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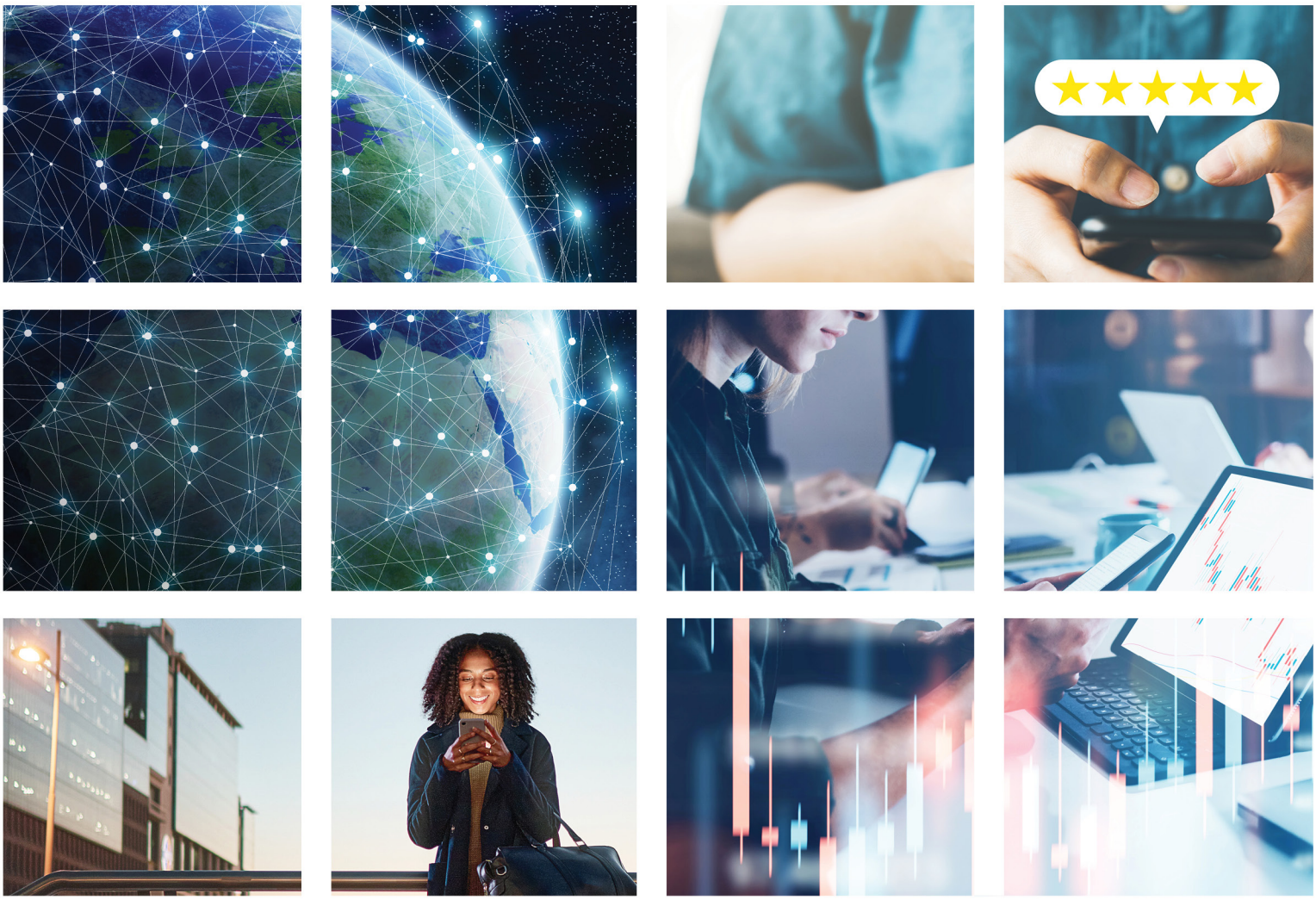
International Telecommunication Union

Benchmark of fifth-generation collaborative digital regulation 2023: Global and regional trends



Benchmark of fifth-generation collaborative digital regulation 2023: Global and regional trends

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For more information on collaborative digital regulation concepts and the full fifth-generation (G5) benchmark dataset, please visit the G5 Accelerator (gen5.digital) or contact treg@itu.int.

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Foreword

It is with pleasure that I present this technical paper, a companion piece to the 2023 edition of the G5 Benchmark. As we explore paths to navigate digital transformation, this paper serves as a critical lens, offering insights into the evolving digital governance landscape.

The 2023 G5 Benchmark edition is a testament to the relentless efforts of regulators and policy-makers and the progress that they are making in enhancing national policy, legal and governance frameworks for digital transformation. In addition to giving an overview of trends in national enabling environments in all regions and globally, this edition also explores their relationship with the development of the digital ecosystem. Our analysis also provides a snapshot of digital governance patterns across different development profiles, including in least developed countries (LDCs), landlocked developing countries (LLDCs) and small islands developing States (SIDS).

This new edition contains the latest information for 193 countries and economies and, following an established methodology, it monitors changes over the past two years. But beyond statistics, this work allows us to focus on the evolution of enabling environments for digital economies and societies, which can offer practical perspectives for national ICT regulators and decision-makers.

I hope this paper proves a valuable resource to those navigating the complexities of our increasingly digital world.

Dr Cosmas Luckyson Zavazava
Director Telecommunication Development Bureau,
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Executive summary

In 2020, the International Telecommunication Union (ITU) launched a new approach to assess regulation needed to support the advancement of digital transformation, labelled fifth-generation (G5) collaborative digital regulation. The G5 concept was defined within a framework of generations of information and communication technology (ICT) regulation, evolving from the initial command and control approach that regulated public monopolies to the collaboration across institutions and stakeholders to oversee the development of a competitive digital economy. Based on the feedback received after publishing the first version of the Benchmark of fifth-generation collaborative digital regulation (G5 Benchmark) in 2020, ITU refined it in 2021, changing the measurement structure and increasing the number of indicators, which were extracted from a wider range of data sources. The 2023 edition of the G5 Benchmark contains the latest information for the same sample of 193 countries and economies as in the 2021 edition. It also preserves the same structure and methodology, making it possible to monitor the changes of each country in the preceding two years.

As in the previous edition, the G5 Benchmark overall score is calculated based on seventy indicators grouped around four pillars: (i) national collaborative governance; (ii) policy design principles in the digital arena; (iii) digital development toolbox; and (iv) digital economic policy agenda:

- **Pillar I: National collaborative governance** measures the breadth and depth of cross-sector collaboration among the ICT regulator, peer regulators and policy-makers. It factors in the institutional set-up (agencies and their mandates), as well as practices around regulatory collaboration, formal and informal, across 16 areas, including consumer protection, spectrum management, education and e-waste.
- **Pillar II: Policy design principles in the digital arena** focuses on the design of frameworks and their coherence. As all sectors' regulation shifts from rules to principles, new elements have become paramount in ensuring that regulatory processes and policy implementation are delivering as they should, from applying tools for evidence-based decision-making to providing space for regulatory experimentation, strengthening the accountability of multistakeholder policy initiatives, and ethics.
- **Pillar III: Digital development toolbox** focuses on the tools needed by regulators to stimulate development of a sustainable digital economy. It considers new consumer needs, business models and market dynamics. The G5 toolbox covers areas such as cybersecurity, data protection, emergency telecommunications and cross-sector infrastructure sharing. The toolbox also includes universal instruments geared towards the achievement of medium- to long-term social and economic goals, such as youth employment and sustainable consumption and production, where digital has a central role to play.
- **Pillar IV: Digital economic policy agenda** features country policies and interventions for promoting the digital economy, entrepreneurship and investment. The areas covered range from an innovation framework to digital transformation, sector taxation and adherence to international and regional integration initiatives.

The full list of indicators in each pillar and the scoring methodology are contained in Appendix 1.

The 2023 edition of the G5 Benchmark was calculated for 193 countries and economies. In addition, with the new and better information available, it has been possible to revise scores from 2021. Once tabulated, countries and economies were categorized according to the highest threshold met: (i) Leading (for scores between 79 and 100); (ii) Advanced (for scores

between 60 and 79); (iii) Transitional (for scores between 30 and 60); and (iv) Limited (for scores under 30). Some 18 countries, or 10.9 per cent of the total 193 countries and economies, have a G5 score corresponding to the Leading threshold; 58 countries, or 28.5 per cent, have an Advanced score; 84 countries, or 43.5 per cent, have a Transitional score; and 33 countries, or 17.1 per cent, have a Limited score. This indicates that, while a sizable group of countries, i.e. 76 countries or 39.4 per cent, have met the Leading or Advanced threshold according to the G5 Benchmark, most countries still need to fulfil the conditions reflected in those levels (see Table A).

Table A: G5 Benchmark – Number of countries by threshold, 2021 and 2023

Region	Leading		Advanced		Transitional		Limited		Total
	2021	2023	2021	2023	2021	2023	2021	2023	
Africa	0	0	5	7	23	25	16	12	44
Americas	1	2	9	10	16	19	9	4	35
- North America	1	1	1	1	0	0	0	0	2
- Latin America and the Caribbean	0	1	8	9	16	19	9	4	33
Arab States	0	1	3	5	11	11	8	5	22
Asia and the Pacific	3	7	9	7	13	14	13	10	38
Commonwealth of Independent States	0	0	0	2	6	6	3	1	9
Europe	5	8	29	27	10	9	1	1	45
World	9	18	55	58	79	84	50	33	193

Source: ITU, G5 Benchmark 2023, gen5.digital

The comparison of the thresholds with respect to the previous edition of the G5 Benchmark already points to the progress made in the past two years: there has been a significant increase in the number of countries categorized as Leading, i.e. up to 18 in 2023 from nine in 2021, combined with a sizeable reduction in the number of countries categorized as Limited, i.e. down to 33 in 2023 from 50 in 2021. The 18 Leading countries are: Austria, Australia, Canada, Colombia, Estonia, Finland, Germany, India, Malaysia, Netherlands (Kingdom of the), New Zealand, Philippines, Norway, Portugal, Republic of Korea, Saudi Arabia, Singapore, and United Kingdom, . Of note, a total of six countries from Latin America and the Caribbean, the Arab States and Asia and the Pacific have transitioned to Leading status.

Europe and North America remain the only regions with an average G5 Benchmark at the Leading or Advanced threshold, reflecting the prevalence of national formal collaboration mechanisms and institutions, the implementation of well-developed policy design principles, the implementation of digital economy enabling frameworks and a digitalization development agenda. Some emerging regions also recorded significant increases in the G5 Benchmark score compared to 2021, such as Africa (43.08 from 37.50), Latin America and the Caribbean (48.18 from 44.37), the Arab States (44.86 from 38.46), Asia and the Pacific (49.39 from 43.86) and the Commonwealth of Independent States (CIS) (44.36 from 38.27) (see Table B).

Table B: G5 Benchmark – Regional averages, 2021 and 2023

Region	G5 Benchmark (max: 100)		% Change
	2021	2023	
Africa	37.50	43.08	14.88
Americas	46.46	50.10	7.83
- North America	80.94	81.87	1.14
- Latin America and the Caribbean	44.37	48.18	8.57
Arab States	38.46	44.86	16.63
Asia and the Pacific	43.86	49.39	12.62
Commonwealth of Independent States	38.27	44.36	15.91
Europe	65.35	69.45	6.27
World	47.03	52.01	10.57

Source: ITU, G5 Benchmark 2023, gen5.digital

When the G5 Benchmark is broken down by pillar, North America and Europe stand as the highest achievers for Pillar I, national regulatory governance, followed by Latin America and the Caribbean. It is important to point out that even the top-scoring regions remain a way off the maximum score of 29.63, suggesting that all regions are faced with the important task of adopting and localizing best practices. In the case of Pillar II, policy design principles in the digital arena, North America scores close to the maximum with 16.67 against a maximum of 18.52, followed by Europe with 14.51, with remaining regions lagging further behind. For Pillar III, digital development toolbox, North America again scores highest with 24.92 against a maximum of 29.63, followed by Europe with 20.61 and the other regions, which remain at lower levels. Finally, there is a similar situation with Pillar IV, digital economy policy agenda, where North America and Europe again lead the way, this time followed by Asia and the Pacific (see Table C).

Table C: G5 Benchmark – Regional averages by pillar, 2021 and 2023

Region	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development tool-box (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Africa	13.24	15.43	7.19	7.78	10.34	12.15	6.74	7.73
Americas	15.26	16.06	10.42	11.06	11.92	13.54	8.86	9.45
- North America	21.76	21.76	16.67	16.67	24.92	24.92	17.59	18.52
- Latin America and the Caribbean	14.87	15.71	10.04	10.72	11.13	12.85	8.33	8.90
Arab States	12.46	14.94	7.15	8.12	11.34	13.12	7.51	8.68

Table C: G5 Benchmark – Regional averages by pillar, 2021 and 2023 (continued)

Region	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development tool-box (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Asia and the Pacific	14.28	15.57	8.89	9.70	11.96	14.30	8.72	9.82
Commonwealth of Independent States	9.36	11.52	8.44	9.57	11.73	13.70	8.74	9.57
Europe	19.22	20.00	13.87	14.51	18.40	20.61	13.86	14.33
World	14.94	16.40	9.72	10.44	13.01	14.98	9.36	10.19

Source: ITU, G5 Benchmark 2023, gen5.digital

In terms of groups of vulnerable countries, attention is focused on least developed countries (LDCs), landlocked developing countries (LLDCs) and small island developing States (SIDS). While scoring lower averages than the world leaders, it is encouraging that scores for LDCs, LLDCs and SIDS have increased significantly since 2021, with LLDCs having made most progress in adopting best institutional and regulatory practices (Table D).

Table D: G5 Benchmark – Averages for groups of vulnerable countries, 2021 and 2023

Group of vulnerable countries	G5 Benchmark (max: 100)		% Change
	2021	2023	
Least developed countries	30.97	36.70	18.50
Landlocked developing countries	38.95	43.93	12.79
Small islands developing States	30.84	34.19	10.84

Source: ITU, G5 Benchmark 2023, gen5.digital

Analysis by pillar demonstrates that the groups of vulnerable countries are lagging behind in all main areas. Again, LLDCs appear to lead the remaining groups of vulnerable countries in all fields (Table E).

Table E: G5 Benchmark – Averages by pillar for groups of vulnerable countries, 2021 and 2023

Group of vulnerable countries	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Least developed countries	11.25	13.22	6.38	7.29	8.07	9.84	5.26	6.35
Landlocked developing countries	13.17	15.08	8.25	8.78	10.44	12.20	7.10	7.88

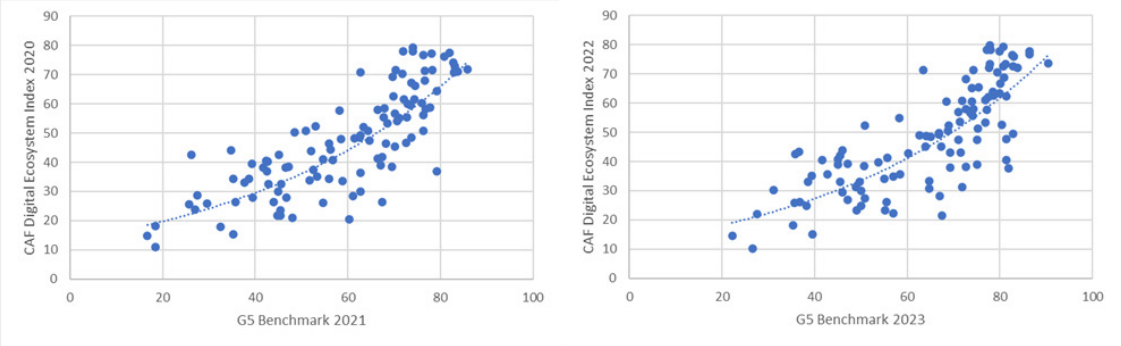
Table E: G5 Benchmark – Averages by pillar for groups of vulnerable countries, 2021 and 2023 (continued)

Group of vulnerable countries	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Small islands developing States	11.63	12.29	6.97	7.59	7.03	8.42	5.21	5.89

Source: ITU, G5 Benchmark 2023, gen5.digital

At the aggregate level, the G5 Benchmark score is, as expected, associated with high digital-economy development, as measured through the Development Bank of Latin America and the Caribbean (CAF) Digital Ecosystem Development Index (see Figure A).

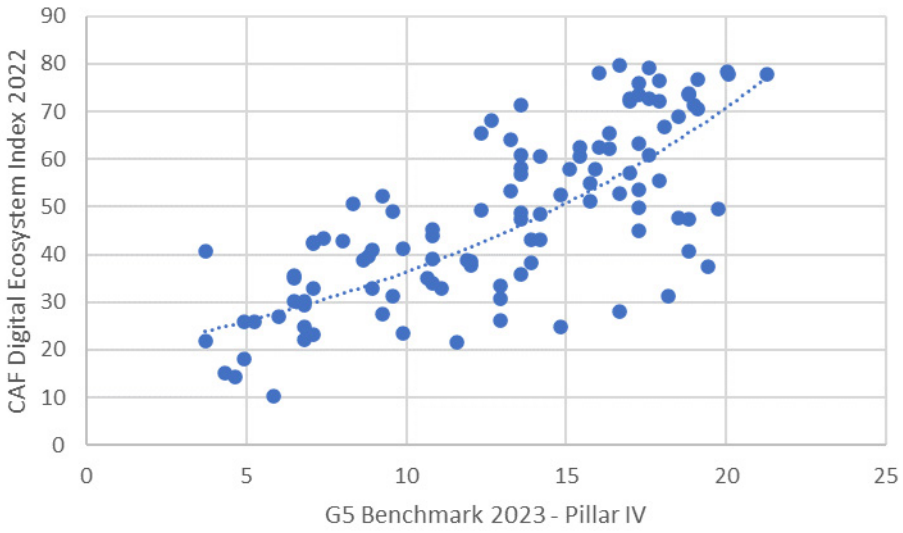
Figure A: Relationship between the G5 Benchmark and the CAF Digital Ecosystem Development Index



Source: ITU, G5 Benchmark 2023, gen5.digital

The data suggest that the development of a national digital economy depends to a large degree on implementation of collaborative digital regulatory and policy frameworks. Moreover, the lack of cross-institutional coordination represents a critical barrier to the development of policy coherence and regulatory consistency. The exponential pattern of the relationship between the three versions of the index and the state of development of the digital ecosystem depicted in Figure A is explained by the strong link existing between Pillar IV of the G5 Benchmark and the development of the digital economy. This last pillar focuses on the policies and interventions taken by a country to promote the development of the digital economy, thus being closely related to the areas where economic impact takes place, such as innovation and Industry 4.0. The correlation between the Pillar IV index of the G5 Benchmark for 2023 and the CAF Digital Ecosystem Development Index for 2022 further validates this association (see Figure B).

Figure B: Relationship between Pillar IV: Digital economy agenda of the G5 Benchmark and the CAF Digital Ecosystem Development Index



Source: ITU, G5 Benchmark 2023

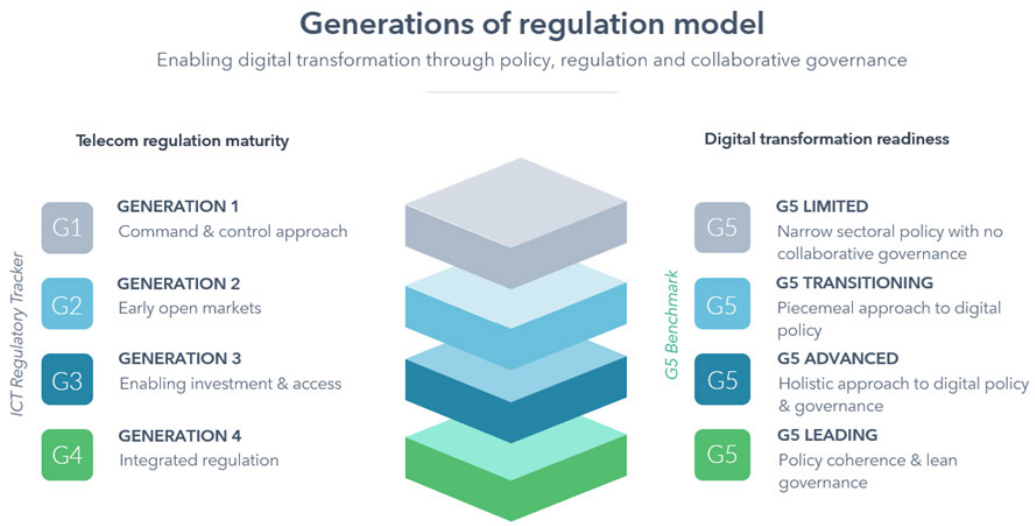
In sum, the key messages distilled from the 2023 edition of the G5 Benchmark can be summarized as follows:

- The development of a national digital economy depends to a large degree on implementation of a collaborative digital regulatory and policy framework. Moreover, the lack of cross-institutional coordination represents a critical barrier to the development of policy coherence and regulatory consistency.
- The comparison with respect to the previous edition of the G5 Benchmark points to progress made in the past two years: there has been a significant increase in the number of countries categorized as Leading, combined with a sizeable reduction in the number of countries categorized as Limited. Africa, Latin America and the Caribbean, the Arab States and the CIS have all recorded a significant increase in average G5 Benchmark score since 2021.
- The correlation analysis conducted confirms a direct relationship between the G5 Benchmark and the CAF Digital Ecosystem Development Index, indicating that good digital regulation is an enabler of the development of digital economies and societies. In addition, once countries' scores exceed 55 in the G5 Benchmark, the digital economy begins to grow at a faster pace.
- The need for cross-institutional coordination and collaboration highlights the relevance of developing a holistic and coherent policy and regulatory framework focused on the digital economy. Governments need to recognize that, if the development of the digital economy is a policy objective, they should explore institutional approaches that enable the fulfilment of this objective.

