Financial Management Specialist.
28. Wesley Ryan de Witt, ETC, (FCV Operational Support).



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Annex 4.
2022 GTM Key Indicators

Ind	GTMI Key indicators	Points	Weight
Core Government Systems Index (CGSI)			
I-1	Is there a cloud platform available for all government entities?	0 - 2	W1
I-2	Is there a government enterprise architecture framework?	0 - 2	W1
I-3	Is there a government interoperability framework?	0 - 2	W1
I-4	Is there a government service bus platform?	0 - 2	W1
I-5	Is there an operational FMIS in place to support core PFM functions?	0 - 2	W3
I-6	Is there a TSA supported by FMIS to automate payments and bank reconciliations?	0 - 2	W3
I-7	Is there a Tax Management Information System in place?	0 - 2	W3
I-8	Is there a Customs Management Information System in place?	0 - 2	W3
I-9	Is there a Human Resources Management Information System with self-service portal?	0 - 2	W3
I-10	Is there a Payroll System (MIS) linked with HRMIS?	0 - 2	W3
I-11	Is there a Social Insurance system providing pensions and other SI programs?	0 - 2	W1
I-12	Is there an e-Procurement portal?	0 - 2	W2
I-13	Is there a Debt Management System (DMS) in place? (Foreign and Domestic debt)?	0 - 2	W3
I-14	Is there a Public Investment Management System (PIMS) in place?	0 - 2	W2
I-15	Is there a government Open-Source Software (OSS) policy/action plan for public sector?	0 - 2	W2
I-16	UN Telecommunication Infrastructure Index (TII)	0 - 1	E1
I-17	Does government have a national strategy on disruptive / innovative technologies?	0 - 2	W2
Public Service Delivery Index (PSDI)			
I-18	UN Online Service Index (OSI)	0 - 1	E1
I-19	Is there an online public service portal? (Also called "One-Stop Shop" or similar)	0 - 2	W2
I-20	Is there a Tax online service portal?	0 - 2	W2
I-21	Is e-Filing available for tax and/or customs declarations?	0 - 2	W2
I-22	Are e-Payment services available?	0 - 2	W2
I-23	Is there a Customs online service portal (Single Window)?	0 - 2	W2
I-24	Is there a Social Insurance/Pension online service portal?	0 - 2	W2
I-25	Is there a Job portal?	0 - 2	W2

Ind	GTMI Key indicators	Points	Weight
Public Service Delivery Index (PSDI)			
I-26	Is there a digital ID that enables remote authentication for (fully) online service access	0 / 1	E2
Digital Citizen Engagement Index (DCEI)			
I-27	UN E-Participation Index (EPI)	0 - 1	E1
I-28	Is there an Open Government web site / portal?	0 / 1	W2
I-29	Is there an Open Data portal?	0 / 1	W2
I-30	Are there national platforms that allow citizens to participate in policy decision-making?	0 / 1	W1
I-31	Are there government platforms that allow citizens to provide feedback on service delivery?	0 / 1	W1
I-32	Does the government publish its citizen engagement statistics and performance regularly?	0 / 1	W2
GovTech Enablers Index (GTEI)			
I-33	Is there a government entity focused on GovTech (digital transform, whole-of-government)?	0 - 2	W1
I-34	Is there a dedicated government entity in charge of data governance or data management?	0 - 2	W1
I-35	Is there a GovTech / digital transformation strategy?	0 - 3	W3
I-36	Is there a whole-of-government approach to public sector digital transformation?	0 - 2	W1
I-37	Are there RTI laws to make data/information available to the public online or digitally?	0 - 2	W3
I-38	Is there a data protection / privacy law?	0 - 2	W3
I-39	Is there a data protection authority?	0 - 2	W3
I-40	Is there a national ID (or similar foundational ID) system?	0 / 1	E2
I-41	Are records in the national ID system stored in a digitized (electronic) format?	0 / 1	E2
I-42	Is there a digital signature regulation and PKI to support service delivery?	0 - 3	W3
I-43	ITU Global Cybersecurity Index (GCI)	0 - 1	E1
I-44	UN Human Capital Index (HCI)	0 - 1	E1
I-45	Is there a government strategy / program to improve digital skills in the public sector?	0 - 2	W1
I-46	Is there a strategy and/or program to improve public sector innovation?	0 - 2	W1
I-47	Is there a government entity focused on public sector innovation?	0 - 2	W1
I-48	Is there a government policy to support GovTech startups and private sector investments?	0 / 1	W2

