ITU Regional Economic Dialogue on Telecommunications/ICTs for Africa(RED)

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ICT Regulatory and Economics tools to fast-track the promise of the digital economy

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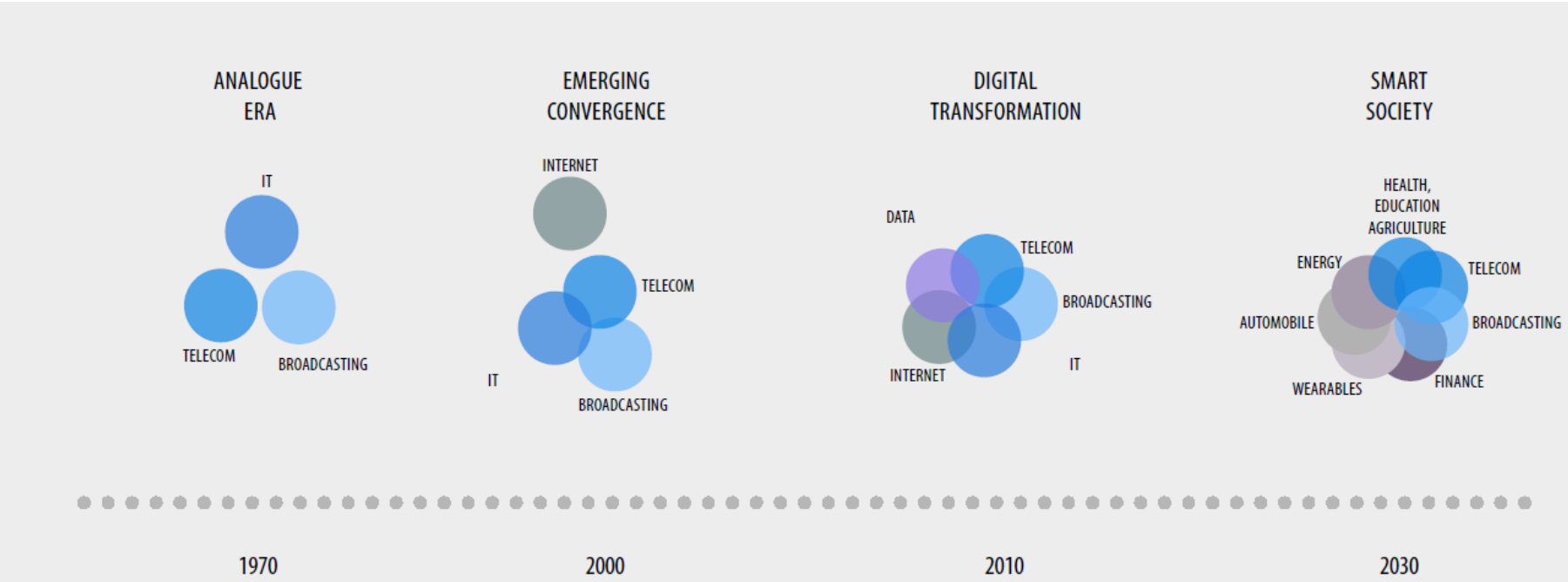
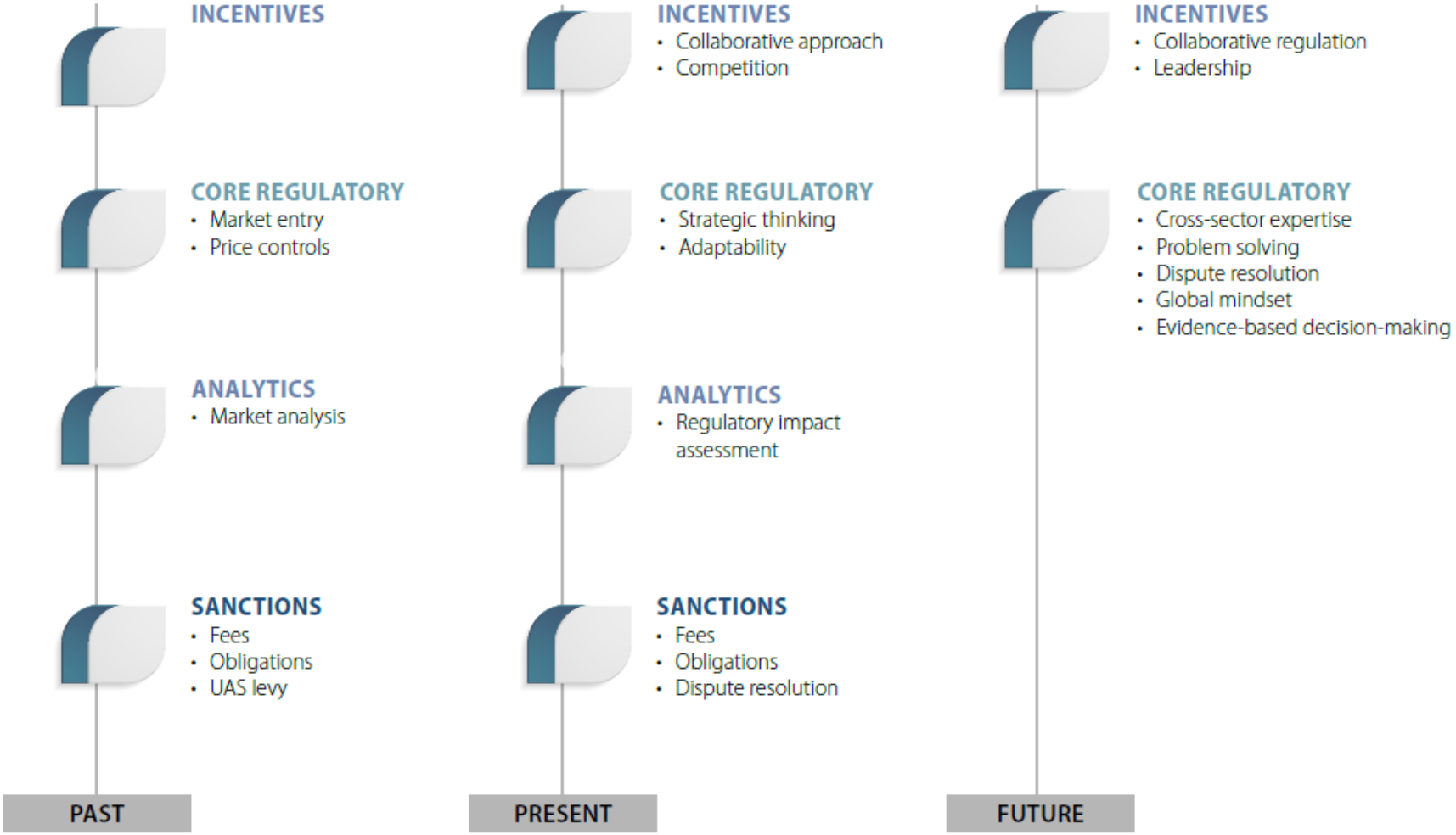
Digital transformation