1 Introduction

In 2020, the International Telecommunication Union (ITU) launched a new approach to assess regulation to support the advancement of digital transformation, labelled fifth-generation (G5) collaborative digital regulation. The G5 concept is part of the framework depicting the generations of information and communication technology (ICT) regulation, evolving from the original command and control approach that regulated public monopolies to collaboration across institutions and stakeholders to oversee the development of a competitive digital economy. G5 marks a fundamental shift in the way regulation is executed, emphasizing its holistic policy ground and the stakeholders that it brings together from policy-makers and single-sector and cross-sector regulators to market players of any size (see Figure 1).

Figure 1: Generations of regulation – a conceptual framework



Source: ITU, G5 Accelerator, gen5.digital

1.1 Pilot edition of the G5 Benchmark

ITU understood the importance of whole-of-government collaboration and demonstrated the benefits of collaborative governance as early as 2017. The underlying premise of such an approach is that, if countries prioritize the development of a competitive digital economy, they need to migrate to a regulatory and policy framework based on collaboration across multiple sectors and among cross-sector regulators within a scope that expands beyond the ICT space into that of the digital economy. In this context, as part of its Global ICT Regulatory Outlook 2020, ITU launched a pilot version of the Benchmark of fifth-generation collaborative digital regulation (G5 Benchmark), with the objective of tracking the evolution of regulatory frameworks and helping countries establish roadmaps towards the new regulatory paradigm. The pilot edition included 25 indicators of collaborative institutional governance and covered more than 80 countries, and it proved to be a powerful and straightforward tool for policy-makers and regulators that sets new goals for regulatory excellence. More importantly, the G5 Benchmark has become a reference in topics such as collaboration among regulators and a design tool for policy and legal instruments seeking to maximize digital transformation across all sectors of the economy.

The G5 Benchmark is based on self-reported information gathered via official ITU surveys distributed among administrations of Member States, datasets compiled by international organizations and desktop research based on official government sources or direct outreach to national telecommunication/ICT regulatory authorities. Official data received from administrations of Member States have been verified to the extent reasonably feasible. The research team endeavours to ensure the accuracy of data to the greatest extent possible; nevertheless, we provide no warranty for its completeness nor do we exclude the possibility of irregular or odd values in rare cases.

1.2 Evolved G5 Benchmark structure and composition

As a result of the feedback received after publishing the pilot version, ITU refined the original G5 Benchmark framework in 2021. While the objectives and scope remained the same, the G5 Benchmark was expanded to cover key areas enabling digital development and digital economy agendas, in addition to collaborative digital governance patterns and policy design principles. The new G5 Benchmark was based on a different metric structure, a larger number of indicators and policy areas covered and a wider range of data sources.[1] This evolved version of the G5 Benchmark has since remained stable, and both the 2021 and the 2023 editions are based on it.

Since then, ITU has continued collecting information through regular surveys distributed among administrations of national governments, as well as conducting desktop research to update and improve the quality of the dataset and fill in gaps to the extent possible. As a result of those efforts, this document presents the 2023 edition of the G5 Benchmark along with the refined 2021 edition. Chapter 2 presents the structure of the G5 Benchmark and its methodology. Chapter 3 presents and analyses the results of the 2023 edition of the G5 Benchmark and compares them with the 2021 edition. Finally, Chapter 4 discusses the policy implications of the findings from the two editions of the G5 Benchmark and outlines the main conclusions.

[1] https://app.gen5.digital/benchmark/about

2 G5 Benchmark for 2021 and 2023

The development of the G5 Benchmark was prompted by the need to measure how countries transition to holistic digital collaborative regulation and policy-making in order to stimulate the development of digital economies.

The G5 Benchmark was therefore developed with the following objectives:

- Serve as a tool for policymakers and regulators to capture the essence of digital regulation, and set new goals for regulatory excellence and agile governance;
- Measure collaboration among regulators and across government, and formalize reference standards for policy and regulatory design to enable digital transformation across the economy;
- Complement the ICT Regulatory Tracker by focusing on the digital economy, in addition to the telecommunication/ICT sector;
- Allow for crafting of regulatory roadmaps built on identified strengths and opportunities and tailored to specific country circumstances;
- Record and celebrate countries' progress over time; and
- Provide a global best-practice framework for benchmarking legal, policy and governance frameworks for digital transformation and a trend-tracker of the readiness of national and regional frameworks.

On the other hand, the G5 Benchmark does not:

- Measure the quality, level of implementation or performance of regulatory frameworks in place; rather, it records their existence and features;
- Focus on cherry picking winners based on the overall index score or rankings, but rather on the opportunities at hand and countries' own journey through digital transformation; or
- Indicate absolute gaps (zero-score indicators), as each country's situation is different and some of the areas scored on the G5 Benchmark might not be a priority or feasible in particular national circumstances.

By assigning a score, the G5 Benchmark aims to provide a snapshot of the state of readiness of national frameworks and a perspective on the evolution of regulation and policy-making in digital transformation. According to their score, each of the 193 countries and economies is associated with one of four levels of maturity, namely: leading, advanced, transitional and limited.

The tool makes possible the benchmarking of country frameworks against best-practice digital development and digital agenda policy-making and regulatory patterns and identifies potential gaps. The G5 Benchmark thus provides a high ground for further regulatory thinking and reforms, importantly informing the creation of custom roadmaps for navigating digital transformation.

To minimize subjectivity in the benchmark design, the identification of indicators is based on the renowned best practice guidelines adopted by the global community of ICT regulators at the Global Symposium for Regulators (GSR) 2021[2] and the United Nations rule of law[3] with respect to transparency, code of conduct and freedom of expression. Also, many of the indicators are inspired by or build on previous editions of the GSR best practice guidelines.[4]

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[2] Global Symposium for Regulators 2021, Best Practice Guidelines: Regulatory uplift for financing digital infrastructure, access and use

[3] United Nations and the rule of law

[4] See the collection on the GSR Best Practice Guidelines 2003- 2023

2.1 G5 Benchmark design

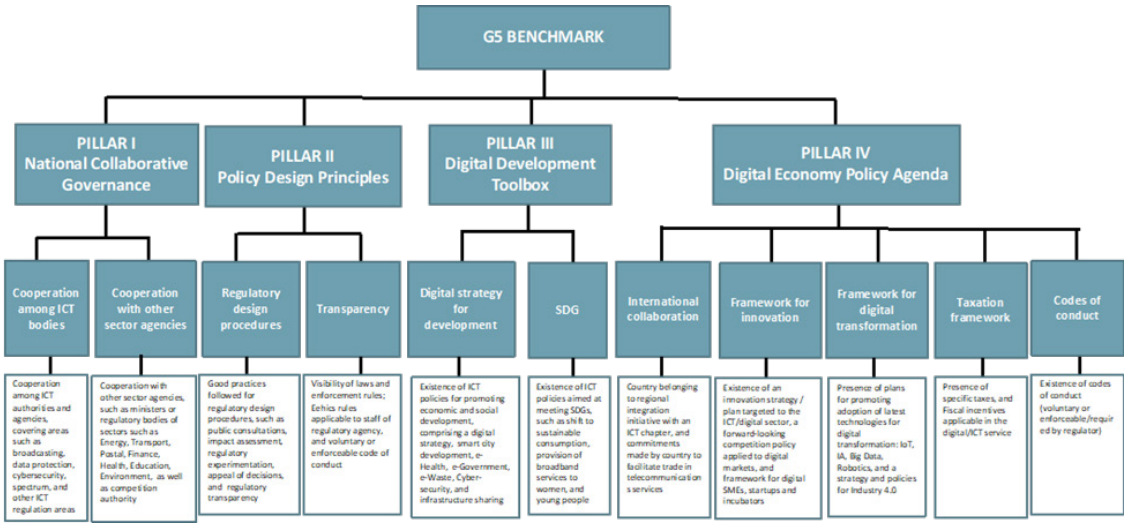
The G5 Benchmark design follows the one established for the original 2021 edition, and individual indicator definitions have been applied consistently with past practice. The definition of indicators has been, however, refined to better reflect current practice.

The overall G5 Benchmark score is calculated based on 70 indicators grouped around four pillars: (i) national collaborative governance; (ii) policy design principles in the digital arena; (iii) digital development; and (iv) digital economic policy agenda. Each pillar focuses on a specific aspect of regulation and policy-making:

- **Pillar I: National collaborative governance** measures the breadth and depth of cross-sector collaboration between the ICT regulator, peer regulators and policy-makers. It factors in the institutional set-up (agencies and their mandates) as well as practices around regulatory collaboration, formal and informal, across 16 areas, including consumer protection, spectrum management, education and e-waste.
- **Pillar II: Policy design principles in the digital arena** focuses on the design of frameworks and their coherence. As all sectors' regulation shifts from rules to principles, new elements have become paramount in ensuring that regulatory processes and policy implementation are delivering as they should, from applying tools for evidence-based decision-making, to providing space for regulatory experimentation, strengthening the accountability of multistakeholder policy initiatives, and ethics.
- **Pillar III: Digital development toolbox** focuses on the tools needed by regulators to stimulate development of a sustainable digital economy. It considers new consumer needs, business models and market dynamics. The G5 toolbox covers areas such as cybersecurity, data protection, emergency telecommunications and cross-sector infrastructure sharing. The toolbox also includes universal instruments geared towards the achievement of medium- to long-term social and economic goals, such as youth employment and sustainable consumption and production, where digital has a central role to play.
- **Pillar IV: Digital economic policy agenda** features country policies and interventions for promoting the digital economy, entrepreneurship and investment. The areas covered range from an innovation framework to digital transformation, sector taxation and adherence to international and regional integration initiatives.

Each pillar is composed in turn of subcomponents, all of them focused on policy and regulatory frameworks within the digital economy (see Figure 2).

Figure 2: G5 Benchmark design



Source: ITU, G5 Benchmark 2023

Each subcomponent combines multiple indicators. In total, the G5 Benchmark comprises 70 indicators, although some are aggregated within an interim subcomponent, ultimately yielding 54 main indicators (see Table 1).

Table 1: G5 Benchmark component structure

Pillar	Component	Indicator
Pillar I: National collaborative governance	Cooperation among ICT bodies	Collaboration between (separate) ICT regulator and (independent) spectrum management authority
		Collaboration between (separate) ICT regulator and (independent) broadcasting authority (content)
		Collaboration between (separate) ICT regulator and (independent) cybersecurity agency
		Collaboration between (separate) ICT regulator and national computer emergency response team (CERT)/computer incident response team (CIRT)
		Collaboration between (separate) ICT regulator and (independent) data protection authority
		Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND a dedicated digital (transformation) agency/national agency in charge of (coordination of) the implementation of digital policies/strategies, OR similar
	Cooperation with other sector ministries or agencies	Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND (independent) financial regulatory authority
		Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND energy regulatory authority
		Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND transport regulatory authority
		Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND (independent) competition authority
		Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND entity in charge of postal regulation (i.e. ministry or independent authority)
		Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND (independent) consumer protection authority
		Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND ministry responsible for health (e-health)
		Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND ministry responsible for education (e-education)
		Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND ministry responsible for the environment (e-waste)
		Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND ministry responsible for economic development OR similar focusing on a single or subset of economic sector/s (e.g. industry, agriculture, fishing, etc.)

Table 1: G5 Benchmark component structure (continued)

Pillar	Component	Indicator	
Pillar II: Policy design principles in the digital arena	Regulatory design procedures	Do official guidelines exist on designing public consultations as a tool to gather feedback from national stakeholders and guide regulatory decision-making (e.g. clear deadlines and sufficient time to contribute, the process for consultations is clearly defined and requirements to publish and respond to stakeholder comments are in place)?	
		Is there a formal legal requirement for conducting a regulatory impact assessment (RIA) before major regulatory decisions are made for all/multiple government agencies (all sectors)?	
		Are the decisions of regulatory authorities (or entities in charge of regulation) subject to a general administrative-procedure law applicable to all/multiple government agencies?	
		Can affected parties (i.e. infrastructure or service providers, not individual users of digital services) request reconsideration or appeal adopted regulations/regulatory decisions to the relevant administrative agency (all sectors), including major dispute* resolution or enforcement decisions?	
		Are national policy and regulatory frameworks technology- and service-neutral (e.g. licensing frameworks)?	
		Regulatory experimentation	Are there mechanisms for experimentation in ICT/digital regulation?
			Are there regulatory sandboxes for digital financial services (or fintech sandboxes)?
		Policy reviews	Do government ministries/regulatory agencies conduct ex-post policy reviews (all sectors)?
			Do government ministries/regulatory agencies conduct rolling policy reviews and commission monitoring reports (all sectors)?
	Transparency	Are the laws (all sectors) that are currently in effect available on a single website managed by the government?	
		Is public access to information ensured and fundamental freedoms protected (i.e. freedom of information and expression), in accordance with national legislation and international agreements?	
		Are there rules on ethics in place that apply to the staff of a national regulatory authority, including the head/chair and members/commissioners (e.g. improper acceptance of gifts, personal and financial conflicts of interest and post-employment obligations)?	

Table 1: G5 Benchmark component structure (continued)

Pillar	Component	Indicator	
Pillar III: Digital development toolbox	Digital strategy for development	Strategy design and implementation	Is there an overarching national digital strategy/ digital transformation policy in place (in addition to and independent of ICT sector-specific strategies)?
			Does the digital strategy have mechanisms for implementation/operational objectives (e.g. funding and coordination mechanisms, monitoring and evaluation mechanisms and objectives)?
		Is broadband considered as part of the universal access/service definition?	
		Is there a national digital identity legal or policy framework, or an operational system in place?	
		Is there a national e-government/digital-first government strategy or equivalent?	
		Has the country adopted e-waste regulations or management standards?	
		Does a regulatory framework exist for ICT accessibility for persons with disabilities?	
		Is there legislation/regulation for child online protection?	
		Public services	Has the country adopted any policy/legislation/ regulation related to smart cities?
			Has the country adopted any policy/legislation/ regulation related to e-health or smart health?
			Has the country adopted a national policy/legislation/regulation related to e-education and e-learning?
		Cybersecurity	Is there cybersecurity legislation or regulation?
			Has the country signed or ratified any of the following international instruments? – the Convention on Cybercrime (Budapest Convention) – the African Union Convention on Cyber Security and Personal Data Protection (Malabo Convention) – Arab Convention on Combating Information Technology Offences – Agreement between the governments of State members of the Shanghai Cooperation Organization on cooperation in the field of ensuring international information security – Commonwealth of Independent States Agreement on Cooperation in the Fight Against Crimes in the Field of Information Technologies (Dushanbe Agreement)

Table 1: G5 Benchmark component structure (continued)

Pillar	Component	Indicator	
		Data protection	Are there formal national data protection rules covering digital services and content (e.g. laws and regulations)?
			Has the country signed international agreements determining jurisdiction and/or managing cross-border flows for data privacy?
		Emergency situations	Has the country signed or ratified the Tampere Convention on the provision of telecommunication resources for disaster mitigation and relief operations?
			Does a national emergency (telecommunications) plan exist?
		Infrastructure sharing	Does an official register or a mapping exist in the country of all telecommunication/ICT infrastructure (including a public register for all infrastructure components)?
			Is there any cross-sector (ICT, energy, rail or other) infrastructure sharing or fibre co-deployment requirements/ regulations/promotion initiatives?
	Sustainable Development Goal (SDG) orientation	Is the national digital strategy explicitly SDG-oriented OR does it mention specific SDGs or other international development goals (e.g. Millennium Development Goals, World Summit on the Information Society goals and European Union strategic objectives)?	
		Are there policy instruments aimed at supporting the shift to sustainable consumption and production, or a coordination mechanism for sustainable consumption and production?	
		Is there a developed and operationalized global strategy for youth employment and for implementation of the Global Jobs Pact of the International Labour Organization?	
		Strategies for targeted groups	Broadband plan/nationwide government initiative for the promotion of meaningful connectivity for women and girls
			Broadband plan/nationwide government initiative/programme for the promotion of meaningful connectivity for persons with disabilities
			Broadband plan/nationwide government initiative/programme for the promotion of meaningful connectivity for young people

Table 1: G5 Benchmark component structure (continued)

Pillar	Component	Indicator	
Pillar IV: Digital economy policy agenda	International collaboration	Does the country belong to regional integration initiatives with ICT chapters?	
		Has the country made a commitment to facilitate trade in telecommunication services?	
	Framework for innovation	Is there a holistic innovation policy or one tailored to the ICT/digital sector?	
		Is there a forward-looking competition policy, law or regulation applied to digital markets?	
	Framework for digital transformation	Has the country adopted a forward-looking or innovative national strategy, policy or initiative focusing on spectrum (e.g. International Mobile Telecommunications 2000, 5G and Fixed Wireless Access)	
		Are there policies and regulations for e-commerce/e-transactions?	
		Digital skills	Does the definition of universal service/access include connectivity for telecentres or schools (primary, secondary and post-secondary)?
			Has the government financed projects for connecting schools to the Internet (primary, secondary, post-secondary, universities, specialized training institutions, etc.) through a universal service fund or other financial mechanisms?
			Does the national digital strategy (identified under III01a) include specific arrangements, mechanisms or initiatives for the education sector?
		Policies for specific sectors	Does the national digital strategy (identified under III01a) include specific arrangements, mechanisms or initiatives for multiple sectors of the economy?
			Has the country adopted any policy/legislation/ regulation related to industry/agriculture/financial services/science or similar?
		Industry 4.0	Has the country adopted a strategy, policy or initiative focusing on the Internet of Things (IoT)? Or have any programmes been deployed regarding spectrum management and availability for IoT systems?
			Has the country adopted a generic policy/legislation/ regulation related to cloud computing?
			Has the country adopted a national strategy, policy or initiative related to artificial intelligence?
	Taxation framework	Are there specific taxes on the telecommunication/digital sector (supply side) OR on Internet services/devices/SIM cards/airtime recharge (demand side)?	
		Are there regulatory incentives aimed at network operators or other digital market players?	
	Codes of conduct	Are there codes of conduct (voluntary or enforceable/required by regulator)?	

Source: ITU, G5 Benchmark 2023

The G5 Benchmark full scoring methodology is available in Appendix 1.

2.2 G5 Benchmark construction methodology

As is the case in the development of any composite metric, the construction of the G5 Benchmark involved addressing three main technical issues: scoring, weighting and aggregation.

- Scoring relates to how regulatory and policy measures are transformed from qualitative to quantitative information.
- Weighting captures the relative importance of each indicator.
- The aggregation method determines how weights are applied to scores for calculating the metric number.

In the case of **scoring**, each indicator was assigned a code between 0 and 2, where 2 is the best possible score based on internationally recognized best practices, in particular the GSR-21 Best Practice Guidelines,[5] adopted by the global community of ICT regulators, and the United Nations rule of law.[6]

The source of qualitative data used for scoring was self-reported information compiled from answers to the ITU World Telecommunication/ICT Regulatory Survey[7] (the latest edition of the survey was carried out in 2022), in addition to data made available by the World Bank, the United Nations (e.g. United Nations Conference on Trade and Development (UNCTAD) and the United Nations Treaty Collection), the World Trade Organization (WTO), the Consultative Group to Assist the Poor (CGAP) and regional economic communities, and desktop research carried out in 2023, which was complemented for some countries with direct outreach to national ICT regulatory authorities.

The score for each indicator was determined according to the detailed methodology included in Appendix 1. In cases where data were not available for a particular indicator in each country, the score is valued as zero, although, for accuracy, the respective value in the dataset is left blank. While this penalizes countries with omitted values, it also assumes that non-available data (either through official sources online or through contact with national ICT regulators) and/or no answer to a survey question indicate that the country has not adopted the given policy instrument or practice.