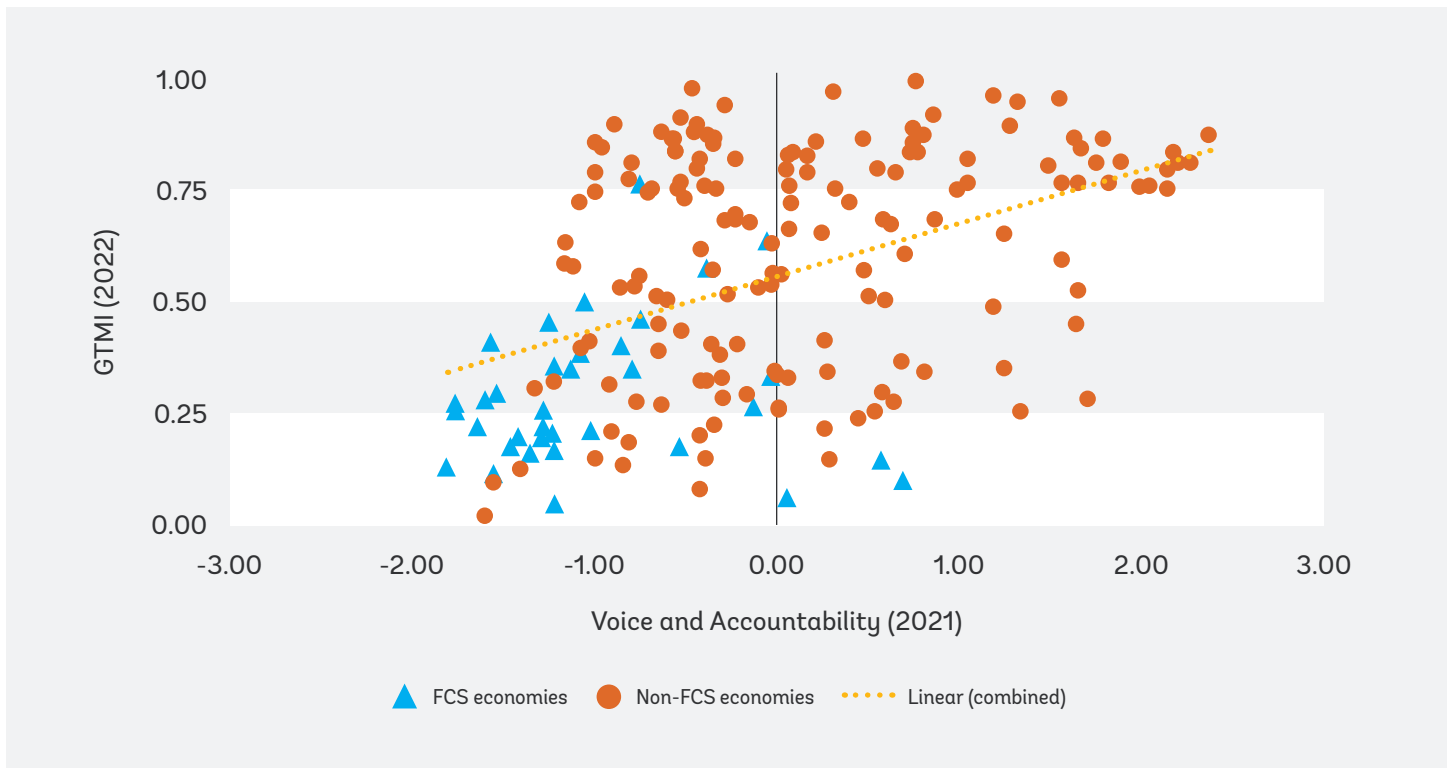
Source: World Bank data.

Note: The 2022 GTMI is based on 48 key indicators, including eight external indicators.

