WORLD TELECOMMUNICATION
DEVELOPMENT CONFERENCE

ITU WTDC
BAKU2025
17–28 November 2025
Baku, Azerbaijan

Regulatory Roundtable

Objectives and priorities for regulators in the digital era – next generation regulations- sharing experiences

Session 2
Digital infrastructure investment: creating the optimum investment environment to enable digital transformation for all

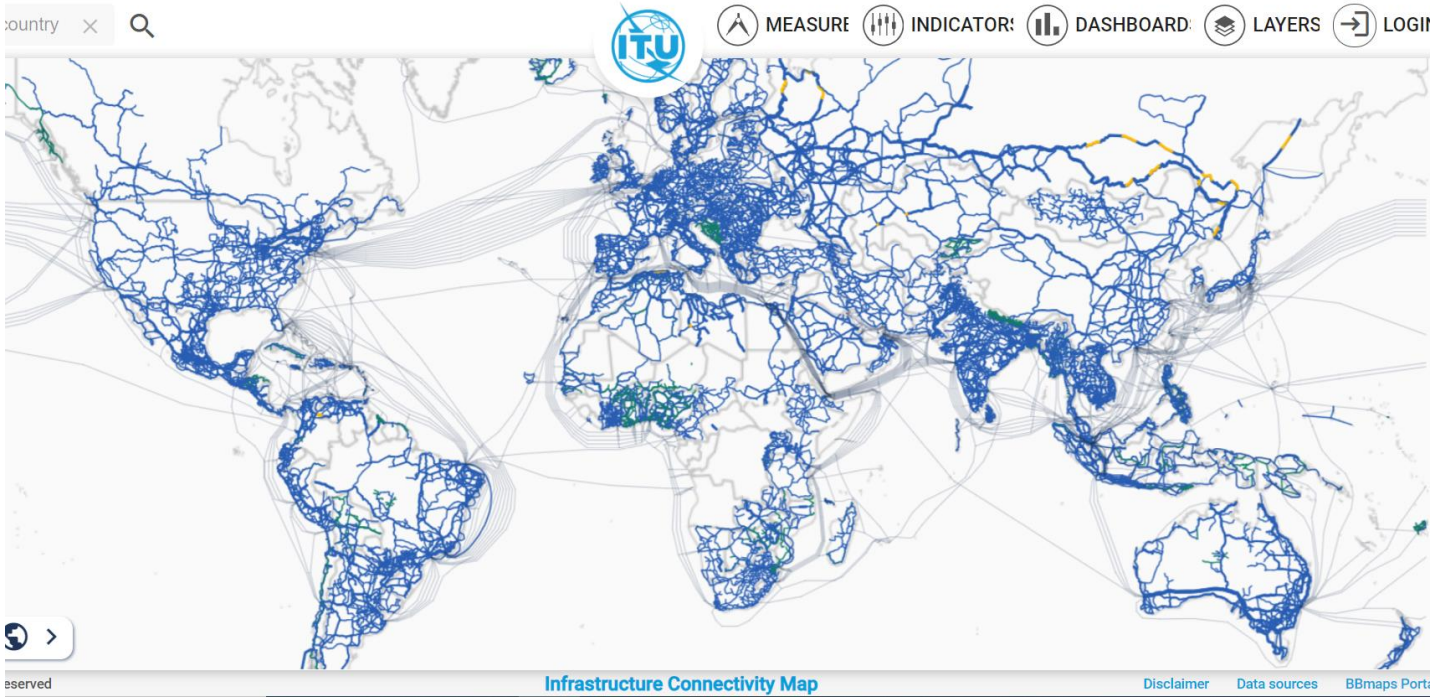
Asia and the Pacific: Overview

- Internet use has grown steadily, reaching 66% in 2024, up from just 30% in 2010.
- 4G coverage now reaches 96% of the population, helping bridge connectivity gaps, but some remote areas remain unserved.
- 5G networks expanded from 3% to 62% coverage between 2020 and 2024, outpacing global growth
- The region’s mobile broadband subscriptions (97 per 100 inhabitants) now exceed the global average, driving digital transformation.

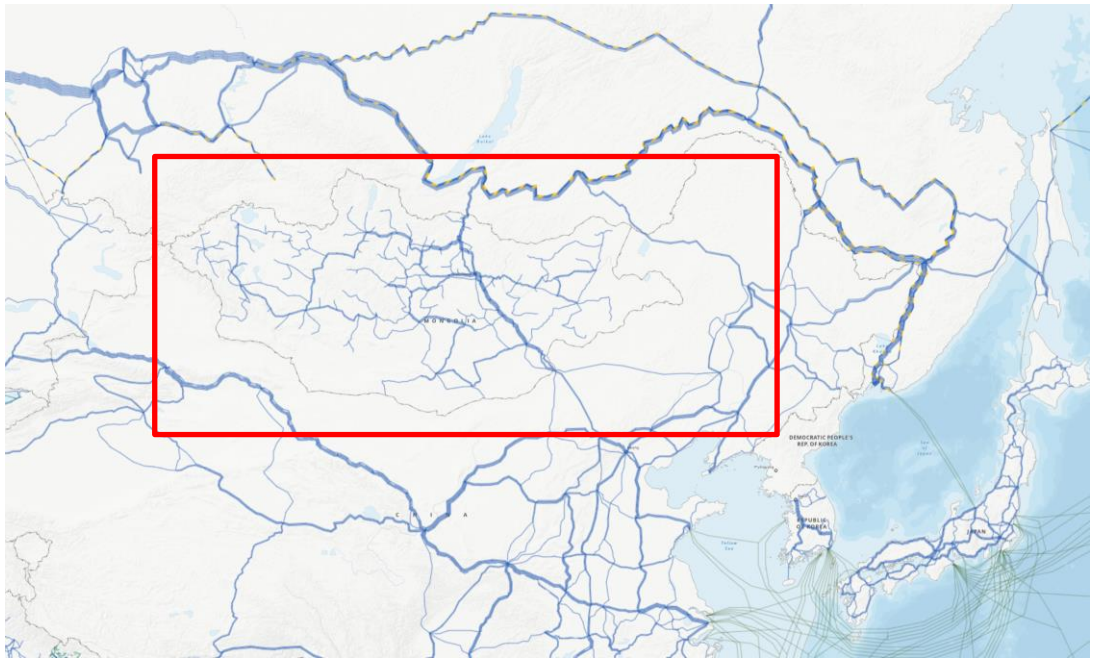
ICT regulation: Where it all begins

- One-quarter of Asia-Pacific countries are in the most advanced stage of ICT regulation (‘G4’), while two-thirds remain at G2 or G3.
- Legal instruments for digital markets are underdeveloped, with the region scoring just 39%, and LDCs and SIDS achieving only 20%, undermining digital readiness.
- Regional and international cooperation is weak, scoring 29%—below the global average (38%), limiting the region’s ability to scale digital innovation.
- Several initiatives are driving regulatory progress, including ASEAN DIFAP, ITU-ASEAN Digital Government Framework, APEC Digital Economy Work Program, and the Pacific Islands Forum Digital Agenda