Over the past couple of decades, digital transformation has been reshaping the ICT sector – and increasingly other sectors too – bringing both challenges and opportunities

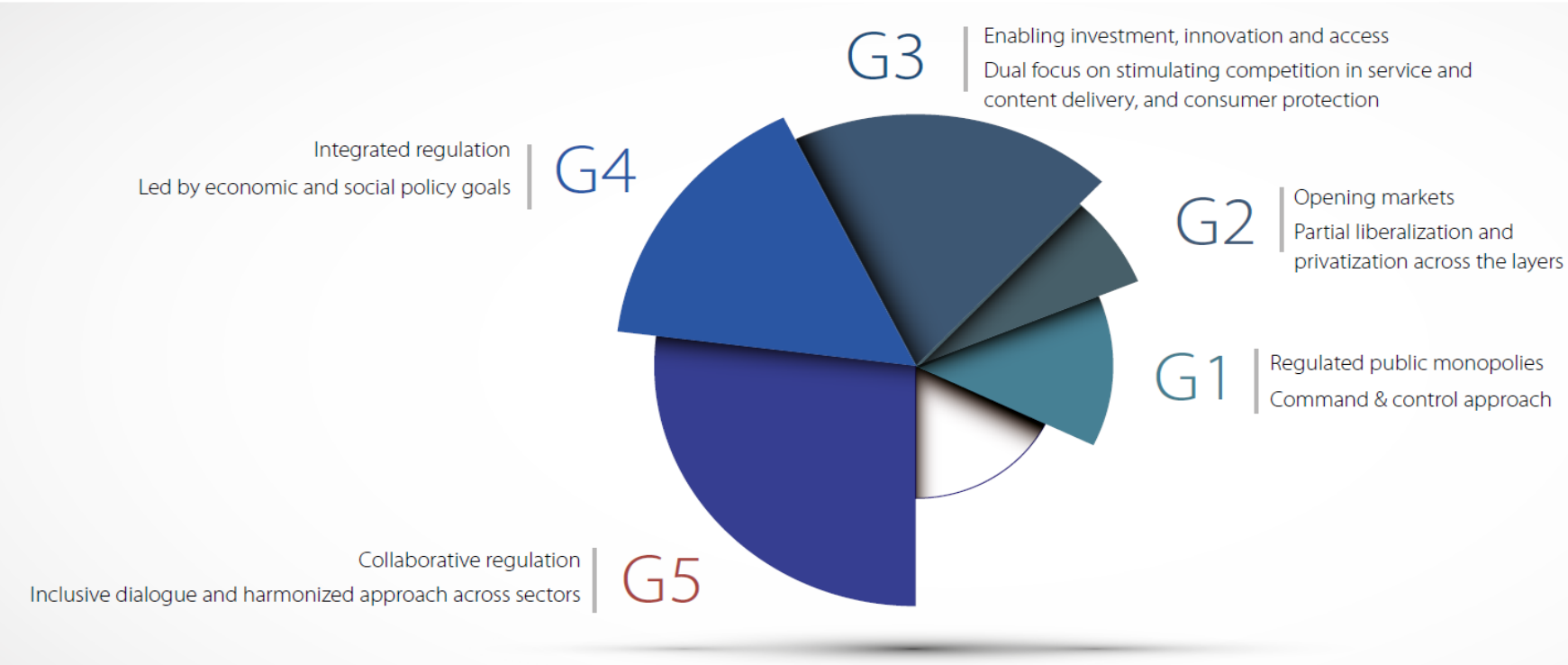
Source: ITU

Evolution of regulatory mandates and skills



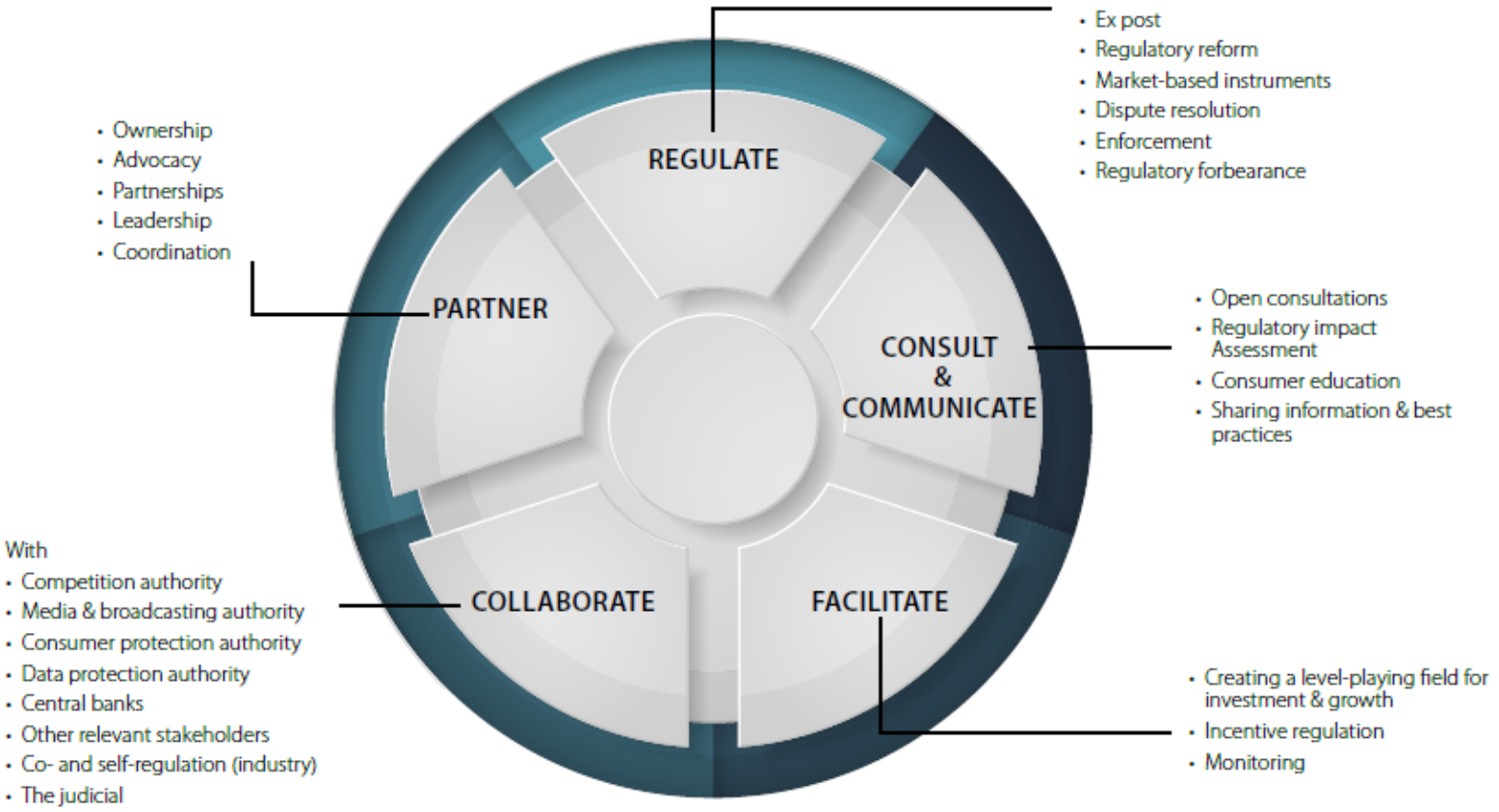
Source: ITU

The Five Generations of Regulation



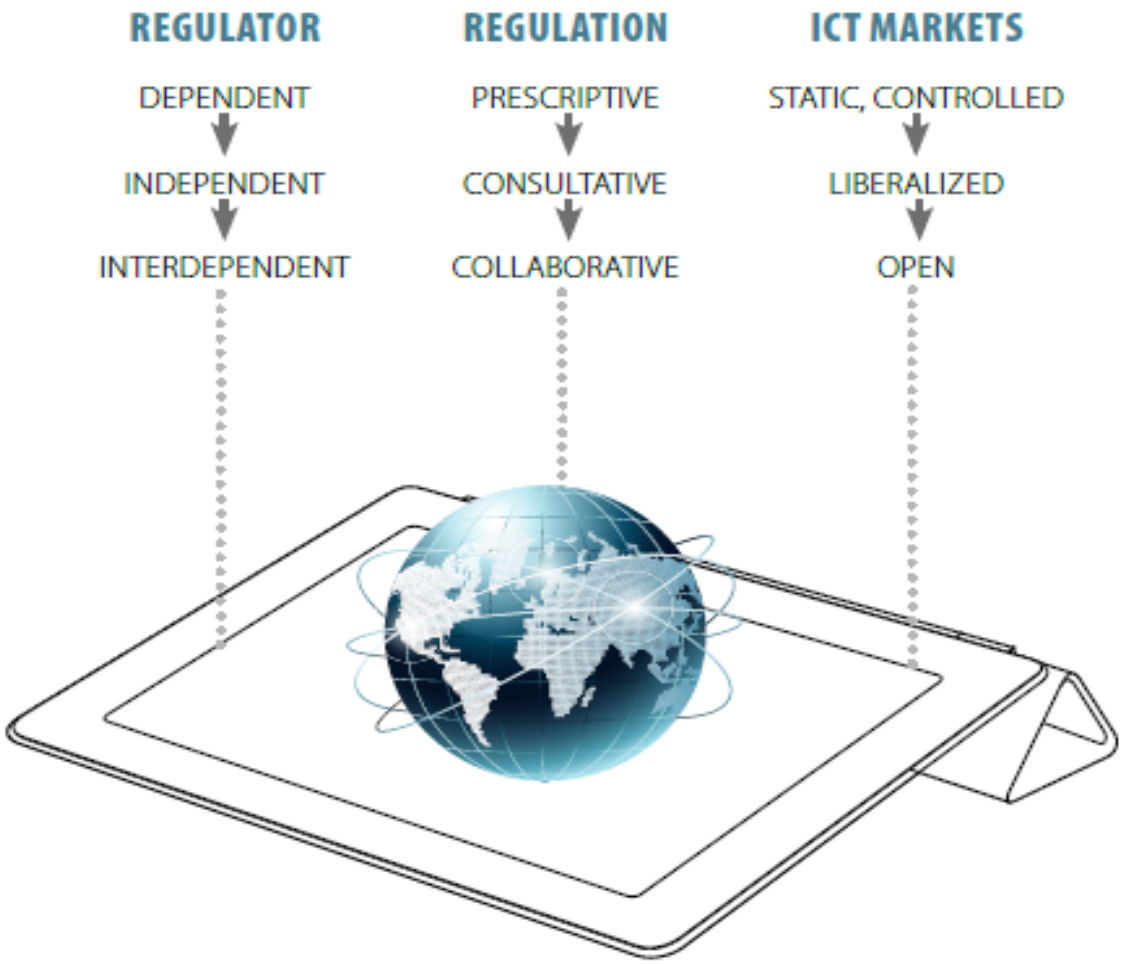
Source: ITU

G5 Regulation: the regulatory wheel of fire



Source: ITU

Changing paths of the ICT regulator, regulation and markets



Source: ITU

One of the ITU tools to fast-tracking the revolution in Regulation

GLOBAL ICT REGULATORY OUTLOOK 2017

itu.int/go/outlook17

itu.int/go/tracker

Country	I. Regulatory authority	II. Regulatory mandate	III. Regulatory regime	IV. Competition framework	Generation	Rank