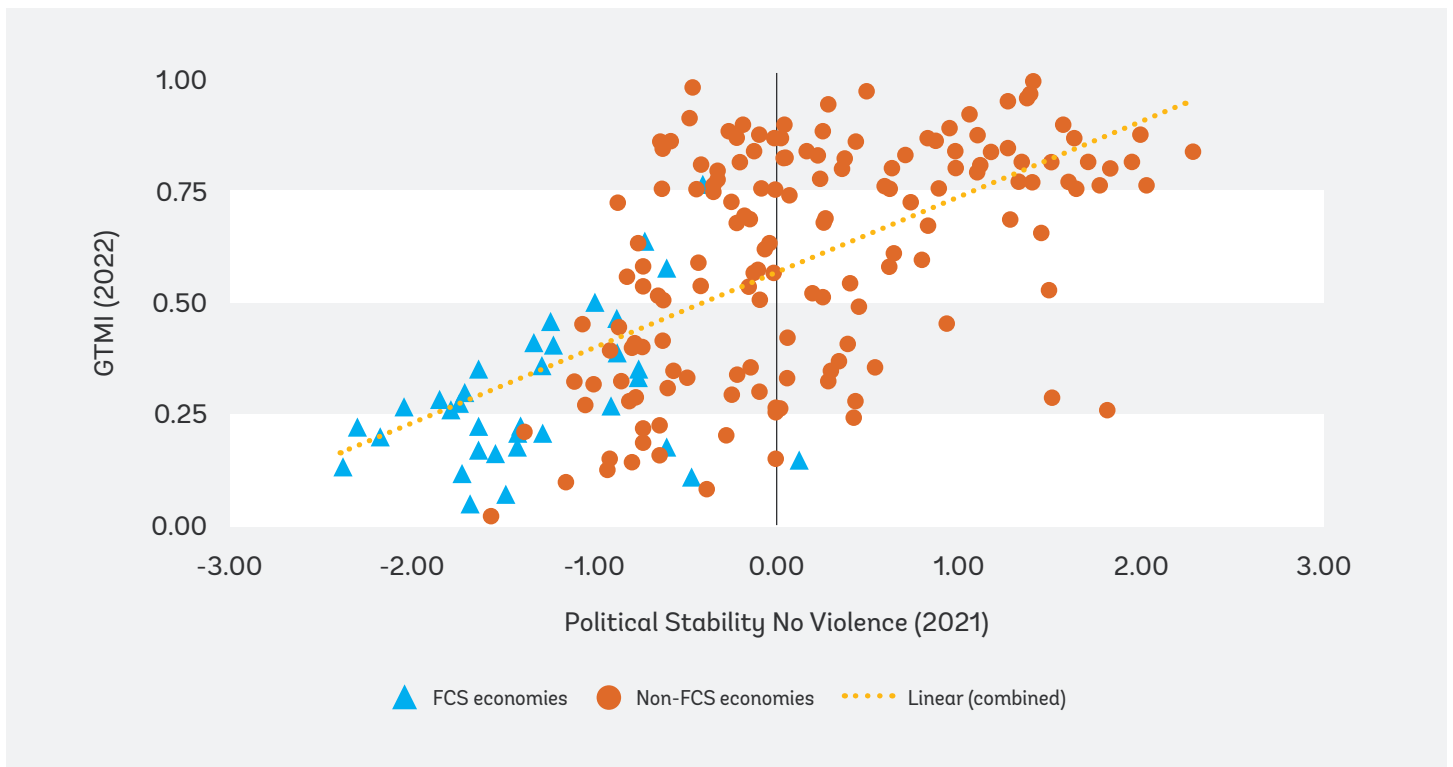


Annex 5. GTMI Data Analysis in FCS

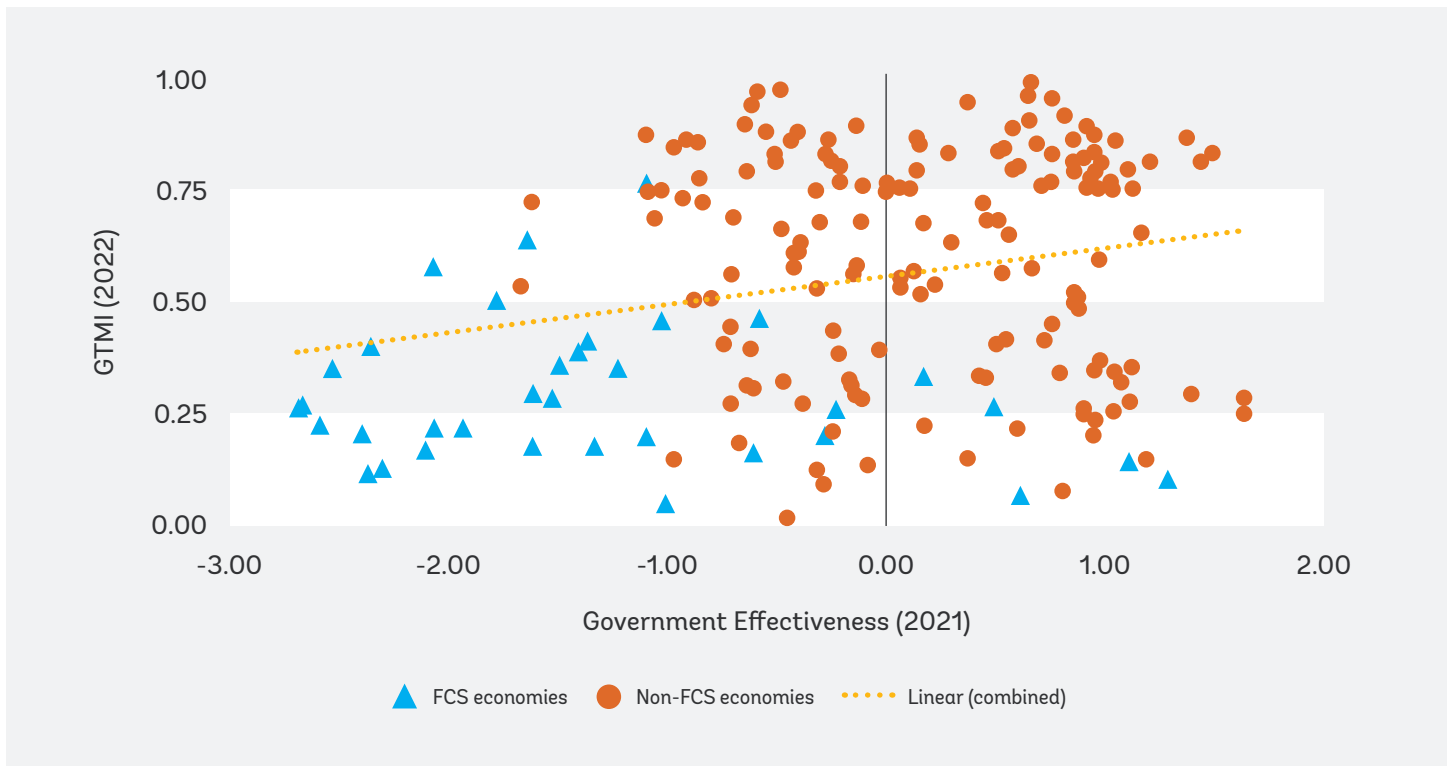
Plot of GovTech Maturity against WGI Voice and Accountability