ITU interactive transmission map

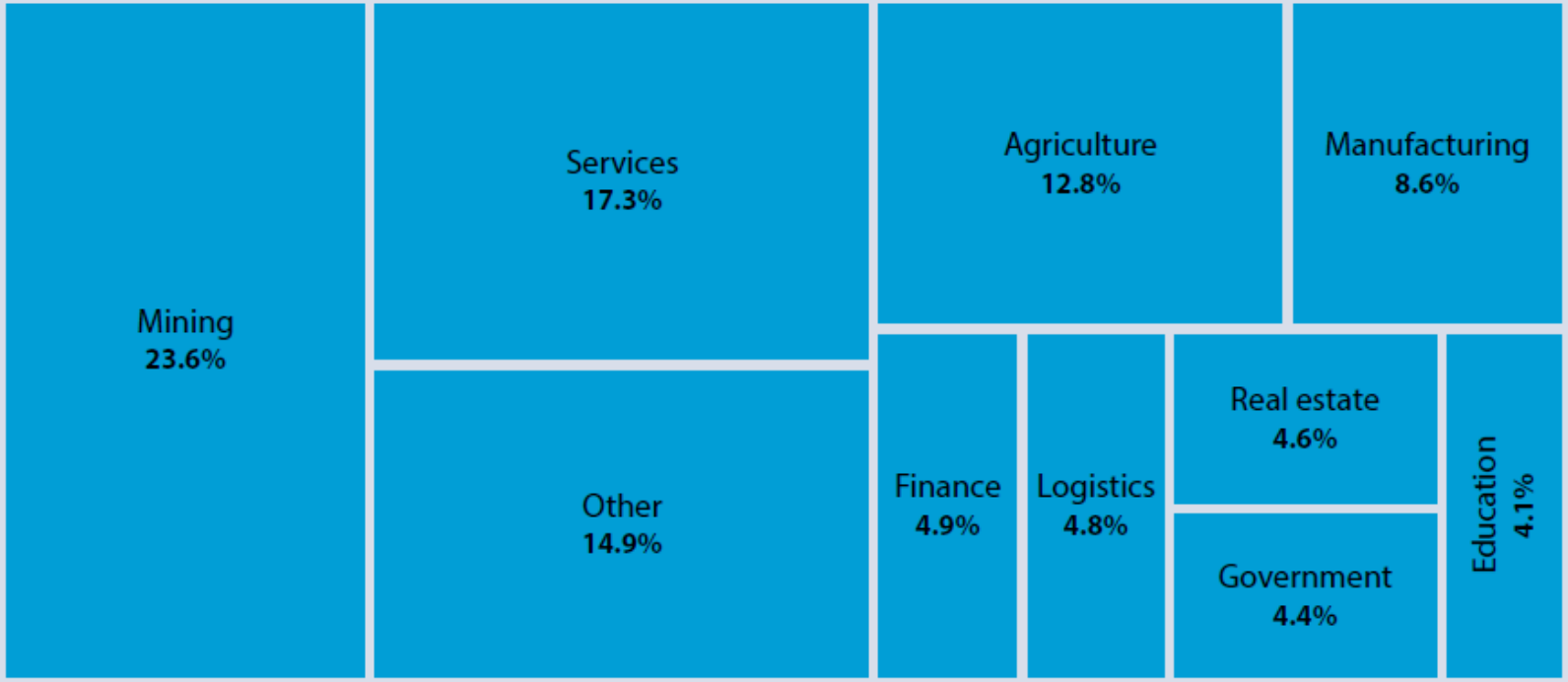


Mongolia



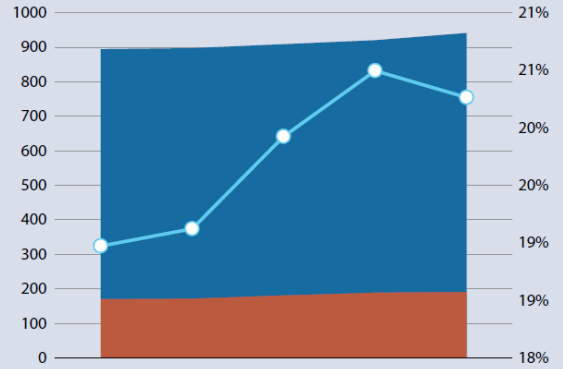
Source: https://bbmaps.itu.int/bbmaps/

SECTOR-WISE CONTRIBUTION TO MONGOLIA'S GDP.



Source: National Statistics Office (NSO) of Mongolia. Gross Domestic Product. 2023 [6].

OVERALL Vs SHARE OF HERDER HOUSEHOLD IN MONGOLIA.

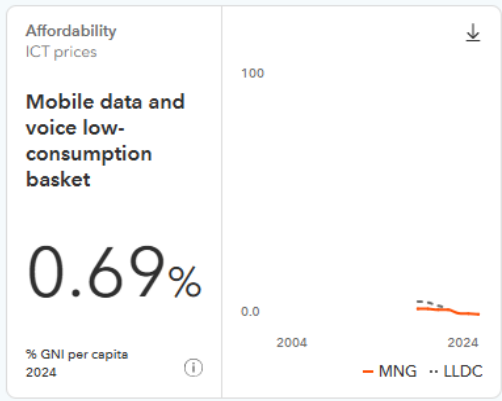


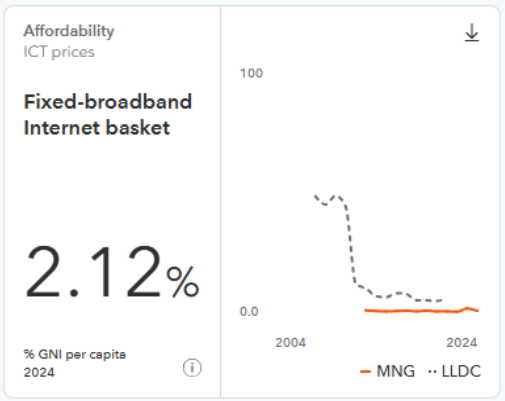
	2018	2019	2020	2021	2022
Households, thousand households	894.5	897.4	908.7	920.2	941.5
Herder households	169.7	171.6	181.1	188.6	190.8
Percentage of herder HH-s	19%	19%	20%	20%	20%

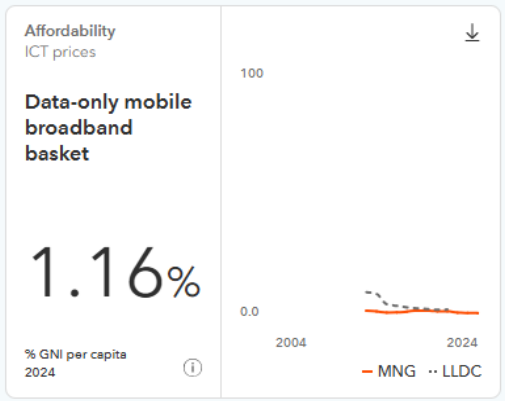
MONGOLIA'S RANK IN INNOVATION INDEX (2020–23).