Max Category Score:	20	22	30	28.0		
Ghana	16	20	26	26.3	4G	41
Kenya	18	21.5	21	27.0	4G	45
Malawi	19	20	22	25.0	4G	52
Uganda	17	20	22	27.0	4G	52
Botswana	18	22	18	26.0	3G	63
Burkina Faso	19	19	19	27.0	3G	63
Cape Verde	17	20	25	22.0	3G	63
Tanzania	20	21	19	20.0	3G	81
Congo (Dem. Rep.)	14	20	20	25.3	3G	82
Namibia	19	20	24	16.0	3G	83
Nigeria	17	20	20	21.3	3G	86
Senegal	19	20	25	13.7	3G	88
Zambia	19	18	19	21.7	3G	89
Mauritius	15	21	13	27.3	3G	92
Gambia	20	19	16	20.7	3G	93
Lesotho	17	17.5	19	21.7	3G	96
Togo	15	21	22	16.0	3G	100
Zimbabwe	19	19	18	17.0	3G	107
South Africa	17	17	24	12.7	3G	110
Rwanda	20	20	18	12.3	3G	113
Burundi	10	21	16	23.0	3G	116
Mali	18	16	14	21.0	2G	120
Guinea	16	18	22	12.3	2G	122
Gabon	18	17.5	19	12.0	2G	124
Angola	17	20	18	10.7	2G	125
Congo (Rep.)	18	17	23	7.7	2G	125
Equatorial Guinea	12	20	18	13.3	2G	131
Madagascar	17	17	10	18.3	2G	132
Côte d'Ivoire	17	15.5	14	15.3	2G	134
Benin	16	16	22	7.0	2G	136
Seychelles	6	11	16	26.7	2G	139
Chad	15	19	13	11.7	2G	140
Mozambique	16	10.5	16	15.2	2G	143
Liberia	17	19	12	8.7	2G	145
Cameroon	17	18	16	5.0	2G	147

What does the ICT Tracker do?

The ICT Tracker:

- pinpoints the changes taking place in the ICT regulatory environment;
- facilitates benchmarking and the identification of trends in ICT legal and regulatory frameworks;
- helps identify gaps in existing regulatory frameworks, making the case for further regulatory reform towards achieving a vibrant and inclusive ICT sector;
- enables users/countries to track progress and identify the major regulatory trends driving the ICT sector since 2007;
- It has also led to the definition of five 'generations of ICT regulation'.