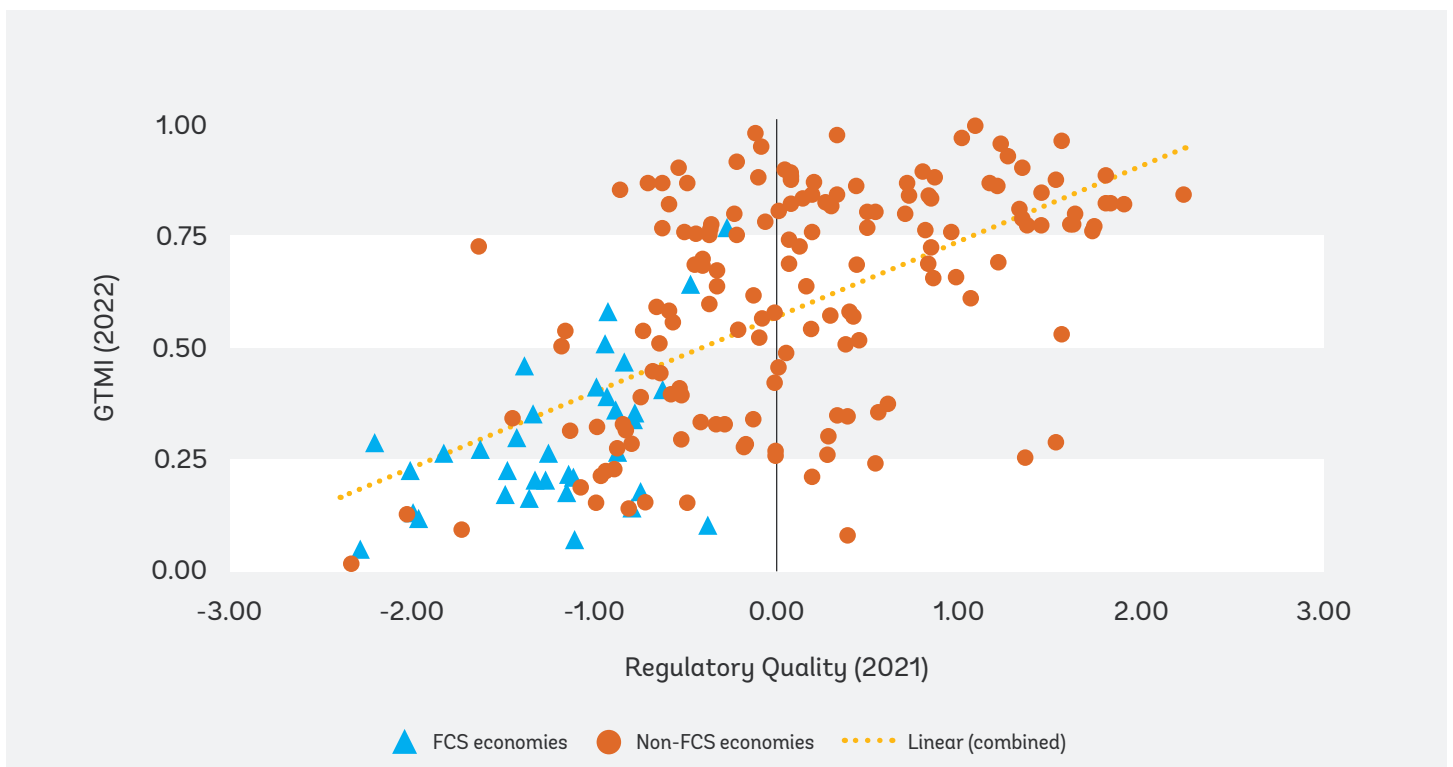
Plot of GovTech Maturity against WGI Political Stability No Violence