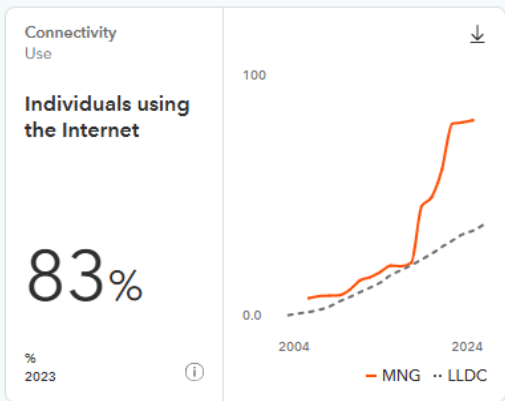
	GII Position	Innovation Inputs	Innovation Outputs
2020	58th	65th	54th
2021	58th	65th	55th
2022	71st	81st	64th
2023	68th	79th	60th

Source: WIPO. Global Innovation Index. 2023 [34].







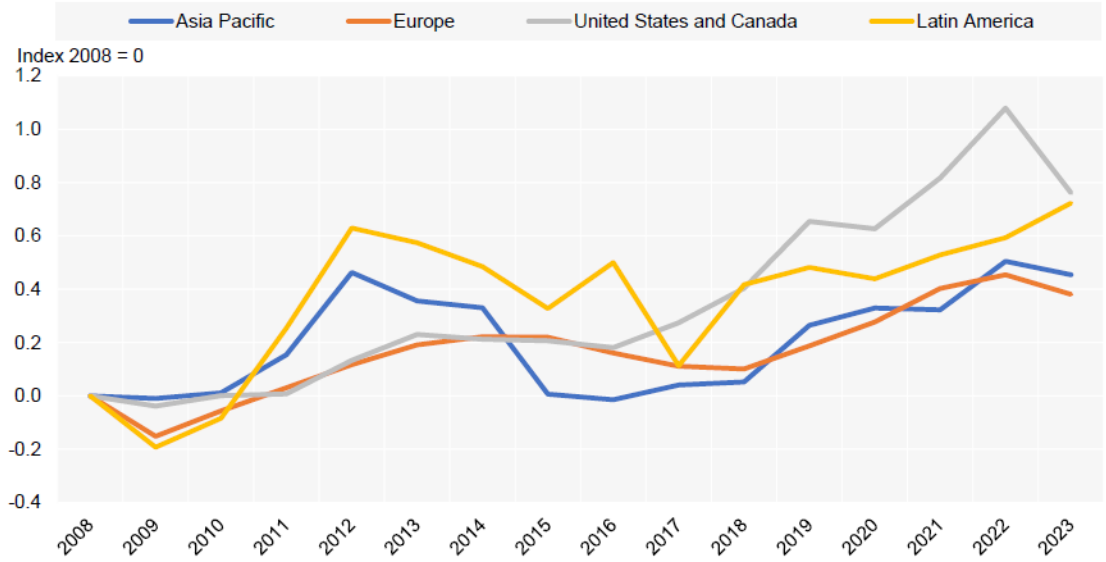


Source: ITU Data Hub

Capital Expenditure ↑ Return on Invested Capital ↓

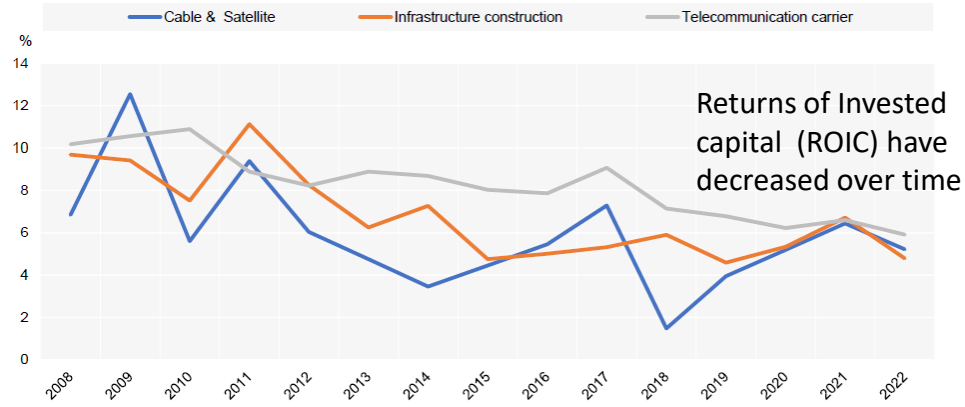
Indexed values of capital expenditure of mobile operators increased over time

Development of Capital expenditure in indexed absolute values over time for OECD countries in Asia Pacific, Europe, United States and Canada and Latin America



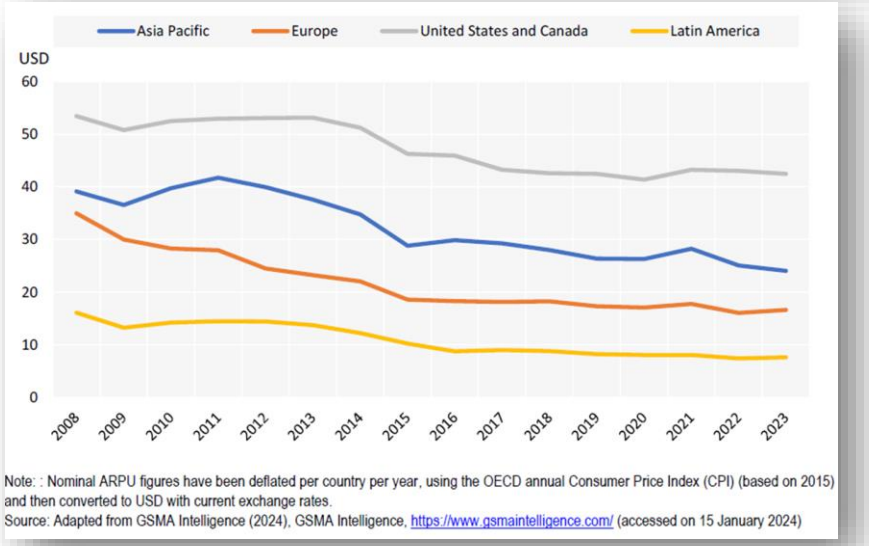
Source: Adapted from GSMA Intelligence (2024), GSMA Intelligence, https://www.gsmaintelligence.com/ (accessed on 15 January 2024)

Return on invested capital (ROIC) for telecommunication carriers, cable & satellite companies, and Infrastructure construction companies, 2008 – 2022