The Tracker does not measure the quality or the performance of regulatory frameworks in place, but records their existence and features.

But… how to move from G3 and G4 to the G5 of Regulation?

Regulatory incentives toolkit for the 5th Generation of ICT regulation

Main areas of intervention	Incentives	Description / Advantages	+ / -	Market impact/ Regulatory impact	Country examples
Infrastructure & network expansion	Simplification of licensing regime and procedures, especially ex ante	Ensures flexibility to accommodate future technological and market changes and reduce administrative burdens and fees on market players.	+	Facilitated entry of new market players Enhanced competition	EU Singapore Tanzania Trinidad & Tobago Uganda
	Administrative incentive prices (AIPs)	'Administrative' because prices are set by the regulator reflecting the opportunity cost of spectrum while incorporating potential 'incentive' properties: prices are thereby set at a level to encourage efficient use reflecting spectrum scarcity. There is strong evidence that AIPs, which are intended to be set at a level reflecting spectrum scarcity in particular bands, can encourage efficiency and economy in spectrum use.	+	Improved economic efficiency	Australia New Zealand UK
	Smart subsidies (UAS)	An initial subsidy (usually one-off) that is designed to kick-start service provision in rural or high-cost areas, and low-income population groups that will not be reached by the market alone, even if it is an efficient market, or at least not for a long time to come. Although the number of countries applying it has decreased recently, smart subsidies has its place in the regulatory incentives toolbox.	+	Minimizing network buildout cost Market growth	Mongolia Nepal Uganda
	Reduced regulatory fees (recurring or for licences, etc.)	Levying proportionate, justified fees is considered best regulatory practice, however the amount of fees for licences, spectrum, numbers and other resources should be regularly reviewed and can be reduced, with proper justification.	+	Facilitated entry of new market players Enhanced competition	Argentina Brazil Ecuador Venezuela
	Tax holidays (also include tax credits, accelerated depreciation on assets, and export subsidies and import entitlements)	Tax reduction or elimination that is offered to new markets entrants, especially foreign.	+	Higher FDI Increased GDP in ICTs	Brazil Guatemala

Source: ITU

Regulatory Incentives Toolkit 2

Main areas of intervention	Incentives	Description / Advantages	+ / -	Market impact/ Regulatory impact	Country examples
	Broadband plan: various regulatory & financial incentives	Examples include measures to unbundle and co-locate services, opening the Universal Services Programme for broadband initiatives, and allowing for broadband service delivery through multiple technologies, including wireless solutions.	+	Increased penetration Connecting the unconnected	Bulgaria Ghana Honduras Malaysia Thailand US
Diversification of services	Infrastructure sharing (permitted or mandated at different layers – MVNOs, bitstream, cable/fibre collocation)	Lowers the cost of deploying broadband networks. Certain sharing options could also pose risks, in particular by reducing competition. Access to non-telecom infrastructure becomes more common.	+/-	Increased coverage Increased affordability of services Enhanced service-based competition	Brazil Dominican Republic Georgia Jordan Pakistan Portugal
	Spectrum sharing (or spectrum commons) and secondary trading	Can be accomplished through licensing and/or commercial arrangements involving spectrum leases and spectrum trading. Spectrum can also be shared in several dimensions; time, space and geography. In the spectrum commons, low-power devices operate on the basis of signal propagation, which takes advantage of power and interference reduction techniques.	+	Improve market efficiency Facilitated access to spectrum by new players	Cape Verde EU (some countries) Guatemala India Turkey US
Affordability	Price caps –access and/or retail pricing	If price caps must be applied, it should be in a justified situation and in a proportionate manner. Caps must be consistent and non-discriminatory based on costing methodologies to promote competition and enhance infrastructure investment. The regulator defines a main price cap formula to calculate maximum prices of services. If the operator achieves greater efficiencies than required by the regulator (allowed RoI), it can retain the difference as increased profits.	-	Increased economic efficiency Price reduction	Australia Barbados EU
	Deregulation of retail pricing caps	After reaching market maturity, retail pricing is generally deregulated.	+	Price reduction	Hong Kong, China UK

Source: ITU

Regulatory Incentives Toolkit 3

Main areas of intervention	Incentives	Description / Advantages	+ / -	Market impact/ Regulatory impact	Country examples
Content	Light-touch regulation on OTTs/OSPs	In the case of VoIP, a number of policy and regulations have classified it as a telecom/ICT service or explicitly legalized VoIP services.	+	Usage stimulation	Bangladesh Bahamas EU Indonesia Iran Malawi
Cybersecurity, privacy & data protection	Adoption of basic technical controls & standards for cybersecurity	Incentivize market players to level up their cybersecurity readiness while encouraging manufacturers to deploy more 'privacy-by-design' solutions.	+	Better consumer protection Improved network resilience	UK
Quality of service & experience (QoSE)	Monitoring the implementation of licence conditions/ measurement targets, etc.	Is necessary to ensure consumer rights are met and where they are not, follow up with the available regulatory enforcement tools or remedies.	-	Enhanced consumer information Better user experience	China Colombia Rwanda Switzerland Tunisia Ukraine
	Publishing QoSE measurements	Publishing at least some measurements is central to helping consumers make informed choices. In addition, it is often the main technique for encouraging compliance with QoSE norms and creating a positive competitive dynamic among service providers.	+	Enhanced consumer ability to make informed choices	Australia Canada Chile Colombia Singapore
Transparency	Open consultations	Consultation with ICT sector stakeholders reinforces the perception of a transparent regulatory process. Consultation also allows the regulator to directly receive the views of consumers, existing service providers and prospective players on a proposed regulatory initiative. Receiving feedback from these stakeholders assists the regulator to fine-tune the proposal and come closer to the demands of both service providers and consumers.	+	Market-wise regulation Increased confidence of service providers and investors in regulation Reduced investment risk	Armenia Benin EU India Jamaica Saudi Arabia