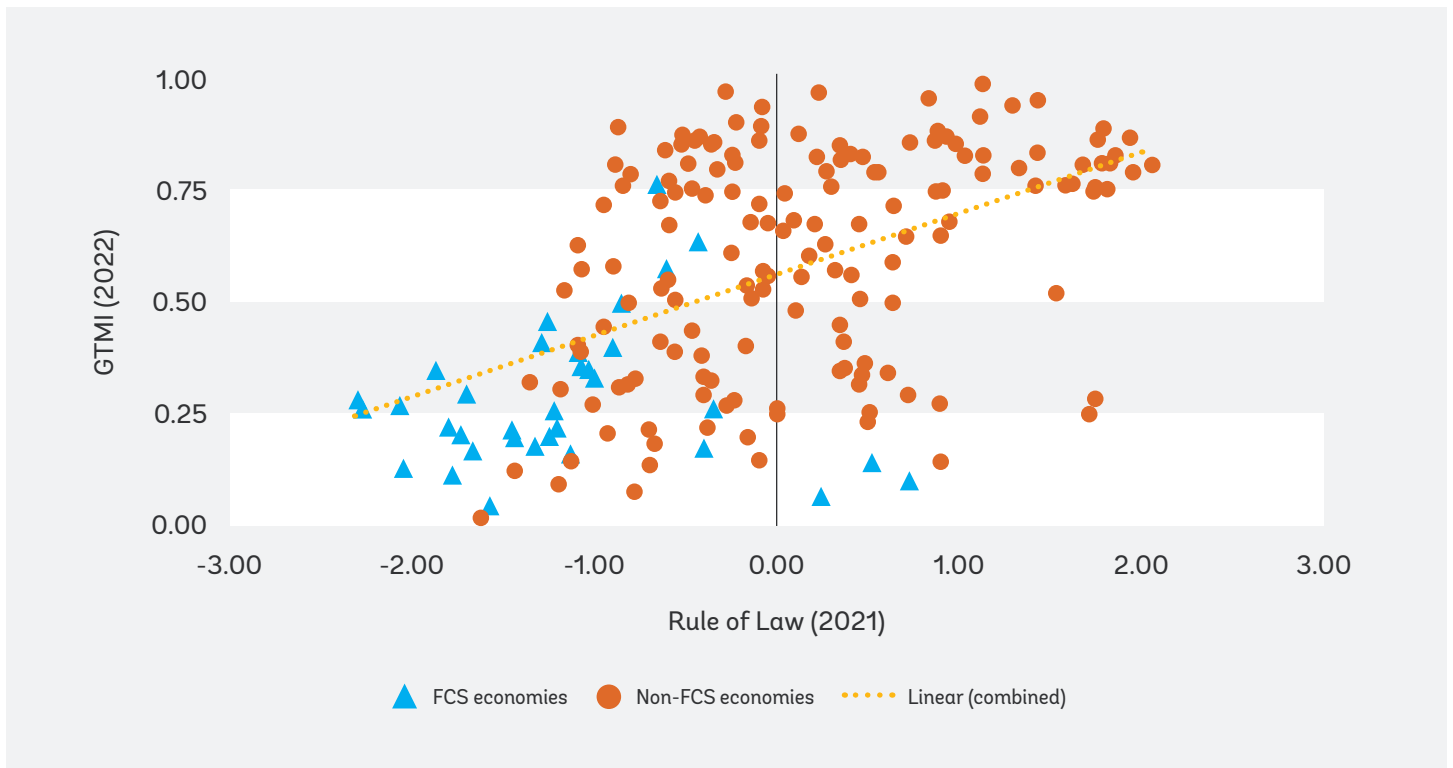
Plot of GovTech Maturity against WGI Government Effectiveness



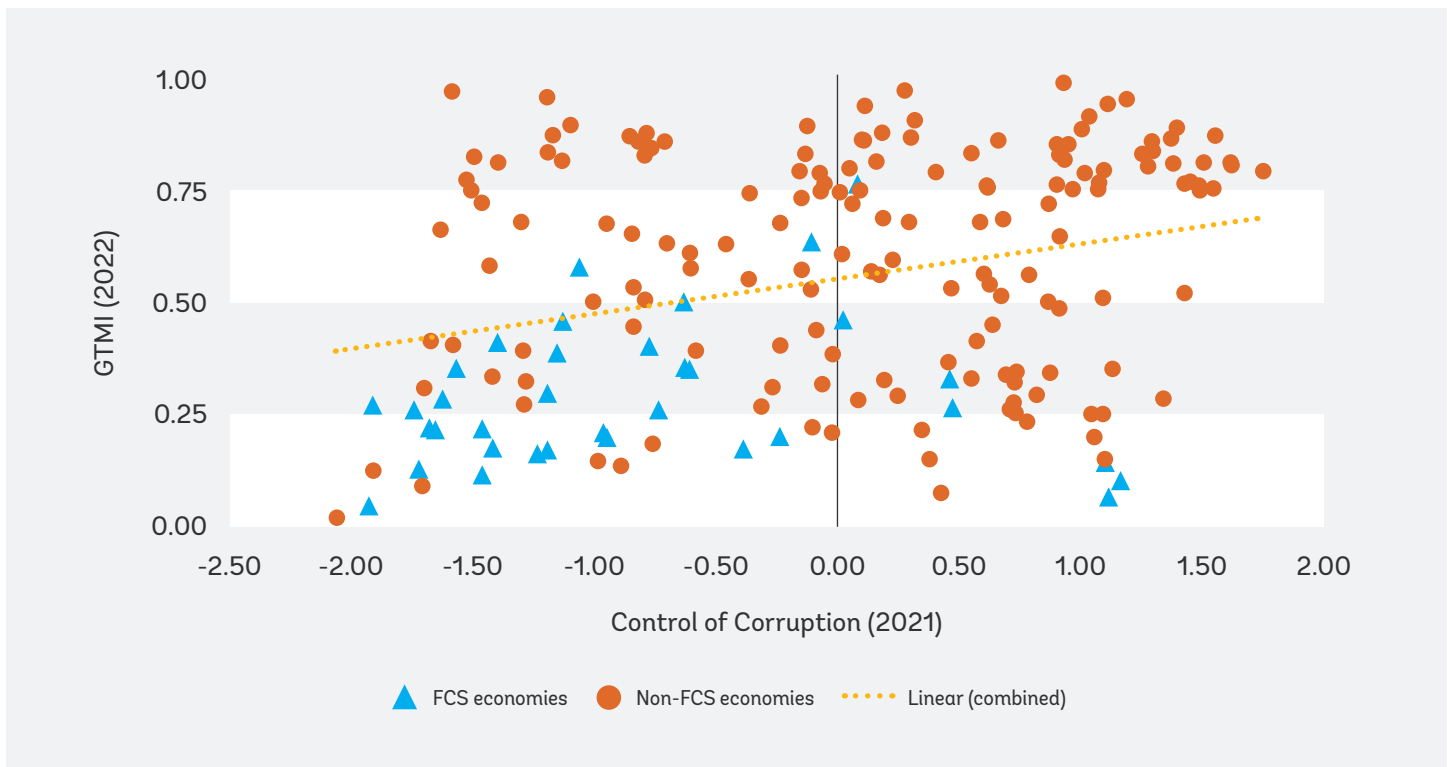
Plot of GovTech Maturity against WGI Regulatory Quality