Returns of Invested capital (ROIC) have decreased over time

Source: Adapted from Bloomberg (2023), Bloomberg Terminal, https://www.bloomberg.com/professional/products/bloomberg-terminal (accessed 15 September 2023)



Note: : Nominal ARPU figures have been deflated per country per year, using the OECD annual Consumer Price Index (CPI) (based on 2015) and then converted to USD with current exchange rates.
Source: Adapted from GSMA Intelligence (2024), GSMA Intelligence, https://www.gsmaintelligence.com/ (accessed on 15 January 2024)

Nominal ARPU figures deflated per country per year

World Bank: FINANCING BROADBAND NETWORKS OF THE FUTURE

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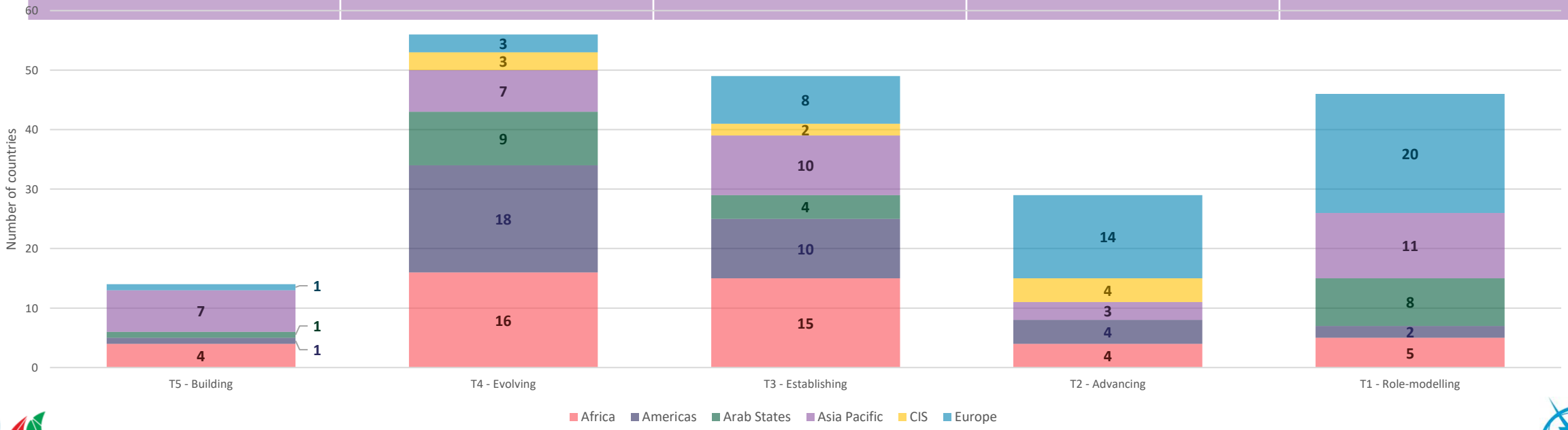
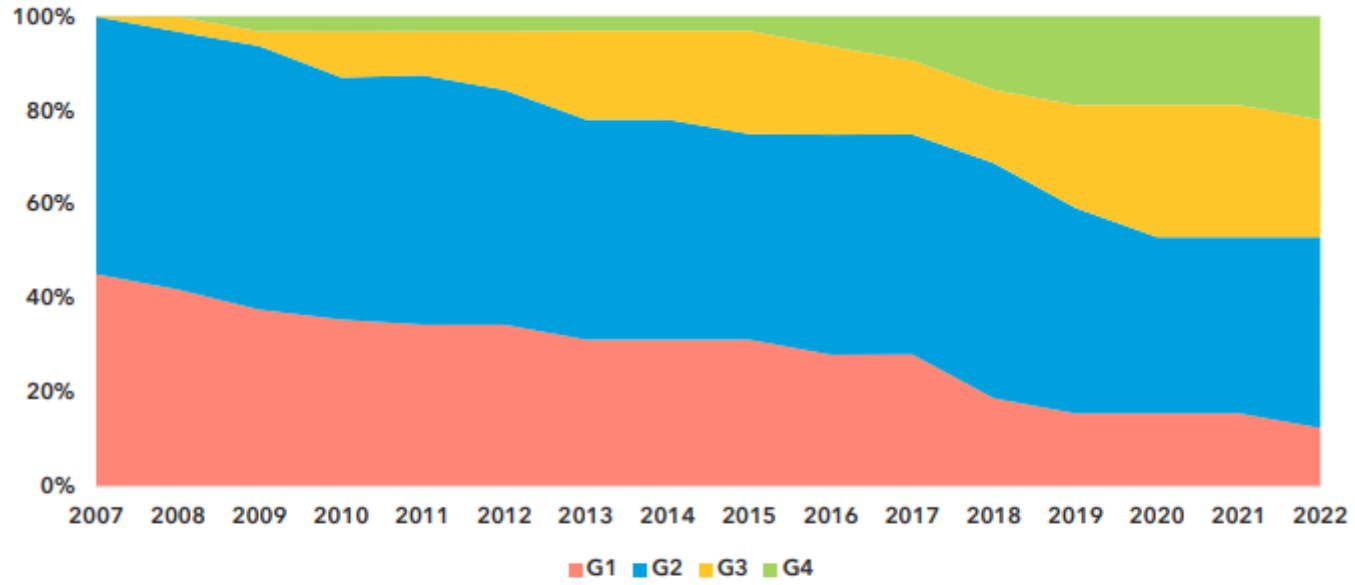
GCI 2024: Asia and the Pacific Tier Performance

T5 *Building*	T4 *Evolving*	T3 Establishing	T2 Advancing	T1 Role-Modelling
Afghanistan Dem. People's Rep. of Korea) Maldives Marshall Islands Micronesia Solomon Islands Timor-Leste	Cambodia Fiji Lao P.D.R. Nauru Samoa Tonga Tuvalu	Bhutan Brunei Darussalam Iran (Islamic Republic of) Kiribati **Mongolia** Myanmar Nepal (Republic of) New Zealand Papua New Guinea Vanuatu	China Philippines Sri Lanka	Australia Bangladesh India Indonesia Japan Malaysia Pakistan Republic of Korea Singapore Thailand Viet Nam