Source: ITU

Other ITU Regulatory Tools for Evidence Based Decision Making

- ✓ *Knowledge Sharing Platforms and Strategic Dialogues,* in particular *The Global Symposium for Regulators (GSR)*, our annual flagship event for and with ICT Policy Makers and Regulators and Members to network, exchange, learn and collaborate:
  - **The GSR Best Practice Guidelines**
  - **The GSR Discussion Papers** (e.g.: GSR-18: AI for Development Series, 5G Challenges and Opportunities)
- ✓ *Cutting-edge data, research and publications for evidence-based decision making*, including:
  - **Global ICT Regulatory Outlook Report**, tracking market, regulatory and policy trends in the ICT sector and their implications across the sectors and the economy
  - **ICT Regulatory Tracker** – a unique tool covering 185+ countries for the period 2007-2016, showcasing regulatory progress within the same country, amongst regions and worldwide
  - **Various Thematic Reports and Portals** focusing on the evolution of and role of ICTs on digital transformation including on Collaborative Regulatory Frameworks, Affordable Access to Digital Services, the ITU International Mobile Roaming Portal, Digital Ecosystem Portal, Quality of Service Portal, etc.
  - **ICT Regulation Toolkit**, offering an online resource designed to address complex policy and regulatory challenges
  - **ICTeye**, a unique one-stop shop for telecommunications/ICT regulatory data collection and dissemination resulting from the annual Telecommunication/ICT Regulatory Survey and the Tariff Policies Survey

ICTEYE

Infrastructure Development and Sharing – ITU Portal

Telecommunications infrastructure sharing in brief

2 main types

Passive sharing
The sharing of non-electronic infrastructure such as sites, towers, poles, ducts, trays, shelters, equipment rooms, power, HVAC, security, etc.

Active sharing
The sharing of active (i.e., electronic) infrastructure in the access or core network, such as spectrum, switches, and antennae.

5 dimensions

Technology
For example: 2G, 3G, 4G, 5G, WiFi, xDSL, DOCSIS, etc.

Geography
The geographical dimension concerns where in the country the sharing will occur.

Architecture
The architectural dimension defines the (passive and active) assets and related activities that are shared.

Partners
Potential partners in a sharing deal include any entities such as mobile and fixed-network operators, etc.

Sourcing
Sourcing possibilities for sharing infrastructure, include unilateral, bilateral, or joint venture.

Several key benefits

- Reduction in capital expenditure (CapEx) and operating expenditure (OpEx).
- New/enhanced services.
- Faster geographic rollout.
- Improved service quality.
- Lower prices.
- Increased tax revenues for governments.

And some potential risks

For sharing parties
- Partner conflict.
- Technical incompatibilities.
- Breakdown in end-to-end customer experience management.

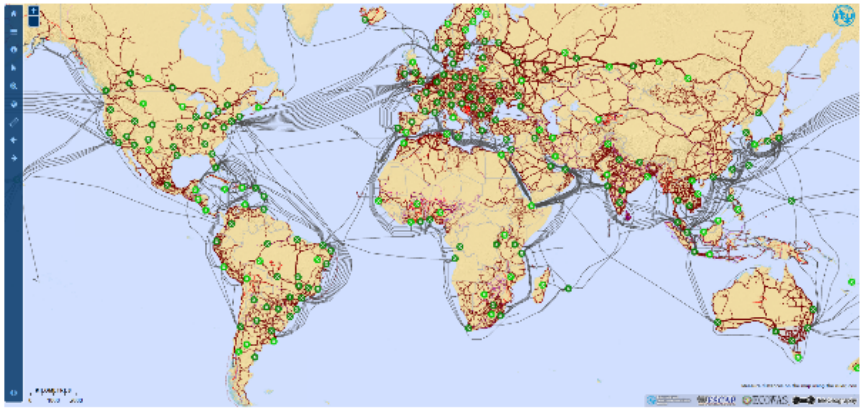
For regulatory authority/competition authorities
- Delays.
- High prices.
- Disputes.

Source: ITU

BROADBAND MAPS

The Broadband Maps are a cutting-edge ICT-data mapping platform to take stock of national backbone connectivity (optical fibres, microwave links and satellite earth stations) as well as of other key metrics of the ICT sector.