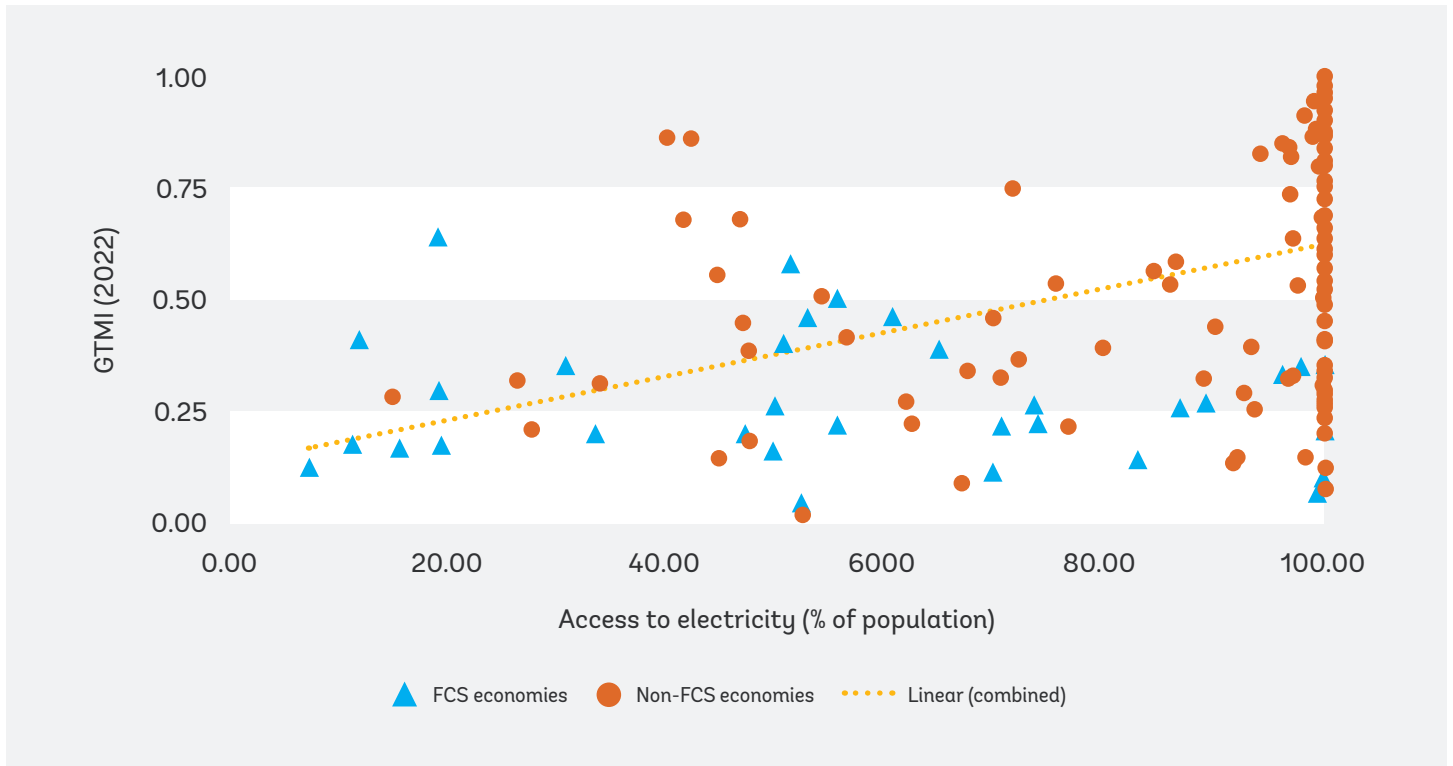
Plot of GovTech Maturity against WGI Rule of Law