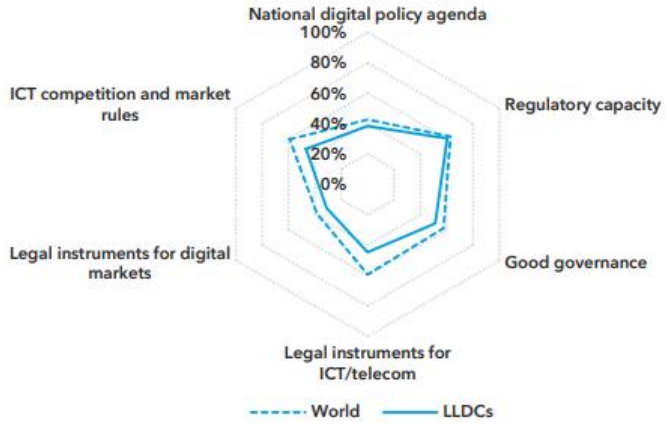
LLDC ICT Regulation and Policies

Evolution of the generations of ICT regulation in LLDCs



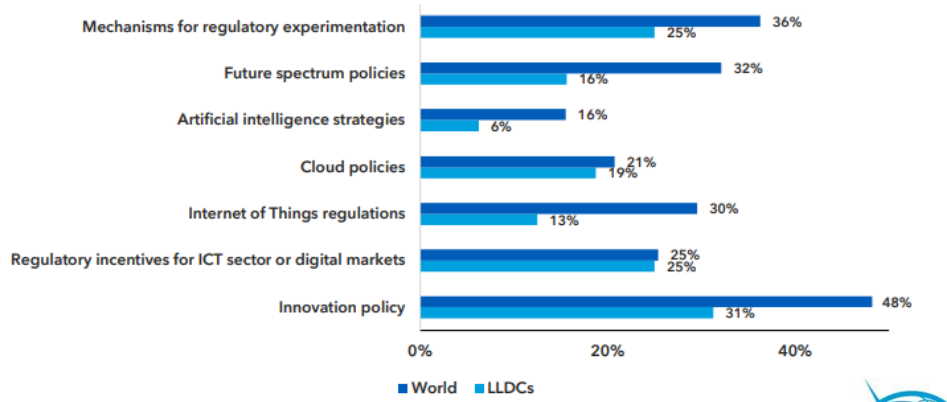
Note: The 'Generations of ICT regulation' provides a high-level conceptual framework for the overall development of national legal instruments, policies and governance for the ICT and digital sectors. Generations 1 through 4 are based on ICT Regulatory Tracker scores:
G1 – Command and control approach: 0 < 40
G2 – Early open markets: 40 < 70
G3 – Enabling investment and access: 70 < 85
G4 – Integrated telecommunication regulation: 85 ≤ 100
Source: ITU

Benchmarks for the readiness of national frameworks for digital transformation in key areas, 2023



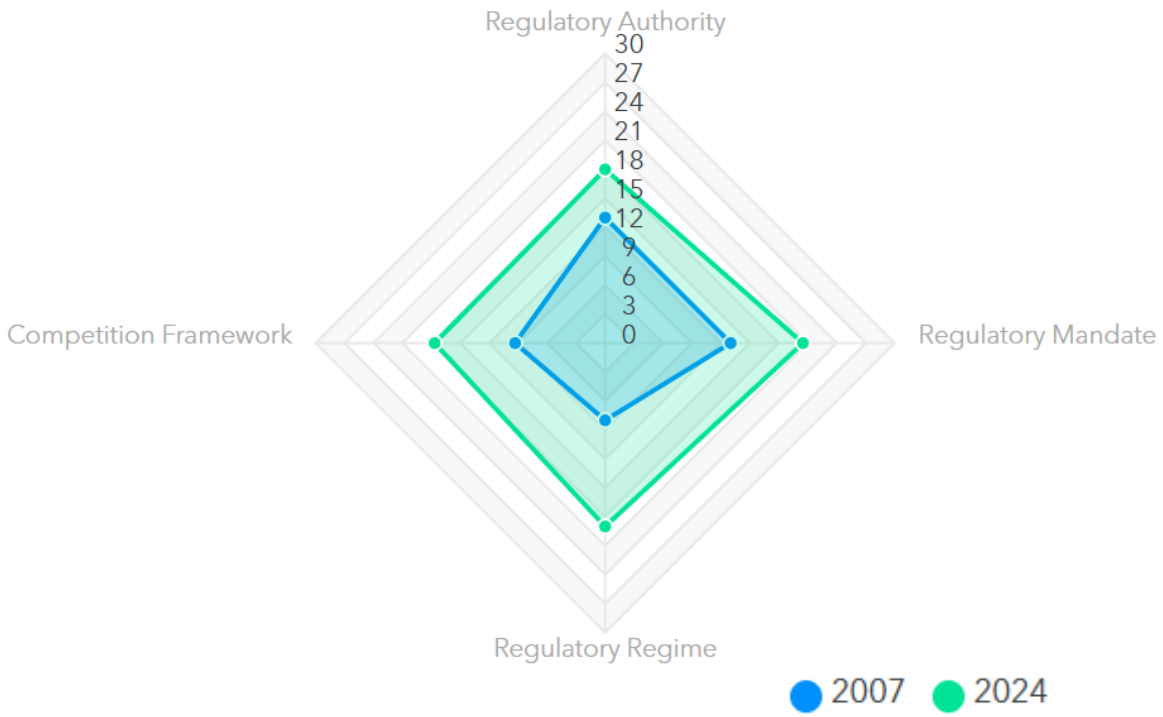
Note: The six thematic benchmarks (national digital policy agenda, regulatory capacity, good governance, legal instruments for ICT/telecommunications and digital markets, and ICT competition and market rules) each comprise a sub-set of indicators, as part of the ITU Unified Framework for the readiness of national policy, legal and governance frameworks for digital transformation. The percentage of achievement on each benchmark indicates the proportion of met versus unmet indicators.
Source: ITU