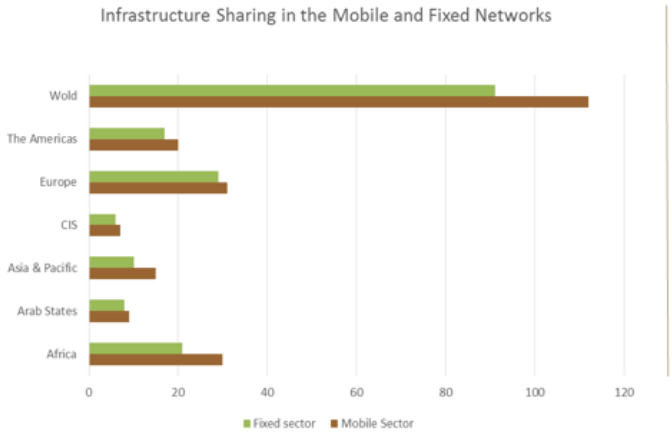
Access to the Broadband Maps



All About Infrastructure Sharing 2018

Is infrastructure sharing practiced in your country?

Infrastructure sharing is more and more applied in all regions for both mobile and fixed networks. The ITU Survey shows that infrastructure sharing occurs more in the mobile (126 out of 140 countries applying) than the fixed sector (91 out of 112 countries applying).

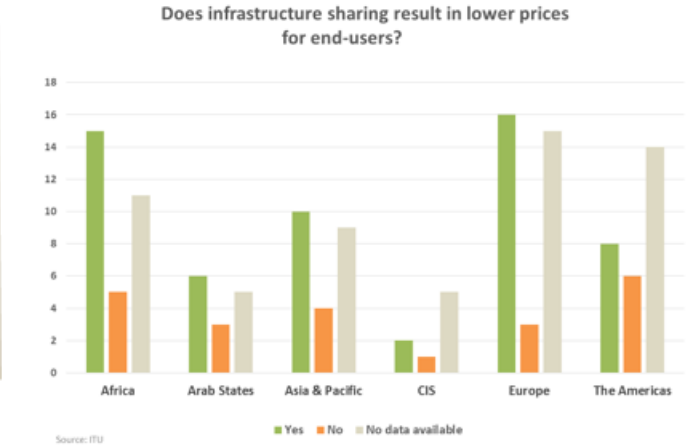


It is interesting to note that in mobile networks, infrastructure sharing is mostly based on commercial agreements rather than on a specific regulatory mandate.

Does infrastructure sharing result in lower ICT service prices for end-users?

In most countries, infrastructure sharing could result in lower prices for end-users, as shown in green in the graph.

However, several countries in all regions reported that data is not available or that NRAs do not monitor prices.

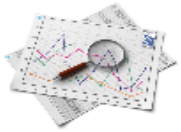


Data from the ITU Tariff Policies

ITU International Mobile Roaming (IMR) Portal

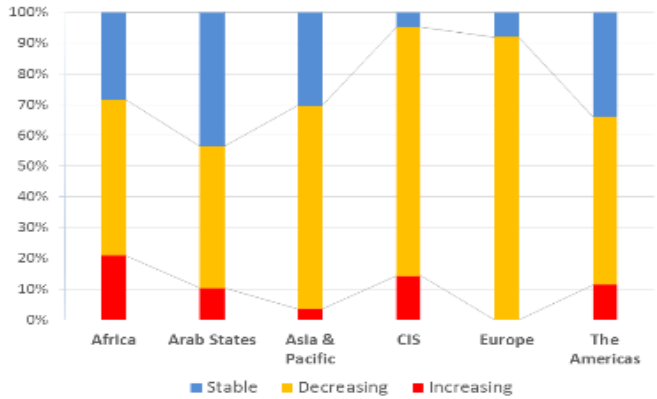
This portal is part of the activities of Mr Brahima Sanou, BDT Director's Initiative LET'S ROAM THE WORLD

ALL ABOUT IMR 2018



This brochure presents a quantitative analysis of data collected by ITU on International Mobile Roaming (IMR) regulatory and policies strategies, as well as a brief introduction to the future of IMR in particular on roaming for Internet of Things (IoT) and Machine-to-Machine (M2M) communications.

IMR VOICE, SMS & DATA Retail price, 2017



Source: ITU Tariff Policies Survey
Note: Regional aggregates: weighted

The trend for IMR voice and data retail prices, over the past three years, seems to be decreasing in all regions (yellow), as reported by NRAs. However, in Africa, 6 countries out of 28 have reported that IMR voice prices are still increasing. In Europe, 29 out of 32 countries reported that IMR prices decreased considerably, following the European Union (EU) IMR Directives.

IMR STRATEGIC GUIDELINES

The IMR Strategic Guidelines were developed with inputs from stakeholders during the ITU Consultation Process (held during 2016 and 2017), including from regional regulatory associations (RAs), international organizations, consumer and private sector associations. The aim of this report is to build the foundation for harmonized guidelines around the world to improve the delivery of IMR services for the benefit of consumers, to reduce what are generally perceived as high mobile roaming retail prices, and to enhance efficiency and transparency of retail roaming prices and services.

"I am sure that these IMR Strategic Guidelines will become an important tool that enables all stakeholders to have a common understanding of the complexities of IMR to foster harmonized solutions at national regional and international level. We all need to continue working together to make ICTs even more affordable for all, including when roaming the world."