The aggregation of the overall score is calculated by totalling the scores of each pillar. Given that each pillar has a different composition in terms of indicators, the relative importance of a pillar to the overall score is implicitly determined by the number of indicators within that pillar. The score is then normalized to establish a value between 0 and 100. Based on the scoring methodology, the maximum score attainable by a country is 100 and would be composed of the following pillar scores (see Table 2).

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5 Global Symposium for Regulators 2021, Best Practice Guidelines: Regulatory uplift for financing digital infrastructure, access and use

6 United Nations and the rule of law

7 The respondents to World Telecommunication/ICT Regulatory Survey are expected in their official capacity to have the ability to provide accurate and up-to-date information on their countries' legal and institutional frameworks and make appropriate judgements. Official data received from administrations of Member States have nevertheless been verified to the extent reasonably feasible through desktop research exclusively using official government sources available online or information provided directly to and verified by ITU. It is understandable that self-reported information on complex and country-specific technical topics can, in some cases, be affected by a subjectivity bias, and every effort is made to continuously improve the quality of the dataset on every new edition of the G5 Benchmark.

Table 2: G5 Benchmark – Maximum pillar scores

Pillar	Component	Maximum component score	Maximum pillar score	Maximum score	Maximum score (normalized)
Pillar I: National collaborative governance	Cooperation among ICT bodies	12	32	108	100
	Cooperation with other sector ministries or agencies	20			
Pillar II: Policy design principles in the digital arena	Regulatory design procedures	14	20		
	Transparency	6			
Pillar III: Digital development toolbox	Digital strategy for development	24	32		
	SDGs	8			
Pillar IV: Digital economy policy agenda	International collaboration	4	24		
	Framework for innovation	4			
	Framework for digital transformation	10			
	Taxation framework	4			
	Code of conduct	2			

Source: ITU, G5 Benchmark 2023

As denoted in Table 2, every pillar contributes to the score proportionally to the number of indicators it contains, adding up to the maximum score of 100 (after normalization), which is the maximum theoretical score any country can achieve (see also Table 3), or the 'gold standard' for collaborative digital regulation.

Table 3: G5 Benchmark – Distribution of indicators by pillar and maximum scores

Pillar	Name	Number of indicators	Max. score	Max. score (normalized)
I	National collaborative governance	16	32	29.63
II	Policy design principles in the digital arena	10	20	18.52
III	Digital development toolbox	16	32	29.63
IV	Digital economy policy agenda	12	24	22.22
G5 Benchmark		54	108	100

Source: ITU, G5 Benchmark 2023

Once calculated, the overall G5 Benchmark score is associated with one of the four thresholds corresponding to the levels of maturity of collaborative digital regulation or the four levels of evolution of national policy, regulatory and governance frameworks for digital transformation (see Table 4 for an indicative summary of the characteristics of each of the levels).

Table 4: G5 Benchmark thresholds for the level of evolution of national policy, regulatory and governance frameworks for digital transformation

Fulfilment of G5 Benchmark	National collaborative governance	Policy design principles in the digital arena	Digital development toolbox	Digital economy policy agenda	Threshold
Limited	• No collaboration • No entity in charge	• Public consultations are not undertaken or required by law • No formal requirement for RIA • Decisions of the regulatory authority are not subject to a general administrative-procedure law • Affected parties may not request reconsideration or appeal of regulations adopted by the administrative agency • Authorization/operating licenses or spectrum are not technology- and service-neutral • No mechanisms for regulatory experimentation or sandboxes exist • No ex-post or rolling regulatory policy reviews	• No overarching digital strategy in place • No digital identity framework • No e-government strategy in place • No existence of policy/legislation/regulation for smart cities, e-health or applications for education and learning • No cybersecurity/ cybercrime legislation and/or regulation in existence • There is neither a data protection law nor a data protection agency • No national emergency telecommunications plan	• No holistic innovation strategy tailored to the ICT sector • No forward-looking competition policy, law or regulation applied to digital markets • No policies and regulations for e-commerce transactions in place • No strategy, policy or initiative focusing on emerging technologies • Sector-specific taxes on telecommunications and digital sector exist in addition to general taxes (e.g. VAT)	0 < 30
Transitional	• Activities carried out under the sector ministry • Informal collaboration prevails	• Public consultations exist but there is no requirement/ it is unclear what the timeline and process is and whether the regulator incorporates results in their decision-making/there is no obligation to consider/respond to all comments • RIA is required but it is not consistently applied to all decisions • Affected parties may request an administrative review by a regulatory body • Authorization/operating licenses or spectrum are either technology- or service-neutral (with exceptions)	• No overarching digital strategy exists (one may be expired, or is being planned, or is part of a broader development strategy, only covering specific plans or not clearly implemented) • Partial measures regarding cybersecurity and cybercrime regulation are in place • A data protection law exists but a data protection agency has not been established	• Forward-looking competition policy, law or regulation applied to digital markets, or spectrum management uses is in the process of being defined • Rules at the regional level exist but the country has not yet formulated national rules to match them, or no monitoring and enforcement of rules exist or, if they do, they have limited provisions	30 < 60
Advanced	Formal collaboration is common among government ministries and regulatory authorities (practised typically through joint programmes or committees)	• Public consultations designed as a tool to gather feedback from national stakeholders and guide most regulatory decision-making • RIA is required for major decisions • The decisions of the regulatory authority are subject to a general administrative-procedure law • Affected parties may request reconsideration or appeal of regulations adopted by the administrative agency to the judiciary • Authorization, operating licenses and spectrum are technology- and service-neutral • Frequent ex-post policy reviews • Laws that are currently in effect are available on multiple websites managed by the government	• Holistic or partial digital strategy in place • Digital identity framework in place • Existence of a national e-government strategy or equivalent • Existence of policy/legislation/regulation for some areas of the digital economy • Cybercrime legislation and regulatory framework in place, but a full cybersecurity framework may be missing • Existence of a law and data protection agency • Existence of a national emergency telecommunications plan	• Holistic but general innovation strategy • General competition policy, law or regulation applied to digital markets or spectrum management processes • Regulations for e-commerce transactions in place • Strategy and initiative focusing on emerging technologies • Selective tax exemptions for the telecommunication and digital sectors, in addition to general taxes (e.g. VAT)	60 < 80

Table 4: G5 Benchmark thresholds for the level of evolution of national policy, regulatory and governance frameworks for digital transformation (continued)

Fulfilment of G5 Benchmark	National collaborative governance	Policy design principles in the digital arena	Digital development toolbox	Digital economy policy agenda	Threshold
Leading	Formal collaboration (joint programme or committee) with regular meetings and high-level participation	• Public consultations designed as a tool to gather feedback from national stakeholders and guide all regulatory decision-making • RIA is required for all major decisions • The decisions of the regulatory authority are subject to a general administrative-procedure law • Affected parties may request reconsideration or appeal of regulations adopted by the administrative agency to an independent body or the judiciary • Authorization, operating licenses and spectrum are technology- and service-neutral • Mechanisms for regulatory experimentation or sandboxes exist • Systematic ex-post policy reviews • Laws that are currently in effect are available on a single website managed by the government	• Current and updated digital strategy in place • Digital identity framework in place • Existence of a national e-government strategy or equivalent • Existence of policy/legislation/regulation for smart cities, e-health and applications for education and learning • Full cybersecurity and cybercrime legislation and regulatory framework • Existence of a law and data protection agency • Existence of a national emergency telecommunications plan • Reference in the digital strategy to SDGs or other regional international development goals • Regional instruments in key areas are ratified and implemented	• Holistic innovation strategy tailored to the ICT sector • Forward-looking competition policy, law or regulation applied to digital markets or spectrum-management processes • Policies and regulations for e-commerce transactions in place • Strategy, policy or initiative focusing on emerging technologies • Overarching tax exemptions for the telecommunication and digital sectors (other than general taxes (e.g. VAT))	80 ≤ 100

Source: ITU, G5 Benchmark 2023

2.3 Data availability and missing values

As in the 2021 edition, cells with missing values were treated as if a zero value had been given. Given that most information comes from country surveys and desktop research, the control procedure is two-fold:

- Firstly, the lack of an answer in a country questionnaire can be reasonably interpreted as a 'No' answer and therefore interpreted as a lack of compliance to best practice in the area of the indicator and corresponding to a score of zero. As pointed out in ITU (2020) for the case of the ICT Regulatory Tracker, it is probably correct to assume that missing values are equal to zero, since, for example, some survey respondents may prefer to leave fields blank rather than stating that their country has not adopted a given policy instrument and, implicitly, does not comply with international best practice.
- Secondly, if no further evidence can be found during the validation phase and additional desktop research, it appears appropriate to consider that the respective condition stipulated in the indicator is not verified for the certain country and no score can therefore be attributed for that indicator.

An important exception to the previous criteria was adopted for the 2023 edition, as the dataset became multi-year. If data were omitted for a certain indicator for 2023 but provided for the 2021 edition, it was assumed that, in the absence of new information, the situation had remained unchanged and the 2021 value was input for the 2023 edition by default. This is a standard approach based on the reasonable assumption that a country is likely to be in a similar situation as in the previous year, an approach which provides more consistent results than leaving it blank would. For countries which have already achieved an indicator target (or a score of 2), this

approach implicitly assumes that it is unlikely that countries go backwards in terms of adopting good practices.

In addition, with the new information accessed during the compilation of the 2023 dataset, it was possible to make some revisions to scores for 2021, thus enhancing the overall quality of the dataset. This is the result of new data becoming available for indicators that had been originally missing or had been misreported, following the 2022 survey data collection, desktop research or direct outreach to national regulatory authorities, which allowed corrections to be made to previous scores.

As shown in Table 5, missing values have been notably reduced with respect to the previous edition. In the original 2021 edition of the G5 Benchmark, there were 1 509 missing values for a total of 13 510 data points (11.17 per cent), while in the 2023 edition, missing values were reduced to 1 005 (7.43 per cent).

Table 5: G5 Benchmark – Missing observations by indicator, 2021 and 2023

Pillar I: National collaborative governance			Pillar II: Policy design principles in the digital arena			Pillar III: Digital development			Pillar IV: Digital economy policy agenda		
Item	Number missing		Item	Number missing		Item	Number missing		Item	Number missing	
	2021	2023		2021	2023		2021	2023		2021	2023
I01	5	5	II01	4	3	III01a	7	1	IV01	0	0
I02	4	4	II02	0	0	III01b	28	19	IV02	0	0
I03	15	12	II03	21	17	III02	21	0	IV03	20	17
I04	33	29	II04	15	15	III03	46	35	IV04	17	10
I05	1	1	II05	10	3	III04	1	1	IV05	11	11
I06	41	12	II06a	14	7	III05	11	8	IV06	12	1
I07	0	0	II06b	113	100	III06	5	5	IV07a	51	2
I08	1	0	II07a	48	48	III07	25	17	IV07b	14	11
I09	26	22	II07b	48	48	III08a	11	11	IV07c	42	37
I10	1	1	II08	5	5	III08b	13	13	IV08a	15	9
I11	10	9	II09	0	0	III08c	42	23	IV08b	43	24
I12	5	5	II10	30	27	III09a	3	3	IV09a	10	10
I13	22	13				III09b	0	0	IV09b	9	9
I14	27	17				III10a	15	13	IV09c	9	9
I15	2	1				III10b	0	0	IV10	12	7
I16	46	32				III11a	0	0	IV11	3	3
						III11b	20	16	IV12	24	21
						III12a	3	1			

Table 5: G5 Benchmark – Missing observations by indicator, 2021 and 2023 (continued)

Pillar I: National collaborative governance			Pillar II: Policy design principles in the digital arena			Pillar III: Digital development			Pillar IV: Digital economy policy agenda		
Item	Number missing		Item	Number missing		Item	Number missing		Item	Number missing	
	2021	2023		2021	2023		2021	2023		2021	2023
						III12b	24	12			
						III13	11	10			
						III14	0	0			
						III15	75	53			
						III16a	70	57			
						III16b	34	29			
						III16c	71	61			

Source: ITU, G5 Benchmark 2023

The country scores were calculated in 2023 for the same sample of 193 countries and economies as in the 2021 edition (Table 6). Country inclusion is decided based on the availability of at least 50 per cent of data required for each of the four pillars. In practice, in the 2023 edition, the data profiles of 144 countries (74.6 per cent) contain up to 10-per-cent missing data (from these, 97 countries, or 50.25 per cent, have less than 5-per-cent missing data). The data profiles for an additional 32 countries are missing between 10 and 20 per cent of data and 14 countries – between 20 and 30 per cent of data. Only three countries have data profiles with a higher percentage of missing values, at 30, 31 and 40 per cent. The medium- to long-term objective in compiling future editions of the G5 Benchmark is to reduce the rates of missing data, which is consistent with the practice of compiling the ICT Regulatory Tracker.

Table 6: Countries and economies included in the G5 Benchmark, 2021 and 2023

Afghanistan	Chad	Ghana	Liberia	Norway	South Sudan
Albania	Chile	Greece	Libya	Oman	Spain
Algeria	China	Grenada	Liechtenstein	Pakistan	Sri Lanka
Andorra	Colombia	Guatemala	Lithuania	Palestine[8]	Sudan
Angola	Comoros	Guinea	Luxembourg	Panama	Suriname
Antigua and Barbuda	Congo (Rep. of the)	Guinea-Bissau	Madagascar	Papua New Guinea	Sweden
Argentina	Costa Rica	Guyana	Malawi	Paraguay	Switzerland
Armenia	Côte d'Ivoire	Haiti	Malaysia	Peru	Syrian Arab Republic
Australia	Croatia	Honduras	Maldives	Philippines	Tajikistan

[8] Palestine is not an ITU Member State; the status of Palestine in ITU is the subject of Resolution 99 (Rev. Dubai, 2018) of the ITU Plenipotentiary Conference.

Table 6: Countries and economies included in the G5 Benchmark, 2021 and 2023 (continued)

Austria	Cuba	Hong Kong, China[9]	Mali	Poland	Tanzania
Azerbaijan	Cyprus	Hungary	Malta	Portugal	Thailand
Bahamas	Czech Republic	Iceland	Marshall Islands	Qatar	Timor-Leste
Bahrain	Dem. Rep. of the Congo	India	Mauritania	Romania	Togo
Bangladesh	Denmark	Indonesia	Mauritius	Russian Federation	Tonga
Barbados	Djibouti	Iran (Islamic Republic of)	Mexico	Rwanda	Trinidad and Tobago
Belarus	Dominica	Iraq	Micronesia	Saint Kitts and Nevis	Tunisia
Belgium	Dominican Rep.	Ireland	Moldova	Saint Lucia	Turkey
Belize	Ecuador	Israel	Monaco	Saint Vincent and the Grenadines	Turkmenistan
Benin	Egypt	Italy	Mongolia	Samoa	Tuvalu
Bhutan	El Salvador	Jamaica	Montenegro	San Marino	Uganda
Bolivia	Equatorial Guinea	Japan	Morocco	Sao Tome and Principe	Ukraine
Bosnia and Herzegovina	Eritrea	Jordan	Mozambique	Saudi Arabia	United Arab Emirates
Botswana	Estonia	Kazakhstan	Myanmar	Senegal	United Kingdom
Brazil	Eswatini	Kenya	Namibia	Serbia	United States of America
Brunei Darussalam	Ethiopia	Kiribati	Nauru	Seychelles	Uruguay
Bulgaria	Fiji	Korea (Rep. of)	Nepal (Republic of)	Sierra Leone	Uzbekistan
Burkina Faso	Finland	Kuwait	Netherlands (Kingdom of the)	Singapore	Vanuatu
Burundi	France	Kyrgyzstan	New Zealand	Slovakia	Venezuela
Cabo Verde	Gabon	Lao P.D.R.	Nicaragua	Slovenia	Viet Nam
Cambodia	Gambia	Latvia	Niger	Solomon Islands	Yemen
Cameroon	Georgia	Lebanon	Nigeria	Somalia	Zambia
Canada	Germany	Lesotho	North Macedonia	South Africa	Zimbabwe
Central African Rep.					

Source: ITU, G5 Benchmark 2023

[9] Hong Kong, Special Administrative Region of China is included here as an economy.

3 2023 edition of the G5 benchmark: results and interpretation

In this section we present the results for the 2023 edition of the G5 Benchmark. For comparison purposes, we also provide the scores from the 2021 edition.

3.1 Global trends

The calculation of the G5 Benchmark allows for the breakdown of countries by threshold level (see Table 7).

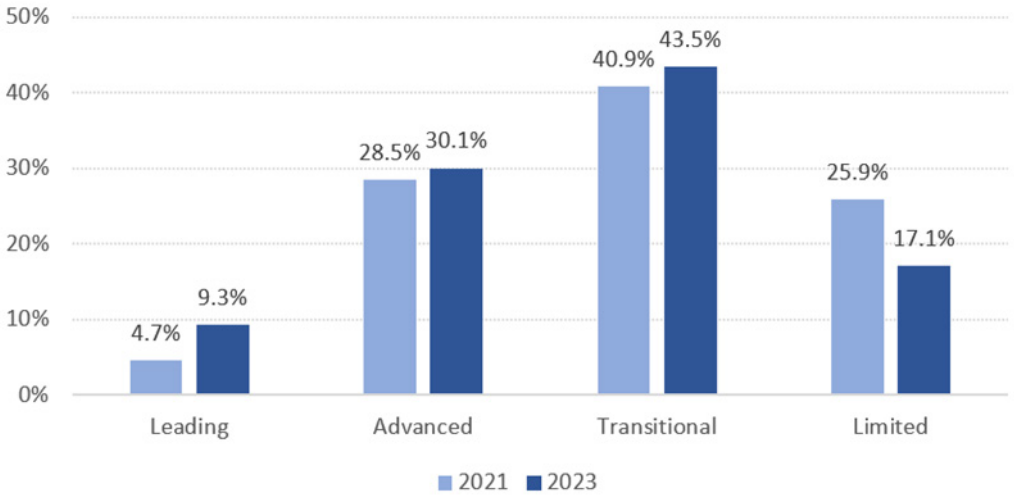
Table 7: G5 Benchmark – Number of countries by threshold, 2021 and 2023

Region	Leading		Advanced		Transitional		Limited		Total
	2021	2023	2021	2023	2021	2023	2021	2023	
Africa	0	0	5	7	23	25	16	12	44
Americas	1	2	9	10	16	19	9	4	35
North America	1	1	1	1	0	0	0	0	2
Latin America and the Caribbean	0	1	8	9	16	19	9	4	33
Arab States	0	1	3	5	11	11	8	5	22
Asia and the Pacific	3	7	9	7	13	14	13	10	38
CIS	0	0	0	2	6	6	3	1	9
Europe	5	8	29	27	10	9	1	1	45
World	9	18	55	58	79	84	50	33	193

Source: ITU, G5 Benchmark 2023, gen5.digital

As shown in Table 7, there has been a significant increase in the number of countries categorized as Leading, a total of 18 in 2023 (up from nine in 2021). Major advances have been recorded in Asia and the Pacific (four new Leading countries) and Europe (three new Leading countries). On the other hand, there are still no Leading countries in the Africa or CIS regions. In total, Leading countries represent 9.3 per cent of the total sample of countries. Next, the number of Advanced countries increased to 58 (up from 55 in 2021), now representing 30 per cent of the sample. In addition, 84 countries (43.5 per cent) scored as Transitional, and 33 countries (17.1 per cent) as Limited (Figure 3).

Figure 3: G5 Benchmark – Percentage of countries by threshold, 2021 and 2023

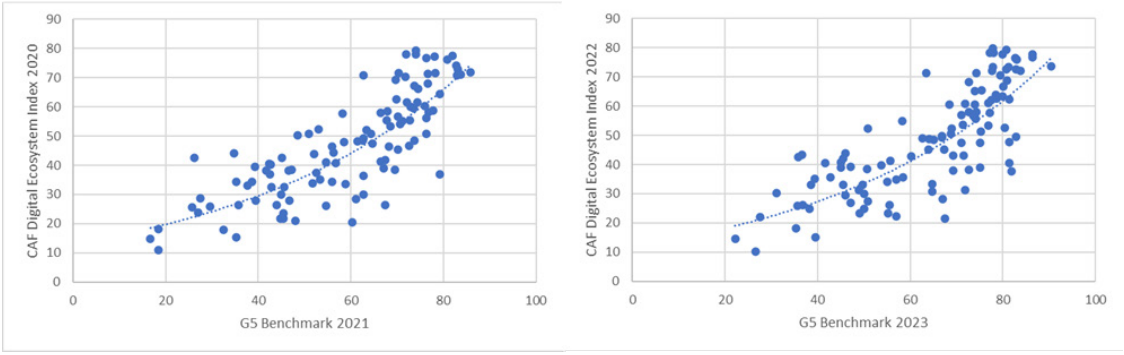


Source: ITU, G5 Benchmark 2023

These results indicate that, while a sizable group of countries have reached a Leading or Advanced status under the G5 Benchmark, more than half of the countries still need to fulfil the conditions required to graduate to that level.