Policy instruments enabling emerging technologies, 2023



Maturity of Telecom/ICT Regulation

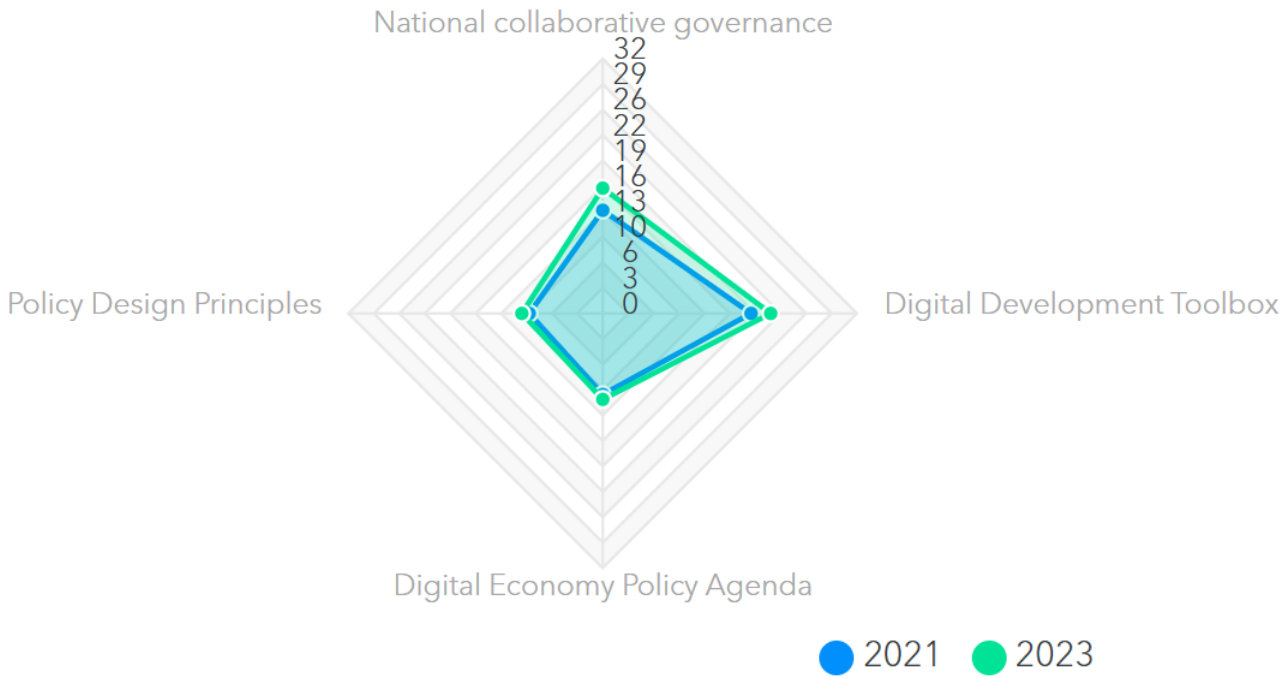
ICT Regulatory Tracker **75.17**



National Digital Policies, Legal and Governance Frameworks

Collaborative Digital Regulation
G5 Benchmark

57.87



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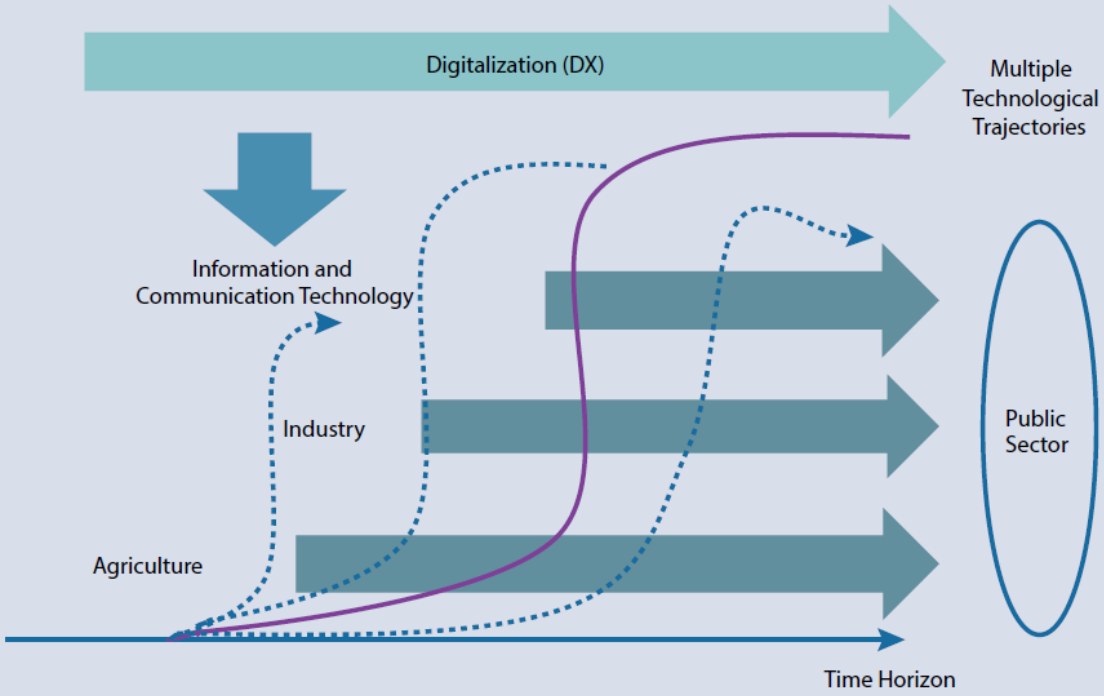
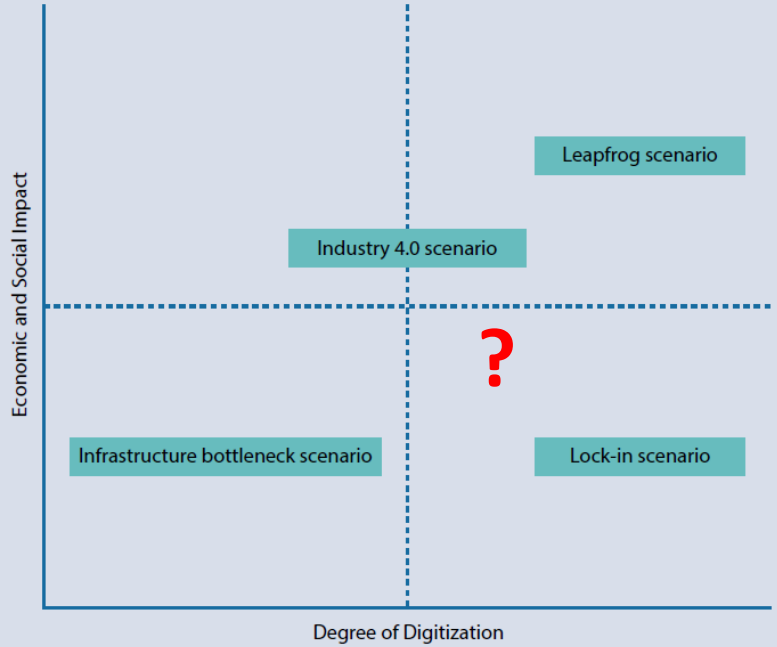
FRAMEWORK MODEL: MULTIPLE TECHNOLOGY TRAJECTORIES OF DIGITALIZATION.



Source: Digital Transformation in Asian Economies: Enhancing Productivity, Socioeconomic Impacts, and Policy Insights, APO, 2024.

MATRIX OF DIGITALIZATION SCENARIOS IN THE APO ECONOMIES.



Source: Digital Transformation in Asian Economies: Enhancing Productivity, Socioeconomic Impacts, and Policy Insights, APO, 2024.