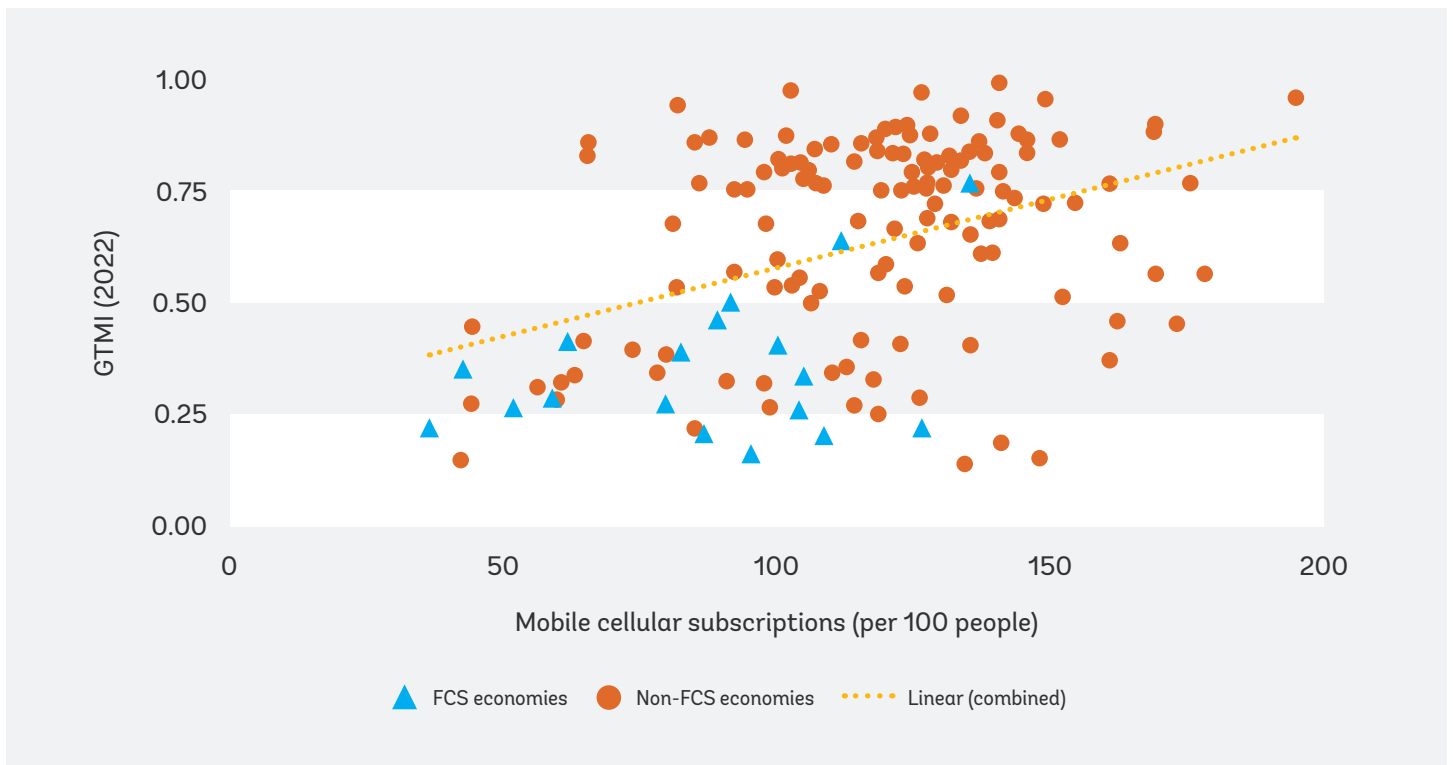
Plot of GovTech Maturity against WGI Control of Corruption



Plot of GovTech Maturity against Access to Electricity (% of Population)



Plot of GovTech Maturity against Mobile Cellular Subscriptions (Per 100 People)



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Annex 6.

Brief on GTMI and Methodology



The following explainer is taken from the GTMI explainer developed by the team and demonstrated on the GovTech website [here](#) and [here](#).

What is the GTMI?

The **GovTech Maturity Index (GTMI)** measures the key aspects of *four GovTech focus areas*: enhancing service delivery, supporting core government systems, mainstreaming citizen engagement, and GovTech enablers, based on the World Bank's definition of GovTech. The objective of the GTMI is to assist practitioners in the design of new digital transformation projects.

The GTMI is the simple average of the normalized scores of four components. The 2020 GTMI calculations were based on the following components:

- **CGSI:** The Core Government Systems Index (15 indicators) captures the key aspects of a whole-of-government approach, including government cloud, interoperability framework and other platforms.
- **PSDI:** The Public Service Delivery Index (9 indicators) measures the maturity of online public service portals, with a focus on citizen centric design and universal accessibility.

- **DCEI:** The Digital Citizen Engagement Index (12 indicators) measures aspects of public participation platforms, citizen feedback mechanisms, open data, and open government portals.
- **GTEI:** The GovTech Enablers Index (15 indicators) captures strategy, institutions, laws, and regulations, as well as digital skills, and innovation policies and programs, to foster GovTech.

The 2022 GTMI update is based on the same four components, but the number of key indicators used for the calculation of the GTMI groups are slightly different due to the inclusion of several new indicators.

How is the GovTech Maturity Index different from other indexes?

Although existing digital government surveys and indices are useful to monitor the progress in digital government initiatives and good practices in general, one of them is assessing progress in all of the four GovTech focus areas. The GTMI addresses this gap, while incorporating the external indices to complement each other.

Based on the comparative analyses with relevant indices, it can be concluded that **the indicators defined for the**

GTMI produce consistent results when compared to other relevant indicators of digital government and measure the less known dimensions related to GovTech foundations adequately.

Who might find this Index useful?