A key question regarding the need to progress along this development path is the assessment of its potential benefits. In other words, what is the payback of migrating to an Advanced or Leading level in G5 collaborative digital regulation in terms of the development of the digital economy? As a proxy for the development of the digital economy, the CAF Digital Ecosystem Development Index was used for statistical analysis.[10] At an aggregate level, and as expected, it appears that the G5 Benchmark score is associated with high digital economy development (Figure 4).

Figure 4: Relationship between the G5 Benchmark and the CAF Digital Ecosystem Development Index



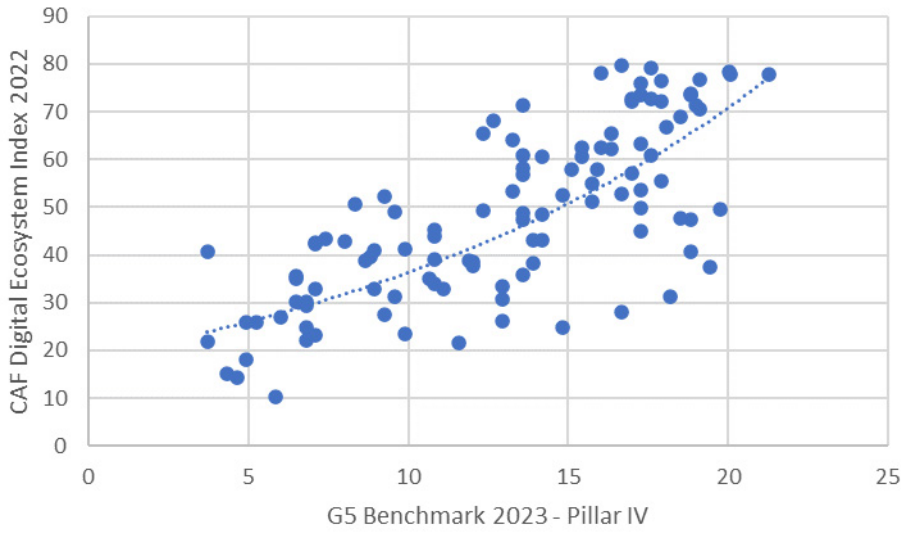
Source: ITU, G5 Benchmark 2023

[10] The CAF Digital Ecosystem Development Index is a composite index based on 156 indicators structured around seven pillars: (i) digital infrastructure; (ii) public policy and regulation; (iii) household digitalization; (iv) digital economy; (v) public sector digitalization; (vi) human capital and workforce; and (vii) digital green economy.

The correlation analysis presented in Figure 4 might indicate that, in addition to the direct relationship between the G5 Benchmark and the CAF Digital Ecosystem Development Index, once countries score in excess of 55 in the G5 Benchmark, the digital economy begins to grow at a faster pace. In other words, in addition to the strong correlation between the enabling policy, regulatory and governance environment and the development of digital economies, when such an environment is well developed, it appears to have a multiplier effect on digital markets.

The exponential form of the trend depicted in Figure 5 is mainly explained by the strong link between Pillar IV of the G5 Benchmark and the development of the digital economy. This last pillar focuses on the policies and interventions taken by a country to promote the development of the digital economy, thus being closely related to the areas where economic impact takes place, such as innovation and Industry 4.0. Figure 5 presents the correlation between Pillar IV of the 2023 edition of the G5 Benchmark and the CAF Digital Ecosystem Development Index for 2022.

Figure 5: Relationship between Pillar IV: Digital economy agenda and the CAF Digital Ecosystem Development Index



Source: ITU, G5 Benchmark 2023

Table 8 presents the results in the 2023 edition of the G5 Benchmark for the top 20 countries, alongside their results from 2021. Some regional trends in higher G5 Benchmark scores can be inferred from both the 2021 and 2023 data. Europe is the region most represented among these countries, with nine out of the top 20 countries in the world in 2023, indicating that the region appears to have the highest level of maturity of policy and regulatory frameworks enabling the digital economy. However, most of the top 20, or 11 countries, belong to other regions, i.e. seven to Asia and the Pacific, three to the Americas and one to the Arab States.

Table 8: G5 Benchmark – Top 20 countries, 2021 and 2023

Country	Region	G5 Benchmark (max: 100)	
		2021	2023
Germany	Europe	85.80	90.43
Finland	Europe	82.72	86.42
Singapore	Asia and the Pacific	81.94	86.42
Canada	Americas	83.80	83.80
United Kingdom	Europe	83.02	83.02
Korea (Rep. of)	Asia and the Pacific	82.87	82.87
Malaysia	Asia and the Pacific	64.66	82.87
Netherlands (Kingdom of the)	Europe	80.86	82.72
India	Asia and the Pacific	79.17	81.94
Portugal	Europe	77.78	81.48
Colombia	Americas	72.53	81.48
Philippines	Asia and the Pacific	67.13	81.48
New Zealand	Asia and the Pacific	76.70	81.33
Austria	Europe	73.77	80.86
Australia	Asia and the Pacific	78.24	80.71
Norway	Europe	74.07	80.71
Saudi Arabia	Arab States	76.23	80.40
Estonia	Europe	79.17	80.09
United States of America	Americas	78.09	79.94
Spain	Europe	75.93	79.94

Source: ITU, G5 Benchmark 2023

Most countries that figured in the original top 20 remained in the list in 2023, though there were some notable additions, such as Colombia, Malaysia and the Philippines, which experienced a substantial increase in their scores and met the Leading threshold. Saudi Arabia, Austria and Norway likewise experienced notable improvements since 2021, allowing them to meet the highest threshold of framework maturity.

Next, Table 9 presents the scores by pillar for the top 20 countries. Starting with Pillar I, most of these countries appear to come close to achieving the maximum score for national regulatory governance, with Saudi Arabia, Malaysia, and the United Kingdom recording the highest score (26.85 out of 29.63).

Table 9: G5 Benchmark by pillar – Top 20 countries, 2021 and 2023

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Germany	25.00	25.00	17.59	17.59	24.38	29.01	18.83	18.83
Finland	24.07	25.93	13.89	14.81	25.62	26.54	19.14	19.14
Singapore	25.93	25.93	14.81	14.81	22.38	24.38	18.83	21.30
Canada	24.07	24.07	16.67	16.67	26.08	26.08	16.98	16.98
United Kingdom	26.85	26.85	16.67	16.67	22.22	22.22	17.28	17.28
Korea (Rep. of)	25.00	25.00	15.74	15.74	24.54	24.54	17.59	17.59
Malaysia	20.37	26.85	12.96	14.81	14.66	21.45	16.67	19.75
Netherlands (Kingdom of the)	25.93	25.93	14.81	16.67	22.22	22.22	17.90	17.90
India	21.30	22.22	12.04	13.89	26.39	26.39	19.44	19.44
Portugal	24.07	25.93	15.74	15.74	22.53	24.38	15.43	15.43
Colombia	17.59	21.30	17.59	17.59	23.15	24.07	14.20	18.52
Philippines	21.30	23.15	13.89	13.89	17.13	25.62	14.81	18.83
New Zealand	17.59	20.37	16.67	17.59	25.15	26.08	17.28	17.28
Austria	22.22	23.15	15.74	15.74	17.90	23.46	17.90	18.52
Australia	25.00	25.00	15.74	15.74	21.14	22.99	16.36	16.98
Norway	24.07	24.07	15.74	16.67	18.52	22.38	15.74	17.59
Saudi Arabia	24.07	26.85	12.04	12.04	23.46	24.85	16.67	16.67
Estonia	20.37	21.30	17.59	17.59	23.15	23.15	18.06	18.06
United States of America	19.44	19.44	16.67	16.67	23.77	23.77	18.21	20.06
Spain	20.37	23.15	15.74	15.74	23.15	23.77	16.67	17.28

Source: ITU, G5 Benchmark 2023

For Pillar II, a number of countries scored close to the maximum for policy design principles in the digital arena, namely: Colombia, Estonia, Germany, and New Zealand, which all scored higher than 17.5 out of 18.52. In terms of Pillar III, Germany scored the highest with 29.01 against a maximum of 29.63. Along with Austria, Malaysia, and the Philippines, these were the countries that experienced the biggest gains with respect to the previous edition. Finally, for Pillar IV, the highest score is that of Singapore with 21.30 out of 22.22. In most cases, scores remain unchanged with respect to the previous edition since many of the countries were already at a highly advanced level of development in their national frameworks, though some have made

significant improvements, such as Colombia, Malaysia, Norway, the Philippines, Singapore, and the United States of America.

Below, a region-by-region review provides a complementary perspective of the geographical clustering of the G5 Benchmark.

3.2 View from the regions

From an aggregate regional perspective, Europe and North America are the only regions with an average G5 Benchmark score that corresponds to the Leading or Advanced level, owing to the existence of sound national formal collaboration mechanisms and institutions, the implementation of highly developed policy design principles, the implementation of digital economy enabling frameworks and a digitalization development agenda (see Table 10). That being said, the other regions have recorded significant increases in their G5 Benchmark scores compared to 2021: Africa climbed to 43.08 from 37.50, Latin America and the Caribbean to 48.18 from 44.37, the Arab States to 44.86 from 38.46, Asia and the Pacific to 49.39 from 43.86, and the CIS to 44.36 from 38.27 (see Table 10).

Table 10: G5 Benchmark – Regional averages, 2021 and 2023

Region	G5 Benchmark (max: 100)		% Change
	2021	2023	
Africa	37.50	43.08	14.88
Americas	46.46	50.10	7.83
North America	80.94	81.87	1.14
Latin America and the Caribbean	44.37	48.18	8.57
Arab States	38.46	44.86	16.63
Asia and the Pacific	43.86	49.39	12.62
CIS	38.27	44.36	15.91
Europe	65.35	69.45	6.27
World	47.03	52.01	10.57

Source: ITU, G5 Benchmark 2023, gen5.digital

When broken down by pillar, North America and Europe again score the highest for Pillar I, followed by Latin America and the Caribbean (see Table 11).

Table 11: G5 Benchmark – Regional averages by pillar, 2021 and 2023

Region	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Africa	13.24	15.43	7.19	7.78	10.34	12.15	6.74	7.73
Americas	15.26	16.06	10.42	11.06	11.92	13.54	8.86	9.45
North America	21.76	21.76	16.67	16.67	24.92	24.92	17.59	18.52
Latin America and the Caribbean	14.87	15.71	10.04	10.72	11.13	12.85	8.33	8.90
Arab States	12.46	14.94	7.15	8.12	11.34	13.12	7.51	8.68
Asia and the Pacific	14.28	15.57	8.89	9.70	11.96	14.30	8.72	9.82
CIS	9.36	11.52	8.44	9.57	11.73	13.70	8.74	9.57
Europe	19.22	20.00	13.87	14.51	18.40	20.61	13.86	14.33
World	14.94	16.40	9.72	10.44	13.01	14.98	9.36	10.19

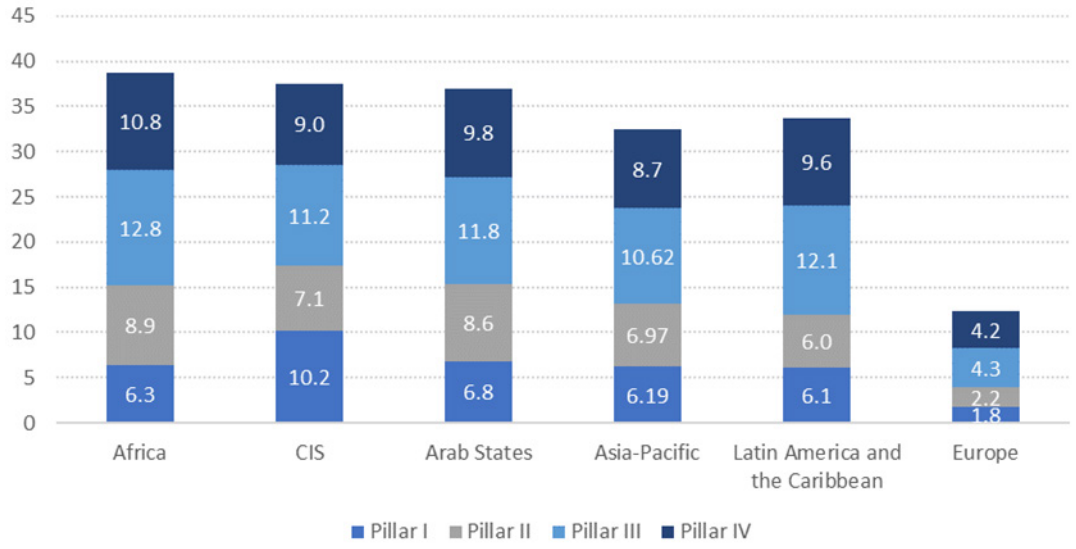
Source: ITU, G5 Benchmark 2023, gen5.digital

It is important to point out that even top-scoring regions remain a way off the maximum score of 29.63, suggesting that all regions are faced with the important task of adopting and localizing best practices. In the case of Pillar II, North America scores close to the maximum, i.e. 16.67 out of 18.52, followed by Europe with 14.51, with remaining regions lagging further behind. For Pillar III, North America again scores highest with 24.92 against a maximum of 29.63, followed by Europe with 20.61 and the other regions, which remain at lower levels. Finally, there is a similar situation with Pillar IV, where North America and Europe again lead the way, this time followed by Asia and the Pacific (see Table 11).

The lower scores for traditionally underdeveloped and transitioning regions for most pillars underscore the size of future challenges for national regulators and policy-makers.

With North America being the region with the highest average score for each pillar in 2023, it is possible to calculate the magnitude of the gap to each of the other regions for each pillar (Figure 6). This can help to identify the main disparities and areas requiring more urgent policy action by region. In all cases, the largest gap with respect to the world leaders is seen under Pillar III, followed by Pillar IV. It seems that, while emerging regions have made advances in closing the gap under Pillar I, the improvements in other fields have not been strong enough.

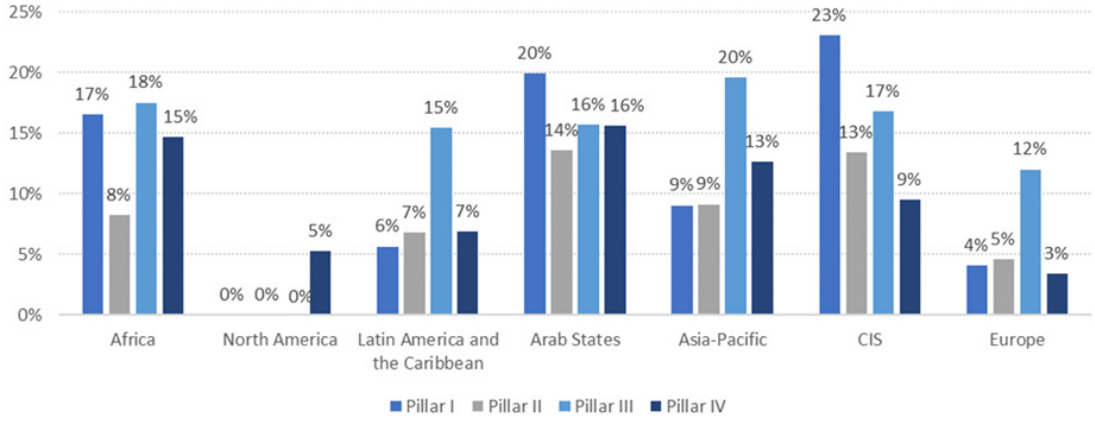
Figure 6: G5 Benchmark – Regional gaps with respect to North America, 2023



Source: ITU, G5 Benchmark 2023

The biggest improvements with respect to the previous edition have been made by the CIS (23 per cent) and the Arab States (20 per cent) in national regulatory governance and by Asia and the Pacific (20 per cent) in digital development toolbox. The CIS and Arab States have also made significant progress in digital development toolbox with increases of 16 per cent and 17 per cent, respectively. Africa has made notable advances in both digital development toolbox (18 per cent) and national regulatory governance (17 per cent). On the other hand, Latin America and the Caribbean has only managed a notable improvement in digital development toolbox, while, as expected, the increases in score for the mature regions of North America and Europe have been lower than those of the emerging regions (see Figure 7).

Figure 7: G5 Benchmark – Regional improvement by pillar, 2021 and 2023



Source: ITU, G5 Benchmark 2023

3.2.1 Africa region

The 2023 edition of the G5 Benchmark was calculated for 44 sub-Saharan African countries, yielding an average score of 43.08 out of 100, underlining the region's Transitional level in terms of policy, legal and governance frameworks for digital transformation, based on the G5 Benchmark. The region recorded a significant increase in its score from 37.50 in 2021.

As in the previous edition, the regional average scores for Africa mask wide differences among countries. While most countries exhibit a score at the Transitional threshold, seven countries have already met the Advanced threshold, up from five in 2021, with Benin and Mauritius joining Ghana, Kenya, Nigeria, Rwanda and South Africa in this group. Kenya and South Africa are the top Africa achievers in the 2023 edition (see Table 12).

Table 12: G5 Benchmark – Africa region, 2021 and 2023

Country	G5 Benchmark (max: 100)	
	2021	2023
Angola	18.36	27.62
Benin	60.34	67.59
Botswana	51.70	55.09
Burkina Faso	40.74	48.77
Burundi	18.36	26.70
Cabo Verde	43.98	50.00
Cameroon	27.01	38.27
Central African Rep.	14.51	26.54
Chad	31.64	41.36
Congo (Rep. of the)	24.54	41.82
Côte d'Ivoire	46.76	50.00
Dem. Rep. of the Congo	35.03	41.20
Equatorial Guinea	16.05	17.59
Eritrea	8.33	8.33
Eswatini	45.22	48.92
Ethiopia	46.91	50.62
Gabon	22.38	29.78
Gambia	37.50	41.36
Ghana	60.49	64.20
Guinea	30.09	33.80
Guinea-Bissau	24.07	26.85
Kenya	62.65	71.91

Table 12: G5 Benchmark – Africa region, 2021 and 2023 (continued)

Country	G5 Benchmark (max: 100)	
	2021	2023
Lesotho	27.01	28.86
Liberia	40.90	41.82
Madagascar	32.56	35.34
Malawi	51.23	59.57
Mali	41.36	44.91
Mauritius	56.33	62.81
Mozambique	16.67	22.22
Namibia	29.32	34.88
Niger	39.20	40.59
Nigeria	61.11	64.81
Rwanda	58.64	63.58
Sao Tome and Principe	22.53	27.62
Senegal	45.37	50.00
Seychelles	14.81	20.37
Sierra Leone	23.46	38.27
South Africa	66.51	69.29
South Sudan	21.60	21.60
Tanzania	44.75	55.25
Togo	41.98	43.83
Uganda	54.63	55.56
Zambia	45.37	49.07
Zimbabwe	47.99	56.94
Africa region averages	37.50	43.08

Source: ITU, G5 Benchmark 2023

The average score for Pillar I, which focuses primarily on measuring collaboration across multiple regulatory and policy-making stakeholders, is 15.43 out of 29.63, which is slightly above the score for 2021. Côte d'Ivoire emerges as the leader in this area, scoring 25.93, which is not far off the maximum. At the other end, multiple countries failed to reach a score of 10, which is symptomatic of serious shortcomings in regulatory governance. These include Equatorial Guinea, Eritrea, Gabon, Mozambique, Sao Tome and Principe, Senegal, Seychelles, South Sudan and Togo, as highlighted in Table 13.