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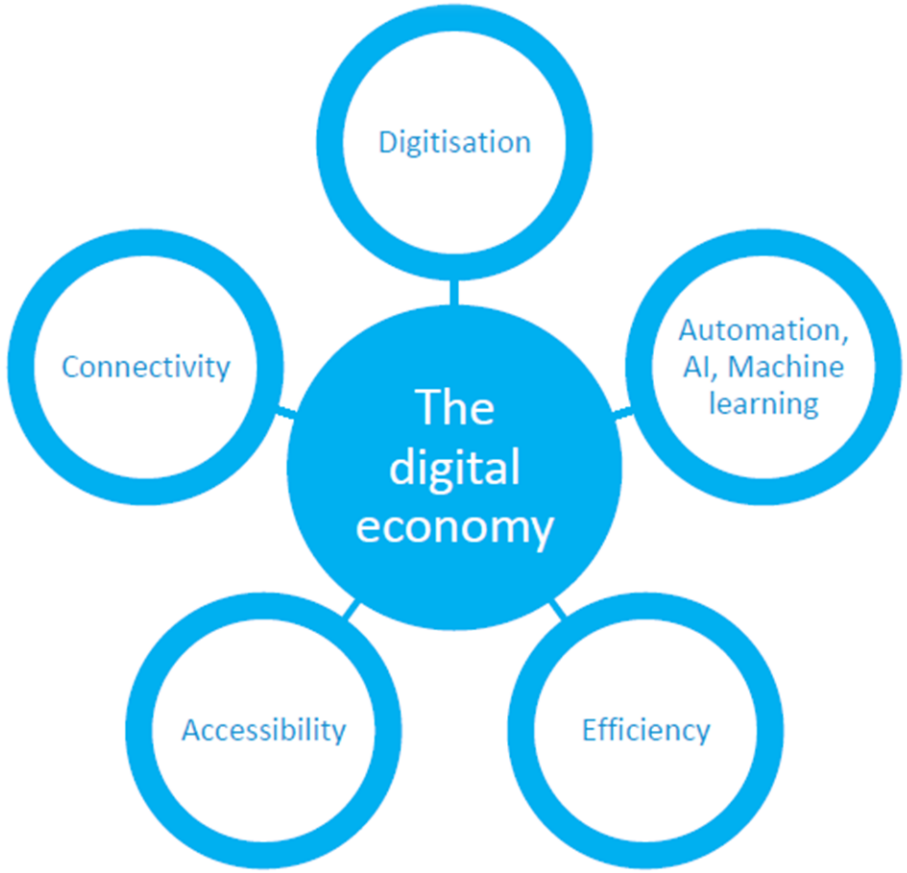
Digital Infrastructure Policy and Regulation

	RECOMMENDATIONS
1	Setting broadband targets for digital Infrastructure
2	Ensuring that sector legislation is Updated and fit for purpose
3	Provision of incentives for the Deployment of digital infrastructure
4	Issuing new rules addressing Telecommunications rights of way
5	Facilitating fixed broadband, FWA, 5G and Satellite Infrastructure deployment
6	Releasing more IMT spectrum for wireless Broadband and 5G deployment
7	Facilitating the switch off of legacy 2G/3Gservices
8	Improving the quality of broadband Services
9	Improving regulatory skillsets

Traditional telecommunication environment to digital landscape

Characteristics of the digital economy and society



Source: ITU Publication: Digital Infrastructure Policy and Regulation in the Asia-Pacific Region

5G - Regulatory Imperatives, Policy Challenges, and Recommendations for Action

KEY ENABLERS

Technical and Infrastructure Readiness: Infrastructure & Network, Spectrum & Bandwidth, Security & Legislation, and Geographical & Environmental Factors

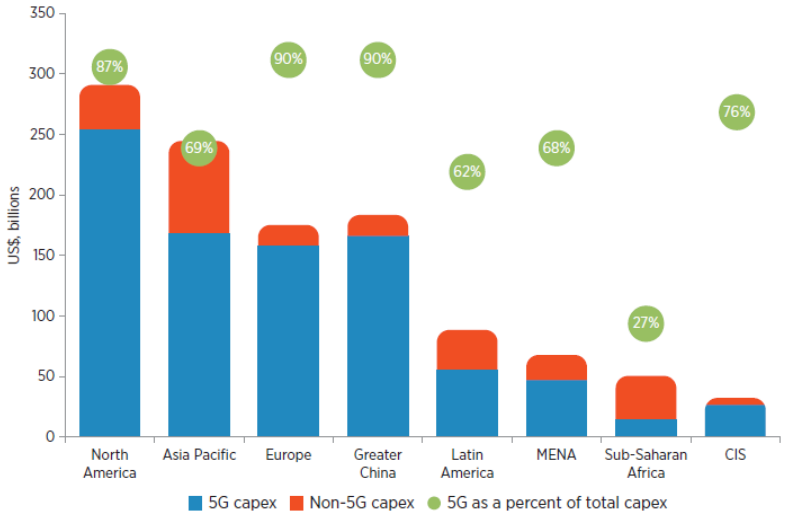
Socio-Cultural and Political Factors: Consumer & Ownership, Content & Services, and Governance & Stability.

Economic and Regulatory Factors: Affordability & Costs, Economic & Development Indicators, and Regulatory & Policy Enviro

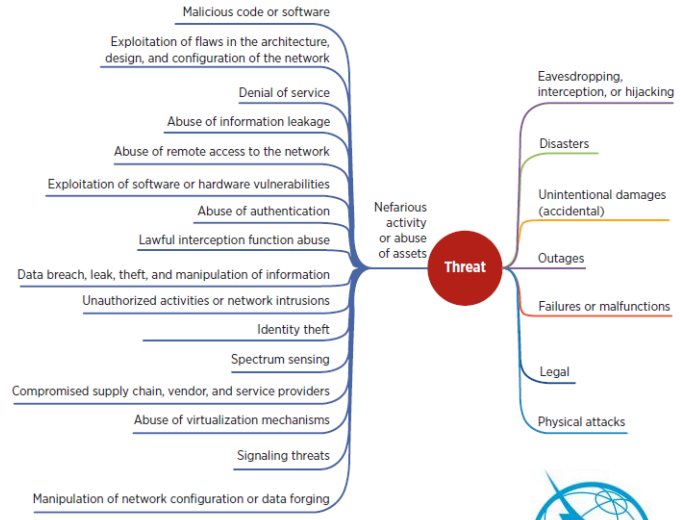
ROLE

1. Decisions about regulation and investment
2. Enabling the development of cell-sites, fibre networks, infrastructure sharing
3. Facilitating affordable spectrum
4. Facilitating New Business models and new industry players
5. Influencing pace of innovation
6. Monitoring 5G threat surface

Capital spending for 5G (2020-2025) Source GSMA



5G Threat Interface



Source: ITU-Key enablers for IMT-2020 adoption among Asia-Pacific countries
World Bank - The path to 5G in the Developing World

Regulatory and economic incentives for an inclusive sustainable digital future

Dr Cosmas Luckyson Zavazava, ITU BDT Director

The future of sustainable and inclusive digital transformation will depend on the right regulatory and economic incentives, encouraging innovation, creating a level playing field for all stakeholders, will foster social welfare and economic growth contributing to a better digital future for all.

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Defining regulatory and economic incentives to stimulate the deployment of digital infrastructure

Incentives towards achieving meaningful connectivity

1. Market access
2. Universal access and service
3. Universal service funding
4. Balancing fiscal policies
5. Innovative regulatory last mile connectivity solutions
6. Research & development (R&D)
7. Spectrum reform

Incentives to support access, adoption and use

1. Demand-side interventions
2. Digital skills and educational programmes
3. Lowering barriers to access digital devices and equipment
4. Incentives for digital services and device adoption

Cross-sector digital policy and regulatory principles

1. Regulatory coordination in the digital landscape
2. Inclusive decision-making cycles
3. Data and benchmarks
4. Research and foresight capacity
5. Alignment with international standards
6. Regional and international collaboration and representation

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Digital has become increasingly important in today's society. The lack of connectivity, inclusive access to and adoption of digital services can be a significant barrier to socio-economic development, making regulatory and economic incentives essential to stimulating sustainable infrastructure deployment, innovative solutions, and affordable use.