Mr Brahima Sanou, Director,
ITU Telecommunication Development Bureau (BDT)

- Download the ITU IMR Strategic Guidelines

IMR Portal:

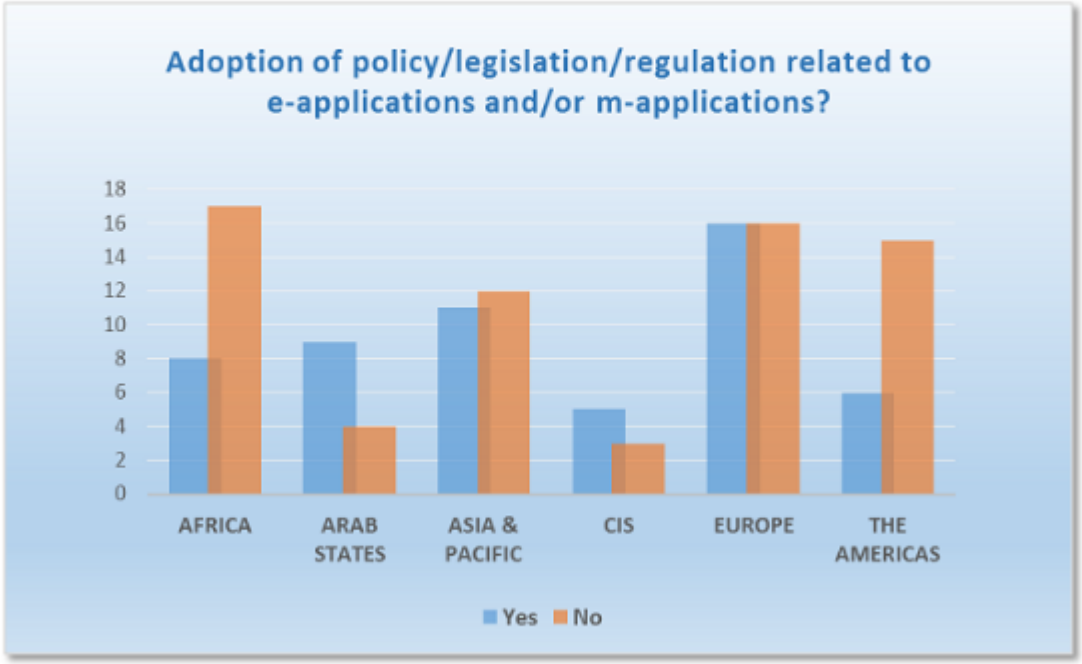
- ✓ ITU International Mobile Roaming (IMR) Strategic Guidelines - 2017 NEW!
- ✓ Data collection and analysis on roaming - Research and material
- ✓ ITU Study Groups material - ITU-T International Mobile Roaming (IMR) Cost Analysis Tool and the ITU-T Guide for NRAs on International Mobile Roaming Cost analysis - ITU Recommendations
- ✓ International initiatives from Regulatory Associations, regulators and operators, and much more…

www.itu.int/en/ITU-D/Regulatory-Market/Pages/Roaming_info.aspx

ITU Digital Ecosystem Portal

ADOPTION OF SPECIFIC REGULATION

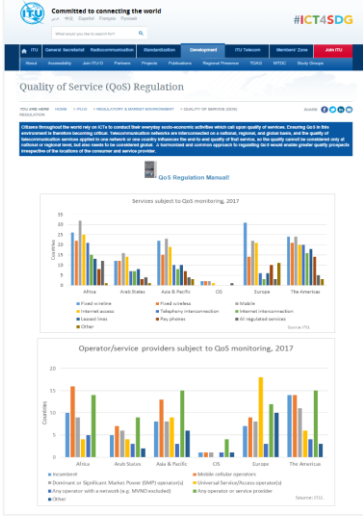
55 over 122 countries reported in 2016 the adoption of policies, regulation/legislation related to e-applications and m-applications and their relationship with and across other sectors of the economy.



Source: ITU Regulatory Survey 2016, ICTEye

www.itu.int/en/ITU-D/Regulatory-Market/Pages/Collaborative_Regulation/App_Economy.aspx

ITU Quality of Service(QoS) Regulation Portal



QOS MANUAL

The QoS Regulation Manual serves as a one-stop shop for QoS regulation in ICTs. It refers to different standards and regulatory practices from various regions and countries worldwide.
It is intended to be used as a guiding tool for telecommunication/ICT regulatory agencies or ICT Administration (e.g., ICT Ministry) in charge of Quality of service (QoS) and Quality of Experience (QoE) parameters and measurements, as defined by the ITU-T, as well as enforcement mechanisms.

CONTENT

2. Quality of Service (QoS) framework (technical)
3. QoS Regulatory Framework - Role of NRAs
4. Traffic Management
5. QoS Parameters and KPIs
6. Broadband QoS measurements
7. Economic principles of QoS regulation
8. Network neutrality and its regulation
9. Consumer Protection and Privacy
10. QoS enforcement
11. Conclusion and guidelines

EVENTS AND TRAINING

Training:

ITU Academy: Quality of service training programme

RESOURCES

- SADC QoS country experiences (2017)
- WATRA QoS country experiences (2017)
- BEREC guidelines, NN regulatory assessment methodology (2017)

- ITU-T Study Group 12 on Performance, QoS and QoE (Work Programme)

Technical Recommendations

www.itu.int/en/ITU-D/Regulatory-Market/Pages/Quality-of-Service-Regulation.aspx

Thank you!

International Telecommunication Union

Committed to connecting the world