Table 13: G5 Benchmark by pillar – Africa region, 2021 and 2023

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Angola	3.70	11.11	5.56	7.41	5.40	5.40	3.70	3.70
Benin	20.37	22.22	12.96	13.43	17.44	20.37	9.57	11.57
Botswana	22.22	24.07	8.33	8.33	10.96	11.88	10.19	10.80
Burkina Faso	11.11	12.96	9.26	10.19	13.27	17.59	7.10	8.02
Burundi	6.48	10.19	1.85	1.85	5.09	8.80	4.94	5.86
Cabo Verde	16.67	16.67	8.33	9.26	11.57	16.67	7.41	7.41
Cameroon	9.26	12.96	3.70	6.48	8.02	12.04	6.02	6.79
Central African Rep.	4.63	12.04	1.85	3.70	4.63	4.63	3.40	6.17
Chad	14.81	21.30	2.78	3.24	10.03	11.88	4.01	4.94
Congo (Rep. of the)	7.41	18.52	1.39	1.39	10.19	13.89	5.56	8.02
Côte d'Ivoire	25.00	25.93	6.48	6.48	8.80	11.11	6.48	6.48
Dem. Rep. of the Congo	16.67	19.44	7.41	7.41	5.09	7.87	5.86	6.48
Equatorial Guinea	3.70	3.70	1.85	1.85	4.63	5.56	5.86	6.48
Eritrea	5.56	5.56	0.00	0.00	0.00	0.00	2.78	2.78
Eswatini	20.37	22.22	6.48	6.48	12.81	14.66	5.56	5.56
Ethiopia	15.74	19.44	8.33	8.33	12.35	12.35	10.49	10.49
Gabon	5.56	9.26	5.56	5.56	6.94	8.80	4.32	6.17
Gambia	22.22	22.22	0.93	2.78	6.94	8.33	7.41	8.02
Ghana	24.07	24.07	8.33	8.33	15.74	19.44	12.35	12.35
Guinea	13.89	13.89	3.70	5.56	7.41	7.87	5.09	6.48
Guinea-Bissau	12.04	14.81	6.48	6.48	2.78	2.78	2.78	2.78
Kenya	12.96	18.52	12.04	12.04	22.22	23.15	15.43	18.21
Lesotho	10.19	11.11	2.78	2.78	7.41	7.41	6.64	7.56
Liberia	13.89	13.89	8.33	8.33	12.81	13.73	5.86	5.86
Madagascar	11.11	12.96	7.41	7.41	9.10	10.03	4.94	4.94
Malawi	24.07	25.00	9.26	10.19	11.11	16.67	6.79	7.72
Mali	16.67	17.59	7.41	8.33	11.57	12.50	5.71	6.48
Mauritius	20.37	20.37	9.26	10.19	14.35	18.06	12.35	14.20
Mozambique	3.70	3.70	7.41	8.33	2.78	5.56	2.78	4.63
Namibia	12.96	13.89	7.41	7.41	6.48	8.33	2.47	5.25
Niger	12.96	12.96	9.26	9.26	10.80	12.19	6.17	6.17

Table 13: G5 Benchmark by pillar – Africa region, 2021 and 2023 (continued)

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Nigeria	24.07	25.00	9.26	10.19	15.74	16.67	12.04	12.96
Rwanda	16.67	18.52	13.89	13.89	20.68	22.53	7.41	8.64
Sao Tome and Principe	5.56	8.33	5.56	7.41	7.41	7.41	4.01	4.48
Senegal	8.33	8.33	6.48	7.41	16.67	19.44	13.89	14.81
Seychelles	5.56	8.33	2.78	2.78	3.70	4.63	2.78	4.63
Sierra Leone	8.33	16.67	6.48	9.26	6.48	8.33	2.16	4.01
South Africa	16.67	17.59	16.67	16.67	19.29	21.14	13.89	13.89
South Sudan	4.63	4.63	8.33	8.33	5.56	5.56	3.09	3.09
Tanzania	14.81	14.81	12.96	13.89	11.42	16.67	5.56	9.88
Togo	8.33	8.33	12.04	12.04	14.81	14.81	6.79	8.64
Uganda	20.37	20.37	8.33	9.26	12.96	12.96	12.96	12.96
Zambia	14.81	14.81	11.11	11.11	13.27	16.05	6.17	7.10
Zimbabwe	13.89	20.37	10.19	11.11	18.06	18.67	5.86	6.79
Africa region averages	13.24	15.43	7.19	7.78	10.34	12.15	6.74	7.73

Source: ITU, G5 Benchmark 2023

The average 2023 edition score for Pillar II for Africa is only 7.78 out of a possible 18.52. That score is slightly above the one recorded in 2021, meaning that progress in this area has been modest. South Africa emerges as the regional leader with a score of 16.67, close to the maximum. The average score for Pillar III, which assesses the existence of strategies to develop the digital economy and the alignment of such policies with the SDGs, is 12.15 out of a possible 29.63. Kenya, Rwanda and South Africa are the only countries in the region that scored above 20. Finally, the average score for Pillar IV is a mere 7.73 out of 22.22. The improvements with respect to the previous edition are modest in most cases, with Kenya the regional leader for this pillar.

3.2.2 Americas region

North America

The Americas region is a composite of two clearly defined groups of countries, or subregions, when assessed by the G5 Benchmark.

The two North American countries, the United States and Canada, exhibit leading scores for the G5 Benchmark and all its pillars (see Table 14).

Table 14: G5 Benchmark – North America, 2021 and 2023

Country	G5 Benchmark (max: 100)	
	2021	2023
Canada	83.80	83.80
United States of America	78.09	79.94
North America subregion averages	80.94	81.87

Source: ITU, G5 Benchmark 2023

In terms of Pillar I, scores remain unchanged from the previous edition, with Canada (24.07) ahead of the United Sates (19.44). In both countries, there is still room for improvement towards reaching the maximum score of 29.63 (Table 15).

Table 15: G5 Benchmark by pillar – North America, 2021 and 2023

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Canada	24.07	24.07	16.67	16.67	26.08	26.08	16.98	16.98
United States of America	19.44	19.44	16.67	16.67	23.77	23.77	18.21	20.06
North America subregion averages	21.76	21.76	16.67	16.67	24.92	24.92	17.59	18.52

Source: ITU, G5 Benchmark 2023

For Pillar II, scores are likewise unchanged from 2021, with Canada and the United Sates scoring the same. In this case, the room for improvement is much lower than for Pillar I, as both countries already score 16.67 out of 18.52. In terms of Pillar III, scores have also remained stable since 2021, with Canada (26.08) ahead of the United Sates (23.77) and an average score for both countries of 24.92. Finally, the United States recorded an increase in its Pillar IV score, up to 20.06 from 18.21, while the average for both countries is 18.52.

Latin America and the Caribbean

In the Latin America and the Caribbean subregion, Colombia leads the way in the 2023 edition of the G5 Benchmark. Beyond Colombia, the subregion is split into three groups of countries: those at the Advanced threshold, i.e. Argentina, Brazil, Chile, Costa Rica, the Dominican Republic, Mexico, Peru, Panama, and Uruguay; those at the Transitional threshold, i.e. Antigua and Barbuda, Bahamas, Barbados, Belize, Bolivia, Cuba, Dominica, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Nicaragua, Paraguay, Trinidad and Tobago, and Venezuela; and the remaining countries at the Limited threshold. It should be noted, however, that scores vary widely among the group of countries at the Transitional threshold (Table 16).

Table 16: G5 Benchmark – Latin America and the Caribbean, 2021 and 2023

Country	G5 Benchmark (max: 100)	
	2021	2023
Antigua and Barbuda	27.78	30.56
Argentina	55.86	65.12
Bahamas	41.82	41.82
Barbados	34.72	36.57
Belize	27.62	31.02
Bolivia (Plurinational State of)	42.90	49.69
Brazil	73.77	75.31
Chile	71.14	71.14
Colombia	72.53	81.48
Costa Rica	68.52	76.85
Cuba	29.63	36.73
Dominica	31.33	32.25
Dominican Rep.	69.44	75.15
Ecuador	54.63	55.71
El Salvador	45.52	45.52
Grenada	31.17	31.17
Guatemala	44.91	48.92
Guyana	40.43	43.21
Haiti	35.19	39.51
Honduras	43.98	47.22
Jamaica	56.02	56.94
Mexico	61.42	68.83
Nicaragua	27.47	31.17
Panama	56.79	60.19
Paraguay	38.58	42.75
Peru	67.44	71.60
Saint Kitts and Nevis	10.19	10.19
Saint Lucia	24.69	27.47
Saint Vincent and the Grenadines	24.69	26.54
Suriname	12.96	17.59

Table 16: G5 Benchmark – Latin America and the Caribbean, 2021 and 2023 (continued)

Country	G5 Benchmark (max: 100)	
	2021	2023
Trinidad and Tobago	47.22	50.77
Uruguay	68.21	75.16
Venezuela	25.77	35.65
Latin America and the Caribbean subregion averages	44.37	48.18

Source: ITU, G5 Benchmark 2023

In terms of Pillar I, the Dominican Republic emerges as the subregional leader with a score of 27.78, close to the maximum 29.63, followed by Costa Rica and Ecuador; overall, however, the subregion scores a substantially lower average of 15.71, indicating that there remains room for improvement in most countries (Table 17).

Table 17: G5 Benchmark by pillar – Latin America and the Caribbean, 2021 and 2023

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Antigua and Barbuda	11.11	11.11	5.56	6.48	5.56	7.41	5.56	5.56
Argentina	16.67	16.67	10.19	10.19	16.67	24.07	12.35	14.20
Bahamas	13.89	13.89	12.96	14.81	8.18	8.18	6.79	4.94
Barbados	12.04	13.89	8.33	8.33	6.94	6.94	7.41	7.41
Belize	9.26	9.26	8.33	8.33	2.78	5.56	7.25	7.87
Bolivia (Plurinational State of)	16.67	17.59	14.81	14.81	2.78	6.17	8.64	11.11
Brazil	23.15	23.15	16.67	16.67	18.21	19.75	15.74	15.74
Chile	17.59	17.59	12.96	12.96	23.61	23.61	16.98	16.98
Colombia	17.59	21.30	17.59	17.59	23.15	24.07	14.20	18.52
Costa Rica	22.22	24.07	11.11	13.89	23.46	25.62	11.73	13.27
Cuba	17.59	20.37	0.00	0.00	6.48	11.11	5.56	5.25
Dominica	11.11	11.11	6.48	7.41	5.56	5.56	8.18	8.18
Dominican Rep.	27.78	27.78	12.04	12.96	19.60	22.53	10.03	11.88
Ecuador	24.07	24.07	10.19	10.19	11.11	11.57	9.26	9.88
El Salvador	15.74	15.74	8.33	8.33	12.50	12.50	8.95	8.95
Grenada	10.19	10.19	5.56	5.56	7.72	7.72	7.72	7.72

Table 17: G5 Benchmark by pillar – Latin America and the Caribbean, 2021 and 2023 (continued)

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Guatemala	15.74	15.74	9.26	9.26	11.11	14.35	8.80	9.57
Guyana	19.44	19.44	10.19	11.11	4.63	5.56	6.17	7.10
Haiti	19.44	22.22	6.48	6.48	5.56	6.48	3.70	4.32
Honduras	16.67	17.59	10.19	10.19	12.04	13.43	5.09	6.02
Jamaica	20.37	21.30	13.89	13.89	11.11	11.11	10.65	10.65
Mexico	19.44	21.30	15.74	17.59	19.29	21.60	6.94	8.33
Nicaragua	7.41	8.33	9.26	9.26	4.94	6.79	5.86	6.79
Panama	19.44	19.44	13.89	14.81	15.12	17.90	8.33	8.02
Paraguay	10.19	11.11	11.11	11.11	11.73	14.04	5.56	6.48
Peru	19.44	19.44	14.81	16.67	18.98	21.30	14.20	14.20
Saint Kitts and Nevis	0.00	0.00	4.63	4.63	1.85	1.85	3.70	3.70
Saint Lucia	3.70	3.70	4.63	7.41	12.96	12.96	3.40	3.40
Saint Vincent and the Grenadines	4.63	5.56	13.89	14.81	3.70	3.70	2.47	2.47
Suriname	3.70	5.56	5.56	5.56	0.93	1.85	2.78	4.63
Trinidad and Tobago	14.81	14.81	10.19	12.04	10.80	11.88	11.42	12.04
Uruguay	19.44	22.22	9.26	12.96	25.00	26.39	14.51	13.58
Venezuela	10.19	12.96	7.41	7.41	3.24	10.34	4.94	4.94
Latin America and the Caribbean subregion averages	14.87	15.71	10.04	10.72	11.13	12.85	8.33	8.90

Source: ITU, G5 Benchmark 2023

For Pillar II, Colombia and Mexico stand out with a score of 17.59, very close to the maximum 18.52; overall, however, the subregion scores an average of 10.72, almost unchanged from the previous edition, meaning that advances have not been significant in most cases. In terms of Pillar III, Costa Rica scores highest in the subregion with 25.62. In comparison, the subregion overall averages a low 12.85, with small improvements over the 2021 edition, indicating persistent gaps in most countries. Finally, in the case of Pillar IV, the subregion scores poorly with an average of 8.90 out of 22.22, with improvement from 2021 negligible. Colombia stands again at the top of the subregion in 2023 with a score of 18.52.

3.2.3 Arab States region

Saudi Arabia is the only Arab State to have entered the Leading category in the 2023 edition of the G5 Benchmark, with a score of 80.40. Beyond Saudi Arabia, the Arab States region denotes two levels of development: Egypt, Kuwait, Oman, Qatar, and the United Arab Emirates have graduated to the Advanced category, while the rest of the Arab States scored within the Transitional or Limited categories. On average, the region has increased its score considerably since the previous edition (up to 44.86 from 38.46). Several Arab States have notably improved in their score, especially Algeria, Egypt, Kuwait, Oman, and the Sudan (Table 18).

Table 18: G5 Benchmark – Arab States region, 2021 and 2023

Country	G5 Benchmark (max: 100)	
	2021	2023
Algeria	35.80	50.93
Bahrain	50.93	50.93
Comoros	26.85	30.56
Djibouti	22.22	23.15
Egypt	52.62	69.29
Iraq	27.93	33.95
Jordan	42.59	47.22
Kuwait	48.46	62.65
Lebanon	37.65	38.58
Libya	3.70	3.70
Mauritania	36.88	44.29
Morocco	53.40	58.49
Oman	52.01	67.28
Palestine[11]	27.16	30.86
Qatar	62.81	66.82
Saudi Arabia	76.23	80.40
Somalia	22.22	22.22
Sudan	30.56	59.10
Syrian Arab Republic	16.36	21.60
Tunisia	35.19	39.35
United Arab Emirates	76.23	77.16
Yemen	8.33	8.33

[11] Palestine is not an ITU Member State; the status of Palestine in ITU is the subject of Resolution 99 (Rev. Dubai, 2018) of the ITU Plenipotentiary Conference.

Table 18: G5 Benchmark – Arab States region, 2021 and 2023 (continued)

Country	G5 Benchmark (max: 100)	
	2021	2023
Arab States region averages	38.46	44.86

Source: ITU, G5 Benchmark 2023

The largest improvements have been made for Pillars I and II (Table 19). Saudi Arabia scores the highest for Pillars I and III, while Tunisia leads for Pillar II and Qatar and Oman are joint leaders for Pillar IV.

Table 19: G5 Benchmark by pillar – Arab States region, 2021 and 2023

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Algeria	17.59	19.44	4.63	9.26	9.26	12.96	4.32	9.26
Bahrain	16.67	16.67	9.26	9.26	15.74	15.74	9.26	9.26
Comoros	11.11	12.04	6.48	6.48	5.56	8.33	3.70	3.70
Djibouti	10.19	11.11	2.78	2.78	3.24	3.24	6.02	6.02
Egypt	12.96	25.00	7.41	11.11	20.22	21.14	12.04	12.04
Iraq	8.33	9.26	9.26	9.26	4.48	8.64	5.86	6.79
Jordan	8.33	10.19	10.19	12.04	14.20	14.20	9.88	10.80
Kuwait	12.04	20.37	12.96	12.96	15.43	19.75	8.02	9.57
Lebanon	19.44	19.44	5.56	5.56	5.56	6.48	7.10	7.10
Libya	1.85	1.85	0.00	0.00	0.93	0.93	0.93	0.93
Mauritania	12.96	14.81	5.56	6.48	13.89	15.28	4.48	7.72
Morocco	19.44	22.22	5.56	7.41	14.81	15.28	13.58	13.58
Oman	18.52	24.07	4.63	7.41	17.13	18.52	11.73	17.28
Palestine[12]	10.19	10.19	5.56	5.56	10.19	12.96	1.23	2.16
Qatar	16.67	17.59	9.26	9.26	21.76	22.69	15.12	17.28
Saudi Arabia	24.07	26.85	12.04	12.04	23.46	24.85	16.67	16.67
Somalia	7.41	7.41	7.41	7.41	4.32	4.32	3.09	3.09
Sudan	10.19	21.30	4.63	10.19	10.49	16.51	5.25	11.11

[12] Palestine is not an ITU Member State; the status of Palestine in ITU is the subject of Resolution 99 (Rev. Dubai, 2018) of the ITU Plenipotentiary Conference.

Table 19: G5 Benchmark by pillar – Arab States region, 2021 and 2023 (continued)

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Syrian Arab Republic	7.41	7.41	3.70	3.70	2.78	7.41	2.47	3.09
Tunisia	5.56	5.56	13.89	13.89	10.19	13.43	5.56	6.48
United Arab Emirates	23.15	25.93	12.96	12.96	23.15	23.15	16.98	15.12
Yemen	0.00	0.00	3.70	3.70	2.78	2.78	1.85	1.85
Arab States region averages	12.46	14.94	7.15	8.12	11.34	13.12	7.51	8.68

Source: ITU, G5 Benchmark 2023

3.2.4 Asia and the Pacific region

The G5 Benchmark scores for the Asia and the Pacific region present a high level of dispersion. Several countries and economies either placed within the Leading category (Australia, India, the Republic of Korea, Malaysia, New Zealand, the Philippines, and Singapore) or the Advanced category (China, Indonesia, Japan, Pakistan, Sri Lanka and Thailand). The remaining countries and economies in the region scored within the Transitional or Limited categories. On average, the region has recorded an improvement with respect to the previous edition, rising to 49.39 from 43.86, as presented in Table 20.

Table 20: G5 Benchmark – Asia and the Pacific region,[13] 2021 and 2023

Country	G5 Benchmark (max: 100)	
	2021	2023
Afghanistan	14.35	19.91
Australia	78.24	80.71
Bangladesh	39.51	45.99
Bhutan	42.44	44.29
Brunei Darussalam	48.92	63.58
Cambodia	39.04	59.72
China	63.43	71.45
Fiji	39.51	39.51
Hong Kong, China	58.18	58.18

[13] The Democratic People's Republic of Korea was excluded due to insufficient observations. Hong Kong, Special Administrative Region of China is included here as an economy.

Table 20: G5 Benchmark – Asia and the Pacific region, 2021 and 2023 (continued)

Country	G5 Benchmark (max: 100)	
	2021	2023
India	79.17	81.94
Indonesia	62.81	72.69
Iran (Islamic Republic of)	46.60	53.70
Japan	74.54	72.69
Kiribati	29.32	29.32
Korea (Rep. of)	82.87	82.87
Lao P.D.R.	41.98	42.90
Malaysia	64.66	82.87
Maldives	25.15	27.01
Marshall Islands	19.44	22.84
Micronesia	30.86	31.79
Mongolia	51.08	57.87
Myanmar	7.41	35.03
Nauru	9.88	12.65
Nepal (Republic of)	11.42	14.20
New Zealand	76.70	81.33
Pakistan	67.44	66.98
Papua New Guinea	27.62	31.33
Philippines	67.13	81.48
Samoa	30.56	35.80
Singapore	81.94	86.42
Solomon Islands	21.30	23.15
Sri Lanka	58.80	64.81
Thailand	70.22	71.14
Timor-Leste	21.91	27.16
Tonga	13.58	16.36
Tuvalu	0.46	0.46
Vanuatu	25.31	41.20
Viet Nam	42.75	45.52
Asia and the Pacific region averages	43.86	49.39

Source: ITU, G5 Benchmark 2023

When examined by pillar, the main improvements have been made for Pillar III, where the regional average reaches 14.30 in 2023, up from 11.96 in the 2021 edition (Table 21). Malaysia and Singapore scored highest for Pillars I, II and IV, while India and the Philippines lead the way for Pillar III.