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Thank You

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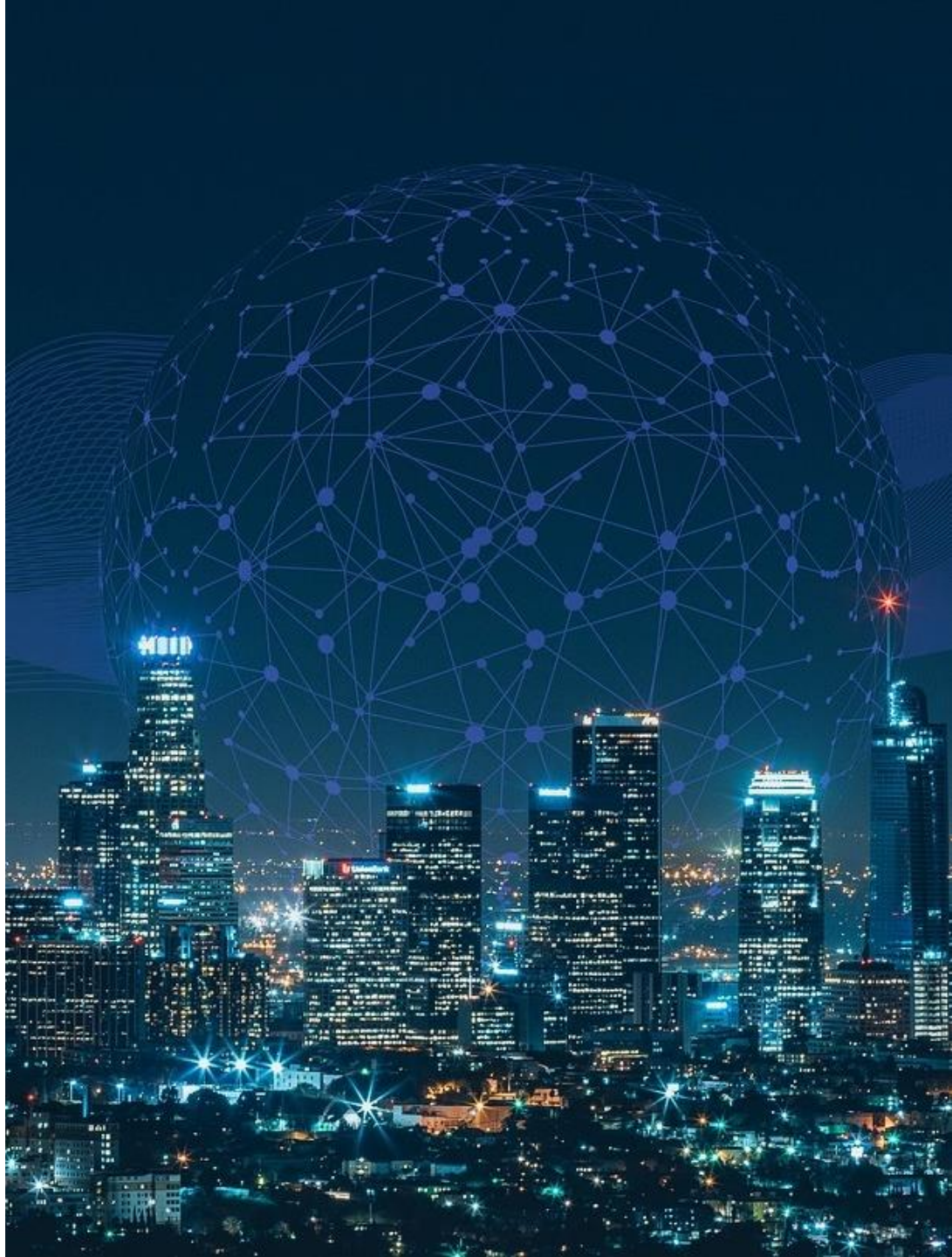
ITU Regional Office for Asia and the Pacific

The future of digital transformation in Asia-Pacific

- Infrastructure gaps in low-income countries and remote Pacific islands hinder progress.
- Affordability and digital literacy needed for meaningful connectivity.
- Cybersecurity threats, misinformation, and privacy concerns demand urgent action.
- E-waste and rising energy consumption require sustainable ICT policies.



SMART GER COMMUNITY (Digital GER)

- Smart GERs (based on smart village template) focusing on community access to broadband, ICT applications and digital skills with an objective to create a template for green digital transformation in ger communities in the outskirts of the capital for migrant communities.
- It includes smart GER pilot(s) in an identified community at local level and to compensate for increased take-up of smart tech it includes developing a national regulation for e-waste, building on the ongoing collaboration between ITU and MDDIC and MET in Mongolia on e-waste.

(The template on access and solutions could also be applicable for mobile communities in some feasible cases; The applications could include health, education, smart community dashboards on pollution)

Key Issues

1. Limited access to digital opportunities including education and health for nomadic people (30-40% of population)
2. Limited access to digital opportunities including education and health for migrant settlers in GER districts around Ulaanbaatar with high pollution and limited access to utilities and services (About 800,000 people in Ger areas represent about 60% of the population of the capital city, and 27% of the country's population)
3. Lack of economic opportunities and growing pollution in GER communities in the outskirts of Ulaanbaatar
4. Rising levels of old and end-of-life electronic devices and batteries left over and unregulated with nowhere to go which will further increase as digital opportunities expand beyond Ulaanbaatar and into GER districts.

Approximately 30-40% of Mongolians are still nomads living GERs and moving seasonally along with their cattle.

Concentration in GER districts at the outskirts of the Capital

Source: IOM Report
Also refer to https://multimedia.scmp.com/nomads/

About 800,000 people

Ger areas represent about 60% of the population of the capital city, estimated to be about 800,000 people, and 27% of the country's population. The ger areas of Ulaanbaatar are highly vulnerable to climate change and hotspots of greenhouse emissions and air pollution.

- In 1960, almost two-thirds of Mongolia’s population lived in the countryside—today, that number is less than one-third. A large portion of them are nomadic herders who have migrated to the capital, Ulaanbaatar, to make a different kind of living. Right away, the newcomers face an unfamiliar lifestyle which can come with higher expenses and new challenges, unlike those they faced when they relied almost solely on animal grazing and the natural environment.
- Even in the city, many families live in gers. But rather than in the vast openness of the steppe, here they find themselves crammed together in tent districts on the edge of Ulaanbaatar, with little access to services such as running water, electricity, sewage systems and heating.