The target audience of the GTMI report are government officials (policymakers and technical specialists), World Bank task teams, and other practitioners involved in the design and implementation of GovTech solutions, and academia.

How is the 2022 GTMI update different from the first GTMI?

The GTMI Team followed a different approach for the 2022 GTMI update.

- First, the GTMI indicators were revised and extended to explore the performance of existing platforms and cover less known areas in consultation with nine relevant organizations ([UN/EGDI](#), [OECD](#), [ITU/GCI](#), [EU](#), [UNU](#), [CAF](#), [IMF](#), GDSI, [Oxford Insights](#)) and 10 World Bank practices/groups ([DD](#), [ID4D](#), [G2Px](#), [MTI](#), ITS, [DEC](#), [SPJ](#), [EDU](#), [LEGOP](#), [DGRA](#)) from November 2021 to January 2022.
- The 2022 GTMI survey includes 40 updated/expanded GovTech indicators measuring the maturity of four GovTech focus areas. Additionally, 8 highly relevant external indicators measured by other relevant indexes, including all three components of the United Nations (UN) [e-Government Development Index](#) (EGDI), the UN e-Participation Index (EPI), the ITU's [Global Cybersecurity](#)

[Index](#) (GCI) and three relevant indicators from the [Identification for Development](#) (ID4D) dataset, are used in the calculation of GTMI.

- For the 2022 update, a Central Government (CG) GTMI online survey was launched in March 2022 and 850+ officials from 164 countries agreed to join this exercise to reflect the latest developments and results of their GovTech initiatives. Additionally, a Subnational Government (SNG) GTMI online survey was launched in parallel as a pilot implementation for interested countries. Finally, a data validation phase was included to benefit from the clarifications and updates of all survey participants while checking the survey responses and calculating the GTMI scores and groups.
- The data collection and validation phases of the 2022 GTMI surveys were completed by the end of August 2022. The CG GTMI data was collected through the direct participation of **135 country teams** and remotely for **63 non-participating economies**. Additionally, **122 subnational government entities** (states, municipalities) **from 17 countries** submitted their SNG GTMI responses in addition to their CG GTMI data.
- A data validation phase was included to benefit from the clarifications and updates of all survey participants while checking the survey responses and calculating the GTMI scores and groups.
- It is important to note that the GTMI does not capture the quality or effectiveness of these indicators but relies on survey responses.



**Annex 7.
List of Income Levels for
FCS and Non-FCS (excluding
High Income Economies)**



High Income Economies:

Andorra, Antigua and Barbuda, Australia, Austria, Bahamas, Bahrain, Barbados, Belgium, Brunei Darussalam, Canada, Chile, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong SAR, China, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Rep., Kuwait, Latvia, Liechtenstein, Lithuania, Luxembourg, Macao SAR, China, Malta, Monaco, Nauru, Netherlands, New Zealand, Norway, Oman, Panama, Poland, Portugal, Qatar, Romania, San Marino, Saudi Arabia, Seychelles, Singapore, Slovak Republic, Slovenia, Spain, St. Kitts and Nevis, Sweden, Switzerland, Taiwan (China), Trinidad and Tobago, United Arab Emirates, United Kingdom, United States of America, Uruguay.

Upper-Middle Income Economies:

Albania, Argentina, Armenia, Azerbaijan, Belarus, Belize, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria, China, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, Equatorial Guinea, Fiji, Gabon, Georgia, Grenada, Guatemala, Guyana, Iraq, Jamaica, Jordan, Kazakhstan, Kosovo, Libya, Malaysia, Maldives, Marshall Islands, Mauritius, Mexico, Moldova, Montenegro, Namibia, North Macedonia, Palau, Paraguay, Peru, Russian Federation, Serbia, South Africa, St. Lucia, St. Vincent and the Grenadines, Suriname, Thailand, Tonga, Türkiye, Turkmenistan, Tuvalu, Venezuela, RB.

Lower-Middle Income Economies:

Algeria, Angola, Bangladesh, Benin, Bhutan, Bolivia, Cabo Verde, Cambodia, Cameroon, Comoros, Congo, Rep., Côte d'Ivoire, Djibouti, Egypt, El Salvador, Eswatini, Ghana, Haiti, Honduras, India, Indonesia, Iran, Kenya, Kiribati, Kyrgyz Republic, Lao PDR, Lebanon, Lesotho, Mauritania, Micronesia, Fed. Sts., Mongolia, Morocco, Myanmar, Nepal, Nicaragua, Nigeria, Pakistan, Papua New Guinea, Philippines, Samoa, São Tomé and Príncipe, Senegal, Solomon Islands, Sri Lanka, Tajikistan, Tanzania, Timor-Leste, Tunisia, Ukraine, Uzbekistan, Vanuatu, Vietnam, West Bank and Gaza, Zimbabwe.

Low Income Economies:

Afghanistan, Burkina Faso, Burundi, Central African Republic, Chad, Congo, Dem. Rep., Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Korea, DPR, Liberia, Madagascar, Malawi, Mali, Mozambique, Niger, Rwanda, Sierra Leone, Somalia, South Sudan, Sudan, Syrian Arab Republic, Togo, Uganda, Yemen, Zambia.

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