Table 21: G5 Benchmark by pillar – Asia and the Pacific region,[14] 2021 and 2023

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Afghanistan	5.56	7.41	4.63	5.56	3.24	5.09	0.93	1.85
Australia	25.00	25.00	15.74	15.74	21.14	22.99	16.36	16.98
Bangladesh	10.19	12.96	8.33	10.19	14.20	16.05	6.79	6.79
Bhutan	16.67	16.67	10.19	10.19	7.41	8.49	8.18	8.95
Brunei Darussalam	23.15	23.15	7.41	8.33	8.80	19.44	9.57	12.65
Cambodia	19.44	20.37	4.63	13.89	7.72	14.35	7.25	11.11
China	21.30	23.15	7.41	8.33	19.91	22.69	14.81	17.28
Fiji	17.59	17.59	6.48	6.48	11.11	11.11	4.32	4.32
Hong Kong, China	21.30	21.30	12.96	12.96	10.49	10.49	13.43	13.43
India	21.30	22.22	12.04	13.89	26.39	26.39	19.44	19.44
Indonesia	19.44	21.30	14.81	14.81	17.75	22.69	10.80	13.89
Iran (Islamic Republic of)	11.11	14.81	12.04	12.04	15.12	18.06	8.33	8.80
Japan	24.07	24.07	15.74	15.74	20.22	20.22	14.51	12.65
Kiribati	16.67	16.67	1.85	1.85	7.41	7.41	3.40	3.40
Korea (Rep. of)	25.00	25.00	15.74	15.74	24.54	24.54	17.59	17.59
Lao P.D.R.	19.44	19.44	6.48	6.48	7.41	8.33	8.64	8.64
Malaysia	20.37	26.85	12.96	14.81	14.66	21.45	16.67	19.75
Maldives	12.04	12.04	2.78	3.70	6.94	6.94	3.40	4.32
Marshall Islands	8.33	8.33	3.70	6.48	5.56	5.56	1.85	2.47
Micronesia	16.67	16.67	6.48	6.48	5.86	5.86	1.85	2.78
Mongolia	12.96	15.74	9.26	10.19	18.67	21.14	10.19	10.80

[14] The Democratic People's Republic of Korea was excluded due to insufficient observations. Hong Kong, Special Administrative Region of China is included here as an economy.

Table 21: G5 Benchmark by pillar – Asia and the Pacific region, 2021 and 2023 (continued)

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Myanmar	0.93	12.96	0.93	3.70	0.93	8.80	4.63	9.57
Nauru	0.93	0.93	1.85	2.78	6.48	8.33	0.62	0.62
Nepal (Republic of)	0.00	0.00	4.63	4.63	3.09	5.86	3.70	3.70
New Zealand	17.59	20.37	16.67	17.59	25.15	26.08	17.28	17.28
Pakistan	14.81	14.81	12.96	12.96	22.07	22.53	17.59	16.67
Papua New Guinea	8.33	8.33	8.33	9.26	6.02	6.02	4.94	7.72
Philippines	21.30	23.15	13.89	13.89	17.13	25.62	14.81	18.83
Samoa	12.04	12.04	8.33	8.33	6.48	9.88	3.70	5.56
Singapore	25.93	25.93	14.81	14.81	22.38	24.38	18.83	21.30
Solomon Islands	7.41	7.41	7.41	7.41	5.56	5.56	0.93	2.78
Sri Lanka	12.96	16.67	10.19	11.11	22.69	24.07	12.96	12.96
Thailand	19.44	19.44	13.89	13.89	18.06	18.98	18.83	18.83
Timor-Leste	8.33	8.33	9.26	10.19	2.78	5.56	1.54	3.09
Tonga	2.78	2.78	4.63	5.56	3.70	5.56	2.47	2.47
Tuvalu	0.00	0.00	0.00	0.00	0.46	0.46	0.00	0.00
Vanuatu	11.11	14.81	7.41	7.41	2.78	12.19	4.01	6.79
Viet Nam	11.11	12.96	11.11	11.11	14.35	14.35	6.17	7.10
Asia and the Pacific region averages	14.28	15.57	8.89	9.70	11.96	14.30	8.72	9.82

Source: ITU, G5 Benchmark 2023

3.2.5 Commonwealth of Independent States region

None of the countries in the Commonwealth of Independent States (CIS) region reached the Leading threshold in the 2023 edition of the G5 Benchmark, while only Armenia and the Russian Federation, with scores of 63.89 and 64.04, respectively, scored at the Advanced level. Both those countries improved their score considerably in the 2023 edition (Table 22). The remaining

countries in the region placed within the Transitional category, except Turkmenistan, which scored as Limited.

Table 22: G5 Benchmark – CIS region, 2021 and 2023

Country	G5 Benchmark (max: 100)	
	2021	2023
Armenia	56.33	63.89
Azerbaijan	41.67	45.06
Belarus	26.23	35.80
Kazakhstan	45.06	45.99
Kyrgyzstan	46.30	49.07
Russian Federation	58.49	64.04
Tajikistan	30.25	31.17
Turkmenistan	22.22	22.22
Uzbekistan	17.90	41.98
CIS region averages	38.27	44.36

Source: ITU, G5 Benchmark 2023

For Pillar I, Armenia scored highest in the region with 22.22 out of 29.63. The Russian Federation leads the way for the remaining pillars, albeit jointly with Kyrgyzstan for Pillar IV (Table 23). For all four pillars, the regional averages remain far off the maximum scores, highlighting the region's need to accelerate institutional and policy reforms in all areas.

Table 23: G5 Benchmark by pillar – CIS region, 2021 and 2023

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Armenia	22.22	22.22	13.89	13.89	12.81	16.98	7.41	10.80
Azerbaijan	12.96	15.74	6.48	6.48	14.20	14.20	8.02	8.64
Belarus	3.70	7.41	6.48	7.41	9.57	13.89	6.48	7.10
Kazakhstan	7.41	8.33	12.04	12.04	14.81	14.81	10.80	10.80
Kyrgyzstan	12.04	13.89	12.04	12.04	9.57	9.57	12.65	13.58
Russian Federation	10.19	12.04	12.96	14.81	21.76	23.61	13.58	13.58
Tajikistan	9.26	9.26	7.41	7.41	7.10	8.02	6.48	6.48
Turkmenistan	5.56	5.56	0.93	0.93	6.48	6.48	9.26	9.26
Uzbekistan	0.93	9.26	3.70	11.11	9.26	15.74	4.01	5.86

Table 23: G5 Benchmark by pillar – CIS region, 2021 and 2023 (continued)

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
CIS region averages	9.36	11.52	8.44	9.57	11.73	13.70	8.74	9.57

Source: ITU, G5 Benchmark 2023

3.2.6 Europe region

Europe is the region with the highest proportion of countries scoring at a Leading or Advanced level in the 2023 edition of the G5 Benchmark: 35 out of 45 countries. As a result, the regional average has increased to 69.45 in 2023 from 65.35 in 2021. The country with the highest score is Germany, which has also made significant progress since 2021. Beyond Germany, the other countries scoring as Leading are Austria, Estonia, Finland, Netherlands (Kingdom of the), Norway, Portugal, and the United Kingdom (Table 24).

Table 24: G5 Benchmark – Europe region,[15] 2021 and 2023

Country	G5 Benchmark (max: 100)	
	2021	2023
Albania	65.28	69.29
Andorra	30.25	37.35
Austria	73.77	80.86
Belgium	69.60	74.23
Bosnia and Herzegovina	39.35	41.67
Bulgaria	53.09	58.33
Croatia	72.69	72.69
Cyprus	58.18	68.52
Czech Republic	72.84	77.47
Denmark	76.23	77.16
Estonia	79.17	80.09
Finland	82.72	86.42
France	76.70	79.48
Georgia	42.59	50.93
Germany	85.80	90.43
Greece	70.68	74.07

[15] The Vatican was excluded due to insufficient observations.

Table 24: G5 Benchmark – Europe region, 2021 and 2023 (continued)

Country	G5 Benchmark (max: 100)	
	2021	2023
Hungary	70.22	74.23
Iceland	62.81	63.43
Ireland	71.76	77.62
Israel	74.38	75.46
Italy	76.85	76.85
Latvia	66.51	71.91
Liechtenstein	49.38	53.09
Lithuania	73.61	78.70
Luxembourg	70.37	77.78
Malta	69.91	73.92
Moldova	55.09	59.10
Monaco	34.41	34.41
Montenegro	60.34	67.13
Netherlands (Kingdom of the)	80.86	82.72
North Macedonia	52.78	57.10
Norway	74.07	80.71
Poland	67.75	73.61
Portugal	77.78	81.48
Romania	64.35	68.98
San Marino	23.15	25.00
Serbia	65.74	69.75
Slovakia	67.90	73.92
Slovenia	72.07	78.55
Spain	75.93	79.94
Sweden	71.91	78.09
Switzerland	74.07	77.78
Turkey	62.50	66.82
Ukraine	42.28	45.06
United Kingdom	83.02	83.02
Europe region averages	65.35	69.45

Source: ITU, G5 Benchmark 2023

Breaking down the region by pillar, the United Kingdom scored highest for Pillar I with 26.85 out of 29.63. For Pillar II, the lead is shared by Estonia, Denmark and Germany with a score of 17.59 out of 18.52. For Pillar III, Germany at 29.01 almost scores the maximum and achieves significant improvement from the previous edition. Finally, Denmark leads the way for Pillar IV, which highlights the advances made by the country in digital economy policy agenda (Table 25).

Table 25: G5 Benchmark by pillar – Europe region,[16] 2021 and 2023

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Albania	25.93	25.93	11.11	11.11	17.28	18.67	10.96	13.58
Andorra	7.41	9.26	2.78	7.41	11.11	11.11	8.95	9.57
Austria	22.22	23.15	15.74	15.74	17.90	23.46	17.90	18.52
Belgium	15.74	15.74	15.74	15.74	22.22	23.77	15.90	18.98
Bosnia and Herzegovina	12.96	14.81	11.11	11.11	10.65	12.04	4.63	3.70
Bulgaria	10.19	11.11	14.81	14.81	12.96	16.67	15.12	15.74
Croatia	20.37	20.37	14.81	14.81	21.60	21.60	15.90	15.90
Cyprus	15.74	19.44	13.89	13.89	15.74	20.99	12.81	14.20
Czech Republic	21.30	21.30	14.81	16.67	20.37	23.15	16.36	16.36
Denmark	17.59	17.59	16.67	17.59	21.91	21.91	20.06	20.06
Estonia	20.37	21.30	17.59	17.59	23.15	23.15	18.06	18.06
Finland	24.07	25.93	13.89	14.81	25.62	26.54	19.14	19.14
France	16.67	17.59	15.74	15.74	25.15	27.01	19.14	19.14
Georgia	14.81	16.67	12.96	12.96	7.41	12.04	7.41	9.26
Germany	25.00	25.00	17.59	17.59	24.38	29.01	18.83	18.83
Greece	20.37	20.37	14.81	15.74	17.59	20.06	17.90	17.90
Hungary	23.15	24.07	13.89	14.81	20.37	21.76	12.81	13.58
Iceland	15.74	15.74	13.89	13.89	20.22	20.22	12.96	13.58
Ireland	22.22	22.22	12.04	13.89	20.37	23.61	17.13	17.90
Israel	19.44	19.44	15.74	15.74	22.84	23.92	16.36	16.36
Italy	22.22	22.22	16.67	16.67	20.37	20.37	17.59	17.59
Latvia	21.30	22.22	14.81	16.67	17.59	19.44	12.81	13.58
Liechtenstein	15.74	16.67	7.41	7.41	18.21	19.14	8.02	9.88

[16] The Vatican was excluded due to insufficient observations.

Table 25: G5 Benchmark by pillar – Europe region, 2021 and 2023 (continued)

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Lithuania	24.07	24.07	16.67	16.67	17.59	21.91	15.28	16.05
Luxembourg	20.37	22.22	15.74	15.74	15.43	20.99	18.83	18.83
Malta	25.00	25.00	13.89	16.67	17.59	19.91	13.43	12.35
Moldova	17.59	20.37	13.89	13.89	14.81	16.05	8.80	8.80
Monaco	14.81	14.81	6.48	6.48	6.94	6.94	6.17	6.17
Montenegro	20.37	23.15	12.96	12.96	18.83	22.07	8.18	8.95
Netherlands (Kingdom of the)	25.93	25.93	14.81	16.67	22.22	22.22	17.90	17.90
North Macedonia	22.22	22.22	12.96	13.89	10.19	12.96	7.41	8.02
Norway	24.07	24.07	15.74	16.67	18.52	22.38	15.74	17.59
Poland	21.30	21.30	13.89	15.74	19.75	22.99	12.81	13.58
Portugal	24.07	25.93	15.74	15.74	22.53	24.38	15.43	15.43
Romania	19.44	20.37	15.74	15.74	15.74	18.06	13.43	14.81
San Marino	0.00	1.85	7.41	7.41	10.19	10.19	5.56	5.56
Serbia	19.44	19.44	13.89	14.81	20.83	23.15	11.57	12.35
Slovakia	18.52	19.44	13.89	14.81	20.06	24.23	15.43	15.43
Slovenia	23.15	23.15	13.89	16.67	20.68	25.46	14.35	13.27
Spain	20.37	23.15	15.74	15.74	23.15	23.77	16.67	17.28
Sweden	19.44	19.44	14.81	16.67	22.22	25.93	15.43	16.05
Switzerland	20.37	20.37	14.81	14.81	22.22	25.93	16.67	16.67
Turkey	17.59	19.44	12.04	12.04	20.99	22.99	11.88	12.35
Ukraine	9.26	9.26	13.89	13.89	10.19	12.96	8.95	8.95
United Kingdom	26.85	26.85	16.67	16.67	22.22	22.22	17.28	17.28
Europe region averages	19.22	20.00	13.87	14.51	18.40	20.61	13.86	14.33

Source: ITU, G5 Benchmark 2023

3.3 Groups of vulnerable countries

Using the definitions of the United Nations, the analysis below focuses on least developed countries (LDCs), landlocked developing countries (LLDCs) and small island developing States (SIDS). While scoring much lower averages than the world leaders, it is encouraging that the 2023 edition of the G5 Benchmark recorded significant increases in scores since 2021. Among these groups, LLDCs clearly emerge as having made most progress in adopting good institutional and regulatory practices (see Table 26).

Table 26: G5 Benchmark – Averages for groups of vulnerable countries, 2021 and 2023

Group of vulnerable countries	G5 Benchmark (max: 100)		% Change
	2021	2023	
LDCs	30.97	36.70	18.50 %
LLDCs	38.95	43.93	12.79%
SIDS	30.84	34.19	10.84%

Source: ITU, G5 Benchmark 2023

Analysis by pillar provides evidence that the groups of vulnerable countries lag behind in all main areas. Again, LLDCs as a group appear to have a better overall state of enabling policy, legal and governance environment for digital transformation compared to the other groups, in all fields (Table 27).

Table 27: G5 Benchmark – Averages by pillar for groups of vulnerable countries

Group of vulnerable countries	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
LDCs	11.25	13.22	6.38	7.29	8.07	9.84	5.26	6.35
LLDCs	13.17	15.08	8.25	8.78	10.44	12.20	7.10	7.88
SIDS	11.63	12.29	6.97	7.59	7.03	8.42	5.21	5.89

Source: ITU, G5 Benchmark 2023

3.3.1 Least developed countries

Analysis of LDCs point to a wide variance across the group. Benin appears as the overall leader, followed by Rwanda, the only countries in this group classified as Advanced based on their G5 Benchmark scores. There are still 19 countries in this group that score in the Limited category, pointing to the need for urgent policy actions in all areas (Table 28).

Table 28: G5 Benchmark – LDCs, 2021 and 2023

Country	G5 Benchmark (max: 100)	
	2021	2023
Afghanistan	14.35	19.91
Angola	18.36	27.62
Bangladesh	39.51	45.99
Benin	60.34	67.59
Bhutan	42.44	44.29
Burkina Faso	40.74	48.77
Burundi	18.36	26.70
Cambodia	39.04	59.72
Central African Rep.	14.51	26.54
Chad	31.64	41.36
Comoros	26.85	30.56
Dem. Rep. of the Congo	35.03	41.20
Djibouti	22.22	23.15
Eritrea	8.33	8.33
Ethiopia	46.91	50.62
Gambia	37.50	41.36
Guinea	30.09	33.80
Guinea-Bissau	24.07	26.85
Haiti	35.19	39.51
Kiribati	29.32	29.32
Lao P.D.R.	41.98	42.90
Lesotho	27.01	28.86
Liberia	40.90	41.82
Madagascar	32.56	35.34
Malawi	51.23	59.57
Mali	41.36	44.91
Mauritania	36.88	44.29
Mozambique	16.67	22.22
Myanmar	7.41	35.03
Nepal (Republic of)	11.42	14.20

Table 28: G5 Benchmark – LDCs, 2021 and 2023 (continued)

Country	G5 Benchmark (max: 100)	
	2021	2023
Niger	39.20	40.59
Rwanda	58.64	63.58
Sao Tome and Principe	22.53	27.62
Senegal	45.37	50.00
Sierra Leone	23.46	38.27
Solomon Islands	21.30	23.15
Somalia	22.22	22.22
South Sudan	21.60	21.60
Sudan	30.56	59.10
Tanzania	44.75	55.25
Timor-Leste	21.91	27.16
Togo	41.98	43.83
Tuvalu	0.46	0.46
Uganda	54.63	55.56
Yemen	8.33	8.33
Zambia	45.37	49.07
LDC group averages	30.97	36.70

Source: ITU, G5 Benchmark 2023

Malawi tops the list for Pillar I with a score of 25 out of 29.63, while Cambodia, Rwanda and Tanzania lead the way for Pillar II with 13.89 out of 18.52, followed closely by Benin. Rwanda scores highest for Pillar III, while Senegal does so for Pillar IV (Table 29).

Table 29: G5 Benchmark by pillar – LDCs, 2021 and 2023

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Afghanistan	5.56	7.41	4.63	5.56	3.24	5.09	0.93	1.85
Angola	3.70	11.11	5.56	7.41	5.40	5.40	3.70	3.70
Bangladesh	10.19	12.96	8.33	10.19	14.20	16.05	6.79	6.79
Benin	20.37	22.22	12.96	13.43	17.44	20.37	9.57	11.57
Bhutan	16.67	16.67	10.19	10.19	7.41	8.49	8.18	8.95

Table 29: G5 Benchmark by pillar – LDCs, 2021 and 2023 (continued)

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Burkina Faso	11.11	12.96	9.26	10.19	13.27	17.59	7.10	8.02
Burundi	6.48	10.19	1.85	1.85	5.09	8.80	4.94	5.86
Cambodia	19.44	20.37	4.63	13.89	7.72	14.35	7.25	11.11
Central African Rep.	4.63	12.04	1.85	3.70	4.63	4.63	3.40	6.17
Chad	14.81	21.30	2.78	3.24	10.03	11.88	4.01	4.94
Comoros	11.11	12.04	6.48	6.48	5.56	8.33	3.70	3.70
Dem. Rep. of the Congo	16.67	19.44	7.41	7.41	5.09	7.87	5.86	6.48
Djibouti	10.19	11.11	2.78	2.78	3.24	3.24	6.02	6.02
Eritrea	5.56	5.56	0.00	0.00	0.00	0.00	2.78	2.78
Ethiopia	15.74	19.44	8.33	8.33	12.35	12.35	10.49	10.49
Gambia	22.22	22.22	0.93	2.78	6.94	8.33	7.41	8.02
Guinea	13.89	13.89	3.70	5.56	7.41	7.87	5.09	6.48
Guinea-Bissau	12.04	14.81	6.48	6.48	2.78	2.78	2.78	2.78
Haiti	19.44	22.22	6.48	6.48	5.56	6.48	3.70	4.32
Kiribati	16.67	16.67	1.85	1.85	7.41	7.41	3.40	3.40
Lao P.D.R.	19.44	19.44	6.48	6.48	7.41	8.33	8.64	8.64
Lesotho	10.19	11.11	2.78	2.78	7.41	7.41	6.64	7.56
Liberia	13.89	13.89	8.33	8.33	12.81	13.73	5.86	5.86
Madagascar	11.11	12.96	7.41	7.41	9.10	10.03	4.94	4.94
Malawi	24.07	25.00	9.26	10.19	11.11	16.67	6.79	7.72
Mali	16.67	17.59	7.41	8.33	11.57	12.50	5.71	6.48
Mauritania	12.96	14.81	5.56	6.48	13.89	15.28	4.48	7.72
Mozambique	3.70	3.70	7.41	8.33	2.78	5.56	2.78	4.63
Myanmar	0.93	12.96	0.93	3.70	0.93	8.80	4.63	9.57
Nepal (Republic of)	0.00	0.00	4.63	4.63	3.09	5.86	3.70	3.70
Niger	12.96	12.96	9.26	9.26	10.80	12.19	6.17	6.17
Rwanda	16.67	18.52	13.89	13.89	20.68	22.53	7.41	8.64

Table 29: G5 Benchmark by pillar – LDCs, 2021 and 2023 (continued)

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Sao Tome and Principe	5.56	8.33	5.56	7.41	7.41	7.41	4.01	4.48
Senegal	8.33	8.33	6.48	7.41	16.67	19.44	13.89	14.81
Sierra Leone	8.33	16.67	6.48	9.26	6.48	8.33	2.16	4.01
Solomon Islands	7.41	7.41	7.41	7.41	5.56	5.56	0.93	2.78
Somalia	7.41	7.41	7.41	7.41	4.32	4.32	3.09	3.09
South Sudan	4.63	4.63	8.33	8.33	5.56	5.56	3.09	3.09
Sudan	10.19	21.30	4.63	10.19	10.49	16.51	5.25	11.11
Tanzania	14.81	14.81	12.96	13.89	11.42	16.67	5.56	9.88
Timor-Leste	8.33	8.33	9.26	10.19	2.78	5.56	1.54	3.09
Togo	8.33	8.33	12.04	12.04	14.81	14.81	6.79	8.64
Tuvalu	0.00	0.00	0.00	0.00	0.46	0.46	0.00	0.00
Uganda	20.37	20.37	8.33	9.26	12.96	12.96	12.96	12.96
Yemen	0.00	0.00	3.70	3.70	2.78	2.78	1.85	1.85
Zambia	14.81	14.81	11.11	11.11	13.27	16.05	6.17	7.10
LDC group averages	11.25	13.22	6.38	7.29	8.07	9.84	5.26	6.35

Source: ITU, G5 Benchmark 2023

3.3.2 Landlocked developing countries

Analysis of LLDCs shows Armenia and Rwanda leading the way as the only countries scoring as Advanced in this group. On the other hand, there are still seven countries in this group that score as Limited based on their G5 Benchmark score, pointing to the need for urgent policy actions in these countries (Table 30).

Table 30: G5 Benchmark – LLDCs, 2021 and 2023

Country	G5 Benchmark (max: 100)	
	2021	2023
Afghanistan	14.35	19.91
Armenia	56.33	63.89
Azerbaijan	41.67	45.06

Table 30: G5 Benchmark – LLDCs, 2021 and 2023 (continued)

Country	G5 Benchmark (max: 100)	
	2021	2023
Bhutan	42.44	44.29
Bolivia (Plurinational State of)	42.90	49.69
Botswana	51.70	55.09
Burkina Faso	40.74	48.77
Burundi	18.36	26.70
Central African Rep.	14.51	26.54
Chad	31.64	41.36
Eswatini	45.22	48.92
Ethiopia	46.91	50.62
Kazakhstan	45.06	45.99
Kyrgyzstan	46.30	49.07
Lao P.D.R.	41.98	42.90
Lesotho	27.01	28.86
Malawi	51.23	59.57
Mali	41.36	44.91
Mongolia	51.08	57.87
Nepal (Republic of)	11.42	14.20
Niger	39.20	40.59
North Macedonia	52.78	57.10
Paraguay	38.58	42.75
Moldova	55.09	59.10
Rwanda	58.64	63.58
South Sudan	21.60	21.60
Tajikistan	30.25	31.17
Turkmenistan	22.22	22.22
Uganda	54.63	55.56
Uzbekistan	17.90	41.98
Zambia	45.37	49.07
Zimbabwe	47.99	56.94
LLDC group averages	38.95	43.93

Source: ITU, G5 Benchmark 2023

By pillar, Malawi scored highest for Pillar I, while North Macedonia and Rwanda did so for Pillar II, with a score of 13.89 out of 18.52, followed closely by Benin. Rwanda leads the way again for Pillar III and Kyrgyzstan got the highest score for Pillar IV (Table 31).

Table 31: G5 Benchmark by pillar – LLDCs, 2021 and 2023

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Afghanistan	5.56	7.41	4.63	5.56	3.24	5.09	0.93	1.85
Armenia	22.22	22.22	13.89	13.89	12.81	16.98	7.41	10.80
Azerbaijan	12.96	15.74	6.48	6.48	14.20	14.20	8.02	8.64
Bhutan	16.67	16.67	10.19	10.19	7.41	8.49	8.18	8.95
Bolivia (Plurinational State of)	16.67	17.59	14.81	14.81	2.78	6.17	8.64	11.11
Botswana	22.22	24.07	8.33	8.33	10.96	11.88	10.19	10.80
Burkina Faso	11.11	12.96	9.26	10.19	13.27	17.59	7.10	8.02
Burundi	6.48	10.19	1.85	1.85	5.09	8.80	4.94	5.86
Central African Rep.	4.63	12.04	1.85	3.70	4.63	4.63	3.40	6.17
Chad	14.81	21.30	2.78	3.24	10.03	11.88	4.01	4.94
Eswatini	20.37	22.22	6.48	6.48	12.81	14.66	5.56	5.56
Ethiopia	15.74	19.44	8.33	8.33	12.35	12.35	10.49	10.49
Kazakhstan	7.41	8.33	12.04	12.04	14.81	14.81	10.80	10.80
Kyrgyzstan	12.04	13.89	12.04	12.04	9.57	9.57	12.65	13.58
Lao P.D.R.	19.44	19.44	6.48	6.48	7.41	8.33	8.64	8.64
Lesotho	10.19	11.11	2.78	2.78	7.41	7.41	6.64	7.56
Malawi	24.07	25.00	9.26	10.19	11.11	16.67	6.79	7.72
Mali	16.67	17.59	7.41	8.33	11.57	12.50	5.71	6.48
Mongolia	12.96	15.74	9.26	10.19	18.67	21.14	10.19	10.80
Nepal (Republic of)	0.00	0.00	4.63	4.63	3.09	5.86	3.70	3.70
Niger	12.96	12.96	9.26	9.26	10.80	12.19	6.17	6.17
North Macedonia	22.22	22.22	12.96	13.89	10.19	12.96	7.41	8.02
Paraguay	10.19	11.11	11.11	11.11	11.73	14.04	5.56	6.48
Moldova	17.59	20.37	13.89	13.89	14.81	16.05	8.80	8.80
Rwanda	16.67	18.52	13.89	13.89	20.68	22.53	7.41	8.64

Table 31: G5 Benchmark by pillar – LLDCs, 2021 and 2023 (continued)

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
South Sudan	4.63	4.63	8.33	8.33	5.56	5.56	3.09	3.09
Tajikistan	9.26	9.26	7.41	7.41	7.10	8.02	6.48	6.48
Turkmenistan	5.56	5.56	0.93	0.93	6.48	6.48	9.26	9.26
Uganda	20.37	20.37	8.33	9.26	12.96	12.96	12.96	12.96
Uzbekistan	0.93	9.26	3.70	11.11	9.26	15.74	4.01	5.86
Zambia	14.81	14.81	11.11	11.11	13.27	16.05	6.17	7.10
Zimbabwe	13.89	20.37	10.19	11.11	18.06	18.67	5.86	6.79
LLDC group averages	13.17	15.08	8.25	8.78	10.44	12.20	7.10	7.88

Source: ITU, G5 Benchmark 2023

3.3.3 Small island developing States

The SIDS group shows significant disparity, with one country passing the Leading threshold (Singapore), while there are still 15 economies within the group that score as Limited based on the G5 Benchmark (Table 32).

Table 32: G5 Benchmark – SIDS, 2021 and 2023

Country	G5 Benchmark (max: 100)	
	2021	2023
Antigua and Barbuda	27.78	30.56
Bahamas	41.82	41.82
Barbados	34.72	36.57
Belize	27.62	31.02
Cabo Verde	43.98	50.00
Comoros	26.85	30.56
Cuba	29.63	36.73
Dominica	31.33	32.25
Dominican Republic	69.44	75.15
Fiji	39.51	39.51
Micronesia	30.86	31.79
Grenada	31.17	31.17

Table 32: G5 Benchmark – SIDS, 2021 and 2023 (continued)

Country	G5 Benchmark (max: 100)	
	2021	2023
Guinea-Bissau	24.07	26.85
Guyana	40.43	43.21
Haiti	35.19	39.51
Jamaica	56.02	56.94
Kiribati	29.32	29.32
Maldives	25.15	27.01
Marshall Islands	19.44	22.84
Mauritius	56.33	62.81
Nauru	9.88	12.65
Papua New Guinea	27.62	31.33
Saint Kitts and Nevis	10.19	10.19
Saint Lucia	24.69	27.47
Saint Vincent and the Grenadines	24.69	26.54
Samoa	30.56	35.80
Sao Tome and Principe	22.53	27.62
Seychelles	14.81	20.37
Singapore	81.94	86.42
Solomon Islands	21.30	23.15
Suriname	12.96	17.59
Timor-Leste	21.91	27.16
Tonga	13.58	16.36
Trinidad and Tobago	47.22	50.77
Tuvalu	0.46	0.46
Vanuatu	25.31	41.20
SIDS group averages	30.84	34.19

Source: ITU, G5 Benchmark 2023

By pillar, Singapore leads the way in all cases, although its score is equalled by Bahamas and Saint Vincent and the Grenadines for Pillar II (Table 33).

Table 33: G5 Benchmark by pillar – SIDS, 2021 and 2023

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Antigua and Barbuda	11.11	11.11	5.56	6.48	5.56	7.41	5.56	5.56
Bahamas	13.89	13.89	12.96	14.81	8.18	8.18	6.79	4.94
Barbados	12.04	13.89	8.33	8.33	6.94	6.94	7.41	7.41
Belize	9.26	9.26	8.33	8.33	2.78	5.56	7.25	7.87
Cabo Verde	16.67	16.67	8.33	9.26	11.57	16.67	7.41	7.41
Comoros	11.11	12.04	6.48	6.48	5.56	8.33	3.70	3.70
Cuba	17.59	20.37	0.00	0.00	6.48	11.11	5.56	5.25
Dominica	11.11	11.11	6.48	7.41	5.56	5.56	8.18	8.18
Dominican Republic	27.78	27.78	12.04	12.96	19.60	22.53	10.03	11.88
Fiji	17.59	17.59	6.48	6.48	11.11	11.11	4.32	4.32
Micronesia	16.67	16.67	6.48	6.48	5.86	5.86	1.85	2.78
Grenada	10.19	10.19	5.56	5.56	7.72	7.72	7.72	7.72
Guinea-Bissau	12.04	14.81	6.48	6.48	2.78	2.78	2.78	2.78
Guyana	19.44	19.44	10.19	11.11	4.63	5.56	6.17	7.10
Haiti	19.44	22.22	6.48	6.48	5.56	6.48	3.70	4.32
Jamaica	20.37	21.30	13.89	13.89	11.11	11.11	10.65	10.65
Kiribati	16.67	16.67	1.85	1.85	7.41	7.41	3.40	3.40
Maldives	12.04	12.04	2.78	3.70	6.94	6.94	3.40	4.32
Marshall Islands	8.33	8.33	3.70	6.48	5.56	5.56	1.85	2.47
Mauritius	20.37	20.37	9.26	10.19	14.35	18.06	12.35	14.20
Nauru	0.93	0.93	1.85	2.78	6.48	8.33	0.62	0.62
Papua New Guinea	8.33	8.33	8.33	9.26	6.02	6.02	4.94	7.72
Saint Kitts and Nevis	0.00	0.00	4.63	4.63	1.85	1.85	3.70	3.70
Saint Lucia	3.70	3.70	4.63	7.41	12.96	12.96	3.40	3.40
Saint Vincent and the Grenadines	4.63	5.56	13.89	14.81	3.70	3.70	2.47	2.47
Samoa	12.04	12.04	8.33	8.33	6.48	9.88	3.70	5.56
Sao Tome and Principe	5.56	8.33	5.56	7.41	7.41	7.41	4.01	4.48
Seychelles	5.56	8.33	2.78	2.78	3.70	4.63	2.78	4.63

Table 33: G5 Benchmark by pillar – SIDS, 2021 and 2023 (continued)

Country	Pillar I: National regulatory governance (max: 29.63)		Pillar II: Policy design principles in the digital arena (max: 18.52)		Pillar III: Digital development toolbox (max: 29.63)		Pillar IV: Digital economy policy agenda (max: 22.22)	
	2021	2023	2021	2023	2021	2023	2021	2023
Singapore	25.93	25.93	14.81	14.81	22.38	24.38	18.83	21.30
Solomon Islands	7.41	7.41	7.41	7.41	5.56	5.56	0.93	2.78
Suriname	3.70	5.56	5.56	5.56	0.93	1.85	2.78	4.63
Timor-Leste	8.33	8.33	9.26	10.19	2.78	5.56	1.54	3.09
Tonga	2.78	2.78	4.63	5.56	3.70	5.56	2.47	2.47
Trinidad and Tobago	14.81	14.81	10.19	12.04	10.80	11.88	11.42	12.04
Tuvalu	0.00	0.00	0.00	0.00	0.46	0.46	0.00	0.00
Vanuatu	11.11	14.81	7.41	7.41	2.78	12.19	4.01	6.79
SIDS group averages	11.63	12.29	6.97	7.59	7.03	8.42	5.21	5.89

Source: ITU, G5 Benchmark 2023

4 Conclusions

The G5 Benchmark was conceived as a tool to track the evolution of regulatory frameworks and help countries establish roadmaps towards a new paradigm of cross-institutional collaboration. Its relevance is justified as the development of a national digital economy depends to a large degree on implementation of collaborative regulatory and policy frameworks. The lack of cross-institutional collaboration represents a critical barrier to the development of policy coherence and regulatory consistency.

In the 2023 edition of the G5 Benchmark, an effort was made to update the information on all indicators, making it possible to monitor the evolution of each country over the past two years. In addition, with access to new information, it has been possible to revise some scores from 2021.

The 2023 edition was calculated for 193 countries and economies, of which 18 countries (9.3 per cent) achieved a G5 Benchmark score corresponding to the Leading threshold, 58 countries (30.1 per cent) scored as Advanced, 84 countries (or 43.5 per cent) as Transitional and 33 countries (17.1 per cent) as Limited. This distribution indicates that, while a sizable group of countries have passed the Leading or Advanced threshold under the G5 Benchmark (76 countries or 39.4 per cent), most countries still need to fulfil the conditions necessary to graduate to those levels.

With North America being the region with the highest average score for each pillar in 2023, it is possible to calculate the magnitude of the gap to each of the other regions for each pillar. In all cases, the largest gap is seen under Pillar III, digital development toolbox, followed by Pillar IV, digital economy policy agenda. It seems that, while emerging regions have made advances for Pillar I, national regulatory governance, the improvements in other fields have not been strong enough.

The most significant improvements with respect to the previous edition have been recorded for Pillar I in the CIS (23 per cent) and Arab States (20 per cent), and for Pillar III, digital development toolbox, in Asia and the Pacific (20 per cent). The CIS and Arab States also made significant improvements for Pillar III with scores of 16 per cent and 17 per cent, respectively. Africa has made notable advances for both Pillar III (18 per cent) and Pillar I (17 per cent). Latin America and the Caribbean, however, only recorded notable improvements for Pillar III, while, as expected, the increases in score for North America and Europe, regions with already mature frameworks, were lower than those of the emerging regions.

For future editions, it is expected that the G5 Benchmark will undergo further conceptual refinements, following developments in digital economy policy-making and regulation. Among issues to be considered in future releases of the G5 Benchmark, it is expected to address: (i) a more detailed approach to digital economy taxation policy; (ii) collaboration in the field of technology ethics; (iii) digital infrastructure funding policies, such as earmarking a portion of the general budget for network deployment or initiatives to address demand-side barriers; (iv) the role of central governments and the executive branch in marshalling policy coherence and coordination; (v) coordination between the public and private sectors; (vi) policy coordination between central and regional/municipal governments; and (vii) international cooperation in adjacent areas such as climate change, digital-service taxation and artificial intelligence, among other current or emerging issues.

Bibliography

ITU (2023). *Global Digital Regulatory Outlook 2023. Policy and regulation to spur digital Transformation*. Geneva, Switzerland.

ITU (2021). *The economic impact of broadband and digitization through the COVID-19 pandemic: Econometric Modelling*. Geneva, Switzerland.

ITU (2020). *Global ICT Regulatory Outlook 2020. Pointing the way forward to collaborative regulation*. Geneva, Switzerland.

Katz, R., Jung, J., and Callorda, F. (2020). "Can digitization mitigate the economic damage of a pandemic? Evidence from SARS", *Telecommunications Policy* 44, 102044.

Appendix 1: Detailed methodology of the G5 Benchmark

PILLAR I: NATIONAL COLLABORATIVE GOVERNANCE				
	Component I: Regulatory collaboration in telecommunication/ICT core areas			
I01	Collaboration between (separate) ICT regulator and (independent) spectrum management authority	- Formal framework for collaboration such as a Memorandum of Understanding or Agreement (MoU or MoA), or - Public joint program or committee exists, or - ICT regulator has the mandate/ same authority	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Informal collaboration (no legal framework but informal collaboration channels exist), or - Semi-formal collaboration (i.e., internal program or committee exist), or - Collaboration may occur in the framework of a general multi-party committee or mechanism, or - No (separate) ICT regulator exists, and activities are carried out under the same ministry	1	
		No collaboration or no entity in charge	0	
I02	Collaboration between (separate) ICT regulator and (independent) broadcasting authority (content)	- Formal framework for collaboration such as a Memorandum of Understanding or Agreement (MoU or MoA), or - Public joint program or committee exists, or - ICT regulator has the mandate/ same authority	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Informal collaboration (no legal framework but informal collaboration channels exist), or - Semi-formal collaboration (i.e., internal program or committee exist), or - Collaboration may occur in the framework of a general multi-party committee or mechanism, or - No (separate) ICT regulator exists, and activities are carried out under the same ministry	1	
		No collaboration or no entity in charge	0	

(continued)

I03	Collaboration between (separate) ICT regulator and (independent) cybersecurity agency	- Formal framework for collaboration such as a Memorandum of Understanding or Agreement (MoU or MoA), or - Public joint program or committee exists, or - ICT regulator has the mandate/ same authority	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Informal collaboration (no legal framework but informal collaboration channels exist), or - Semi-formal collaboration (i.e., internal program or committee exist), or - Collaboration may occur in the framework of a general multi-party committee or mechanism, or - No (separate) ICT regulator exists, and activities are carried out under the same ministry	1	
		No collaboration or no entity in charge	0	
I04	Collaboration between (separate) ICT regulator and national computer emergency response team (CERT)/computer incident response team (CIRT) or similar	- Formal framework for collaboration such as a Memorandum of Understanding or Agreement (MoU or MoA), or - Public joint program or committee exists, or - ICT regulator has the mandate/ same authority	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Informal collaboration (no legal framework but informal collaboration channels exist), or - Semi-formal collaboration (i.e., internal program or committee exist), or - Collaboration may occur in the framework of a general multi-party committee or mechanism, or - No (separate) ICT regulator exists and activities are carried out under the same ministry	1	
		No collaboration or no entity in charge	0	

(continued)

I05	Collaboration between (separate) ICT regulator and (independent) data protection authority	- Formal framework for collaboration such as a Memorandum of Understanding or Agreement (MoU or MoA), or - Public joint program or committee exists	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Informal collaboration (no legal framework but informal collaboration channels exist), or - Semi-formal collaboration (i.e., internal program or committee exist), or - Collaboration may occur in the framework of a general multi-party committee or mechanism, or - ICT regulator has the mandate/ same authority, or - No (separate) ICT regulator exists and activities are carried out under the same ministry	1	
		No collaboration or no entity in charge	0	
	Component II: Collaboration in the area of digital products and services			
I06	Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND a dedicated digital (transformation) agency/ national agency in charge of (coordination of) the implementation of digital policies/strategies, OR similar	- Formal framework for collaboration such as a Memorandum of Understanding or Agreement (MoU or MoA), or - Public joint program or committee exists	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Informal collaboration (no legal framework but informal collaboration channels exist), or - Semi-formal collaboration (i.e., internal program or committee exist), or - Collaboration may occur in the framework of a general multi-party committee or mechanism	1	
		No collaboration or no entity in charge	0	

(continued)

I07	Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND (independent) financial regulatory authority	*Collaboration between (separate) regulatory authorities OR between a regulatory authority and a ministry:* - Formal framework for collaboration such as a Memorandum of Understanding or Agreement (MoU or MoA), or - Public joint program or committee exists; *Inter-ministerial collaboration:* - Public joint program or committee exists, or - Other outcome of such collaboration is on public record	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Informal collaboration (no legal framework but informal collaboration channels exist), or - Semi-formal collaboration (i.e., internal program or committee exist), or - Collaboration may occur in the framework of a general multi-party committee or mechanism, or - No (separate) ICT regulator exists, but ICT policy body collaborating with the ministry of finance	1	
		- No collaboration or no entity in charge	0	
I08	Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND energy regulatory authority	*Collaboration between (separate) regulatory authorities OR between a regulatory authority and a ministry:* - Formal framework for collaboration such as a Memorandum of Understanding or Agreement (MoU or MoA), or - Public joint program or committee exists; *Inter-ministerial collaboration:* - Public joint program or committee exists, or - Other outcome of such collaboration is on public record; OR - (separate) ICT regulator has the mandate/ same authority	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Informal collaboration (no legal framework but informal collaboration channels exist), or - Semi-formal collaboration (i.e., internal program or committee exist), or - Collaboration may occur in the framework of a general multi-party committee or mechanism, or - No (separate) ICT regulator exists and activities are carried out under the same ministry, or - No (separate) ICT regulator exists, but ICT policy body collaborating with the ministry of energy	1	
		No collaboration or no entity in charge	0	

(continued)

I09	Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND transport regulatory authority	*Collaboration between (separate) regulatory authorities OR between a regulatory authority and a ministry:* - Formal framework for collaboration such as a Memorandum of Understanding or Agreement (MoU or MoA), or - Public joint program or committee exists; *Inter-ministerial collaboration:* - Public joint program or committee exists, or - Other outcome of such collaboration is on public record; OR - (separate) ICT regulator has the mandate/ same authority	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Informal collaboration (no legal framework but informal collaboration channels exist), or - Semi-formal collaboration (i.e., internal program or committee exist), or - Collaboration may occur in the framework of a general multi-party committee or mechanism, or - No (separate) ICT regulator exists and activities are carried out under the same ministry, or - No (separate) ICT regulator exists, but ICT policy body collaborating with the ministry of transport	1	
		No collaboration or no entity in charge	0	

(continued)

I10	Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND (independent) competition authority	*Collaboration between (separate) regulatory authorities OR between a regulatory authority and a ministry:* - Formal framework for collaboration such as a Memorandum of Understanding or Agreement (MoU or MoA), or - Public joint program or committee exists; *Inter-ministerial collaboration:* - Public joint program or committee exists, or - Other outcome of such collaboration is on public record	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Informal collaboration (no legal framework but informal collaboration channels exist), or - Semi-formal collaboration (i.e., internal program or committee exist), or - Collaboration may occur in the framework of a general multi-party committee or mechanism, or - ICT regulator has the mandate for both ex-ante and ex-post competition in telecom and digital markets/ same authority, or - No (separate) ICT regulator exists OR no (independent) Competition authority exists but the respective entities responsible for regulation collaborate	1	
		No collaboration or no entity in charge	0	
I11	Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND entity in charge of postal regulation (i.e. ministry or independent authority)	*Collaboration between (separate) regulatory authorities OR between a regulatory authority and a ministry:* - Formal framework for collaboration such as a Memorandum of Understanding or Agreement (MoU or MoA), or - Public joint program or committee exists; *Inter-ministerial collaboration:* - Public joint program or committee exists, or - Other outcome of such collaboration is on public record; OR - (separate) ICT regulator has the mandate/ same authority	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Informal collaboration (no legal framework but informal collaboration channels exist), or - Semi-formal collaboration (i.e., internal program or committee exist), or - Collaboration may occur in the framework of a general multi-party committee or mechanism, or - No (separate) ICT regulator exists, and activities are carried out under the same ministry	1	
		No collaboration or no entity in charge	0	

(continued)

I12	Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND (independent) consumer protection authority	*Collaboration between (separate) regulatory authorities OR between a regulatory authority and a ministry:* - Formal framework for collaboration such as a Memorandum of Understanding or Agreement (MoU or MoA), or - Public joint program or committee exists; *Inter-ministerial collaboration:* - Public joint program or committee exists, or - Other outcome of such collaboration is on public record; OR - (separate) ICT regulator has the mandate/ same authority	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Informal collaboration (no legal framework but informal collaboration channels exist), or - Semi-formal collaboration (i.e., internal program or committee exist), or - Collaboration may occur in the framework of a general multi-party committee or mechanism, or - ICT regulator has the mandate/ same authority, or - No (separate) ICT regulator exists, and activities are carried out under the same ministry, or - No (separate) ICT regulator exists OR no (independent) Consumer protection authority exists but the respective entities responsible for regulation collaborate	1	
		No collaboration or no entity in charge	0	
I13	Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND ministry responsible for health (e-health)	*Collaboration between (separate) ICT regulator and the ministry of health:* - Formal framework for collaboration such as a Memorandum of Understanding or Agreement (MoU or MoA), or - Public joint program or committee exists; *Inter-ministerial collaboration:* - Public joint program or committee exists, or - Other outcome of such collaboration is on public record	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Informal collaboration (no legal framework but informal collaboration channels exist), or - Semi-formal collaboration (i.e., internal program or committee exist), or - Collaboration may occur in the framework of a general multi-party committee or mechanism, or - No (separate) ICT regulator exists AND the ICT Policy body collaborates with the Health ministry	1	
		No collaboration or no entity in charge	0	

(continued)

I14	Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND ministry responsible for education (e-education)	*Collaboration between (separate) ICT regulator and the ministry of education:* - Formal framework for collaboration such as a Memorandum of Understanding or Agreement (MoU or MoA), or - Public joint program or committee exists; *Inter-ministerial collaboration:* - Public joint program or committee exists, or - Other outcome of such collaboration is on public record	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Informal collaboration (no legal framework but informal collaboration channels exist), or - Semi-formal collaboration (i.e., internal program or committee exist), or - Collaboration may occur in the framework of a general multi-party committee or mechanism, or - No (separate) ICT regulator exists AND the ICT Policy body collaborates with the Education ministry	1	
		No collaboration or no entity in charge	0	
I15	Collaboration between ICT policy body (e.g. telecommunication/ICT/ communication ministry) OR ICT regulator AND ministry responsible for the environment (e-waste)	*Collaboration between (separate) ICT regulator and the ministry responsible for e-waste:* - Formal framework for collaboration such as a Memorandum of Understanding or Agreement (MoU or MoA), or - Public joint program or committee exists; *Inter-ministerial collaboration:* - Public joint program or committee exists, or - Other outcome of such collaboration is on public record; OR - ICT regulator/Ministry has the mandate/ same authority	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Informal collaboration (no legal framework but informal collaboration channels exist), or - Semi-formal collaboration (i.e., internal program or committee exist), or - Collaboration may occur in the framework of a general multi-party committee or mechanism, or - No (separate) ICT regulator exists, and activities are carried out under the same ministry, or - No (separate) ICT regulator exists, but the ICT Policy body collaborates with the Ministry responsible for e-waste	1	
		No collaboration or no entity in charge	0	

(continued)

I16	Collaboration between ICT policy body (e.g. telecommunication/ ICT/ communication ministry) OR ICT regulator AND ministry responsible for economic development OR similar focusing on a single or subset of economic sector/s (e.g. industry, agriculture, fishing, etc.)	*Collaboration between the (separate) ICT regulator and the ministry responsible for industrial sector/s or similar:* - Formal framework for collaboration such as a Memorandum of Understanding or Agreement (MoU or MoA), or - Public joint program or committee exists; *Inter-ministerial collaboration:* - Public joint program or committee exists, or - Other outcome of such collaboration is on public record	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Informal collaboration (no legal framework but informal collaboration channels exist), or - Semi-formal collaboration (i.e., internal program or committee exist), or - Collaboration may occur in the framework of a general multi-party committee or mechanism, or - No (separate) ICT regulator exists, but the ICT Policy body collaborates with the Ministry responsible for industrial sector/s or similar	1	
		No collaboration or no entity in charge	0	
PILLAR II: POLICY DESIGN PRINCIPLES				
	Component I: Regulatory design procedures			
	Indicator	*Possible values*	*Score*	*Source*
II01	Do official guidelines exist on designing public consultations as a tool to gather feedback from national stakeholders and guide regulatory decision-making (e.g. clear deadlines and sufficient time to contribute, the process for consultations is clearly defined and requirements to publish and respond to stakeholder comments are in place)?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		Yes, however either: - there is no requirement to publish and/or respond to comments received, or - the timeline for consultation is less than 30 days, or - it is unclear what the timeline and process is and whether the regulator incorporates results in their decision-making, or - there is no obligation to consider/ respond to all comments, or - such guidelines are not publicly available.	1	
		Public consultations are not required by law, are not undertaken or no rules/guidelines exist	0	

(continued)

II02	Is there a formal legal requirement for conducting a regulatory impact assessment (RIA)* before major regulatory decisions are made for all/multiple government agencies (all sectors)? * RIA is a systemic approach to critically assessing the positive and negative effects of proposed and existing regulations and non-regulatory alternatives. It encompasses a range of methods and is an important element of an evidence-based policy making.	Yes	2	World Bank Global Indicators of Regulatory Governance, ITU Telecommunication/ICT Regulatory Database and desktop research
		Yes, but not consistently applied to all decisions/ all sectors	1	
		No	0	
II03	Are the decisions of regulatory authorities (or entities in charge of regulation) subject to a general administrative-procedure law* applicable to all/multiple government agencies?* General administrative procedures law refers to a law that governs the processes by which government agencies (all sectors) propose, establish and implements regulation, as well as provides for the review of regulatory and administrative decisions.	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	
II04	Can affected parties (i.e. infrastructure or service providers, not individual users of digital services) request reconsideration or appeal adopted regulations/regulatory decisions to the relevant administrative agency (all sectors), including major dispute* resolution or enforcement decisions?* Major disputes refer to disputes other than disputes relating to small claims. Major disputes would include, for example, different commercial disputes, interconnection disputes, interference disputes between radiocommunications providers, disputes between telecom operators and OTTs, etc. Such disputes might involve several (independent) regulators or other government agencies.	Yes, administrative review by an independent body/ the judiciary	2	World Bank Global Indicators of Regulatory Governance and desktop research
		Yes, administrative review by the regulatory bodies (all sectors)	1	
		- No, appeals are not allowed through general provisions for all parts of government - Unclear institutional mandates	0	
II05	Are national policy and regulatory frameworks technology- and service-neutral (e.g. licensing frameworks)?	Yes, for both authorizations/operating licences and spectrum	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Yes, for authorization/operating licences OR spectrum, but not for both - Yes, they are technology neutral, but not service neutral - Yes, they are service neutral, but not technology neutral - There are exceptions to which bands of the spectrum are technology neutral	1	
		No	0	
II06a	*Regulatory experimentation*: Are there mechanisms for experimentation foreseen in ICT/digital regulation?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	

(continued)

II06b	*Regulatory experimentation*: Are there regulatory sandboxes for digital financial services (or fintech sandboxes)?	Yes	2	Consultative Group to Assist the Poor (CGAP)
		No	0	
II07a	*Policy reviews*: Do government ministries/regulatory agencies conduct ex-post policy reviews (all sectors)?	Yes	2	World Bank Global Indicators of Regulatory Governance and desktop research
		No	0	
II07b	*Policy reviews*: Do government ministries/regulatory agencies conduct rolling policy reviews and commission policy implementation monitoring reports (all sectors)?	Yes	2	World Bank Global Indicators of Regulatory Governance and desktop research
		No	0	
II08	*Transparency:* Are the laws (all sectors) that are currently in effect available on a single website managed by the government?	Yes	2	World Bank Global Indicators of Regulatory Governance and desktop research
		No	0	
II09	*Transparency:* Is public access to information ensured and fundamental freedoms protected (i.e. freedom of information and expression), in accordance with national legislation and international agreements?	Yes	2	UN Statistics Division SDG indicator
		No	0	
II10	*Transparency:* Are there rules on ethics in place that apply to the staff of a national regulatory authority, including the head/chair and members/commissioners (e.g. improper acceptance of gifts, personal and financial conflicts of interest and post-employment obligations)?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	
PILLAR III: DIGITAL DEVELOPMENT TOOLBOX				
	Component I: Digital strategy for development			
	Indicator	*Possible values*	*Score*	*Source*
III01a	*Strategy design and implementation:* Is there an overarching national digital strategy/digital transformation policy in place (in addition to and independent of ICT sector-specific strategies)?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Expired for less than 2 years, or - Under development (draft document publicly available), or - Digital is part of a broader development strategy	1	
		No	0	
III01b	*Strategy design and implementation:* Does the digital strategy have mechanisms for implementation/operational objectives (e.g. funding and coordination mechanisms, monitoring and evaluation mechanisms and objectives)?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Yes, partially, or - The strategy has expired (for less than 2 years)	1	
		- No, no operational objectives or implementation mechanisms are included in the strategy, or - No strategy exists	0	

(continued)

III02	Is broadband considered as part of the definition of universal access/service?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- No, the universal access/service definition does not include broadband, or - There is no universal access/ service policy or universal access/ service is not clearly defined	0	
III03	Is there a national digital identity legal or policy framework, or an operational system in place?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	
III04	Is there a national e-government/ digital-first government strategy or equivalent?	Very high development	2	United Nations Department of Economic and Social Affairs E-Government Development Index
		High development	1	
		Medium development	0	
		Low development	0	
III05	Has the country adopted e-waste regulations or management standards?	Yes	2	ITU Telecommunication/ICT Regulatory Database and Global E-waste Statistics Partnership (GESP)
		No	0	
III06	Does a regulatory framework exist for ICT accessibility for persons with disabilities?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		Partial framework (or elements in other regulatory instruments)	1	
		No	0	
III07	Is there legislation/regulation for child online protection?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	
III08a	*Public services*: Has the country adopted any policy/legislation/ regulation related to smart cities?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	
III08b	*Public services:* Has the country adopted any policy/legislation/ regulation related to e-health or smart health?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	
III08c	*Public services:* Has the country adopted a national policy/ legislation/regulation related to e-education and e-learning?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	
III09a	*Cybersecurity:* Is there a cybersecurity legislation or regulation?	Yes	2	ITU Telecommunication/ ICT Regulatory Database, UNCTAD and desktop research
		Partial coverage (e.g., cybercrime)	1	
		No	0	

(continued)

III09b	*Cybersecurity:* Has the country signed or ratified either of the following international instruments: - the Convention on Cybercrime (aka Budapest Convention) - the African Union Convention on Cyber Security and Personal Data Protection (aka Malabo convention) - Arab Convention on Combating Information Technology Offences - Shanghai Cooperation Organization Agreement on Cooperation in the Field of International Information Security - Commonwealth of Independent States Agreement on Cooperation in the Fight Against Crimes in the Field of Information Technologies (aka 'Dushanbe Agreement')	Yes, either of the instruments is ratified	2	[Depending on the instrument/region] - Council of Europe - African Union - League of Arab States - Shanghai Cooperation Organization - Commonwealth of Independent States
		No, none of the instruments is ratified	0	
III10a	*Data protection:* Are there formal national data protection rules covering digital services and content (e.g. laws and regulations)?	There is a law, and a data protection agency has been established	2	ITU Telecommunication/ ICT Regulatory Database, UNCTAD and desktop research
		There is a law, but either: - a data protection agency has not yet been established, or - the law is not yet implemented, or - the law covers only a limited number of areas/activities	1	
		No	0	
III10b	*Data protection:* Has the country signed international agreements determining jurisdiction and/or managing cross-border flows for data privacy?	Yes, determining jurisdiction and managing cross border flows	2	Desktop research
		Yes, either determining jurisdiction or managing cross border flows	1	
		No	0	
III11a	*Emergency telecommunications:* Has the country signed or ratified the Tampere Convention on the provision of telecommunication resources for disaster mitigation and relief operations?	Yes	2	United Nations Treaty Collection
		No	0	
III11b	*Emergency telecommunications:* Does a National Emergency (Telecommunications) Plan exist?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	
III12a	*Infrastructure sharing:* Does an official register or a mapping system exist in the country of all telecommunication/ICT infrastructure and providing information about multiple aspects such as quality of service, coverage and network capacity (including a publicly available register of all infrastructure components and data processing guidelines)?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Yes, but only for some infrastructure, or - Yes, but the register is not publicly available (or not for all infrastructure components), or - Yes, but evidence is unclear	1	
		No	0	
III12b	*Infrastructure sharing:* Are there any cross-sector (ICT and energy, rail or other) infrastructure sharing or fibre co-deployment requirements/ regulations or promotion initiatives?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	

(continued)

	Component II: Sustainable Development Goals (SDGs)			
III13	Is the national digital strategy (identified under III01a) explicitly SDG-oriented OR does it mention specific SDGs or other international development goals (e.g. Millennium Development Goals, World Summit on the Information Society goals and European Union strategic objectives)?	Yes	2	ITU Telecommunication/ ICT Regulatory Database, UNSTAT and desktop research
		No	0	
III14	Are there policy instruments aimed at supporting the shift to sustainable consumption and production, or a coordination mechanism for sustainable consumption and production?	Yes	2	UN Statistics Division SDG indicator database
		No	0	
III15	Is there a developed and operationalized global strategy for youth employment and for implementation of the Global Jobs Pact of the International Labour Organization?	Yes	2	International Labour Organization and UN Statistics Division SDG indicator, desktop research
		Developed, not yet operationalized	1	
		No	0	
III16a	*Strategies for targeted groups:* Are there nation-wide government programmes/ initiatives for the promotion of meaningful connectivity* for women and girls? *Meaningful connectivity is defined as a level of connectivity that allows users to have a safe, satisfying, enriching and productive online experience at an affordable cost; it has a dual focus on the quality and use of connectivity.	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	
III16b	*Strategies for targeted groups:* Are there nation-wide government programmes/ initiatives for the promotion of meaningful connectivity* for persons with disabilities?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	
III16c	*Strategies for targeted groups:* Are there nation-wide government programmes/ initiatives for the promotion of meaningful connectivity* for young people?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	
PILLAR IV: DIGITAL ECONOMY POLICY AGENDA				
	Component I: International collaboration and harmonization			
	Indicator	*Possible values*	*Score*	*Source*
IV01	Does the country belong to regional integration initiatives with ICT chapters?	Yes	2	Desktop research
		Yes, partial	1	
		No	0	
IV02	Has the country made a commitment to facilitate trade in telecommunication services under the WTO General Agreement on Trade in Services (GATS)?	Yes	2	World Trade Organization
		No	0	

(continued)

	Component II: Framework for innovation			
IV03	Is there a holistic innovation policy or one tailored to the ICT/ digital sector?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		Planned or not clearly implemented	1	
		No	0	
IV04	Is there a forward-looking competition policy, law or regulation applied to digital markets?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		- Planned (draft document publicly available), or - A general competition law exists which contains specific provisions for digital markets	1	
		No	0	
	Component III: Framework for digital transformation			
IV05	Has your country adopted a forward-looking or innovative national strategy, policy or initiative focusing on spectrum (e.g., for International Mobile Telecommunications 2000/mobile broadband incl. 5G , Ffixed Wireless Access, satellite and space technologies, or a mix of technologies)?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	
IV06	Are there policies and regulations for e-commerce/e-transactions?	Yes	2	ITU Telecommunication/ ICT Regulatory Database, UNCTAD, and desktop research
		- Rules exist at the regional level exist (e.g., EU), but national rules have not yet been formulated, or - National rules have limited provisions (e.g., e-signatures only)	1	
		No	0	
IV07a	*Policies for specific sectors: Education* Does the definition of universal service/access include connectivity for telecentres or schools (primary, secondary and post-secondary)?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	
IV07b	*Policies for specific sectors: Education* Has the government financed projects for connecting schools to the Internet (primary, secondary, post-secondary, universities, specialized training institutions, etc.), through a universal service fund or other financial mechanisms?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	
IV07c	*Policies for specific sectors: Education* Does the national digital strategy (identified under III01a) include specific arrangements, mechanisms or initiatives for the education sector?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	
IV08a	*Policies for specific sectors: All* Does the national digital strategy (identified under III01a) include specific arrangements, mechanisms or initiatives for multiple sectors of the economy?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		Partly/ Not clearly expounded	1	
		No	0	

(continued)

IV08b	*Policies for specific sectors*: *Industry/ Agriculture/ Finance/ Science* Has the country adopted any policy/ legislation/ regulation related to industry/ agriculture/ financial services/ science, or similar?	Yes, for three or more areas	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		Yes, for two areas	1.3	
		Yes, for one area	0.7	
		No	0	
IV09a	*Industry 4.0*: Has the country adopted a strategy, policy or initiative focusing on the Internet of Things (IoT)? Or have any programmes been deployed in the area of spectrum management and availability for IoT systems?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	
IV09b	*Industry 4.0*: Has the country adopted a policy/ legislation/ regulation/ standards or frame-work related to cloud computing (cloud-first or else)?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	
IV09c	*Industry 4.0*: Has the country adopted a national strategy, policy or initiative related to artificial intelligence?	Yes	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		No	0	
Component IV: Taxation framework				
IV10	Are there specific taxes on the telecommunication/digital sector (supply side) OR on Internet services/devices/SIM cards/ airtime recharge (demand side)?	Yes	0	ITU Tariff Policies database and desktop research
		No	2	
IV11	Are there regulatory incentives aimed at network operators or digital market players?	Yes, for all	2	ITU Telecommunication/ ICT Regulatory Database and desktop research
		Yes, but only for some	1	
		No	0	
	Component V: Codes of conduct			
IV12	Aree there industry codes of conduct or codes of practice (voluntary or enforceable/required by or designed with regulator/s)?	Yes	2	Desktop research
		No	0	

Source: ITU, G5 Benchmark 2023

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