
Trends in Telecommunication Regulation

ACMA ITU
International Training Program
23-25 July, Sydney, Australia



Ashish Narayan
International Telecommunication Union

Specialized Agencies of the United Nations



United Nations



UNESCO



WHO



ILO



UPU



ICAO



WMO



IMO



IAEA



THE WORLD BANK

WB



UNWTO

UNWTO



FAO

FAO



IFAD

IFAD



UNIDO

UNIDO



WIPO

WIPO



WFP

WFP



IMF

IMF



*A specialized agency of the UN
with focus on **Telecommunication /
ICTs***

*Founded in **1865***

ITU: A brief overview



193 Member States
567 Sector Members
159 Associates
60 Academia



ITU-R: ITU's Radio-communication Sector globally manages radio-frequency spectrum and satellite orbits that ensure safety of life on land, at sea and in the skies.



ITU-T: ITU's Telecommunication Standardization Sector enables global communications by ensuring that countries' ICT networks and devices are speaking the same language.



Headquartered in
Geneva,
4 Regional Offices
7 Area Offices.

ITU-D: ITU's Development Sector fosters international cooperation and solidarity in the delivery of technical assistance and in the creation, development and improvement of telecommunication/ICT equipment and networks in developing countries.

Presentation Overview

- ❖ **ICT – the integrating thread**
- ❖ **Universal Access to Broadband – Trends**
- ❖ **ICT embedded society and cross-sectoral collaboration**



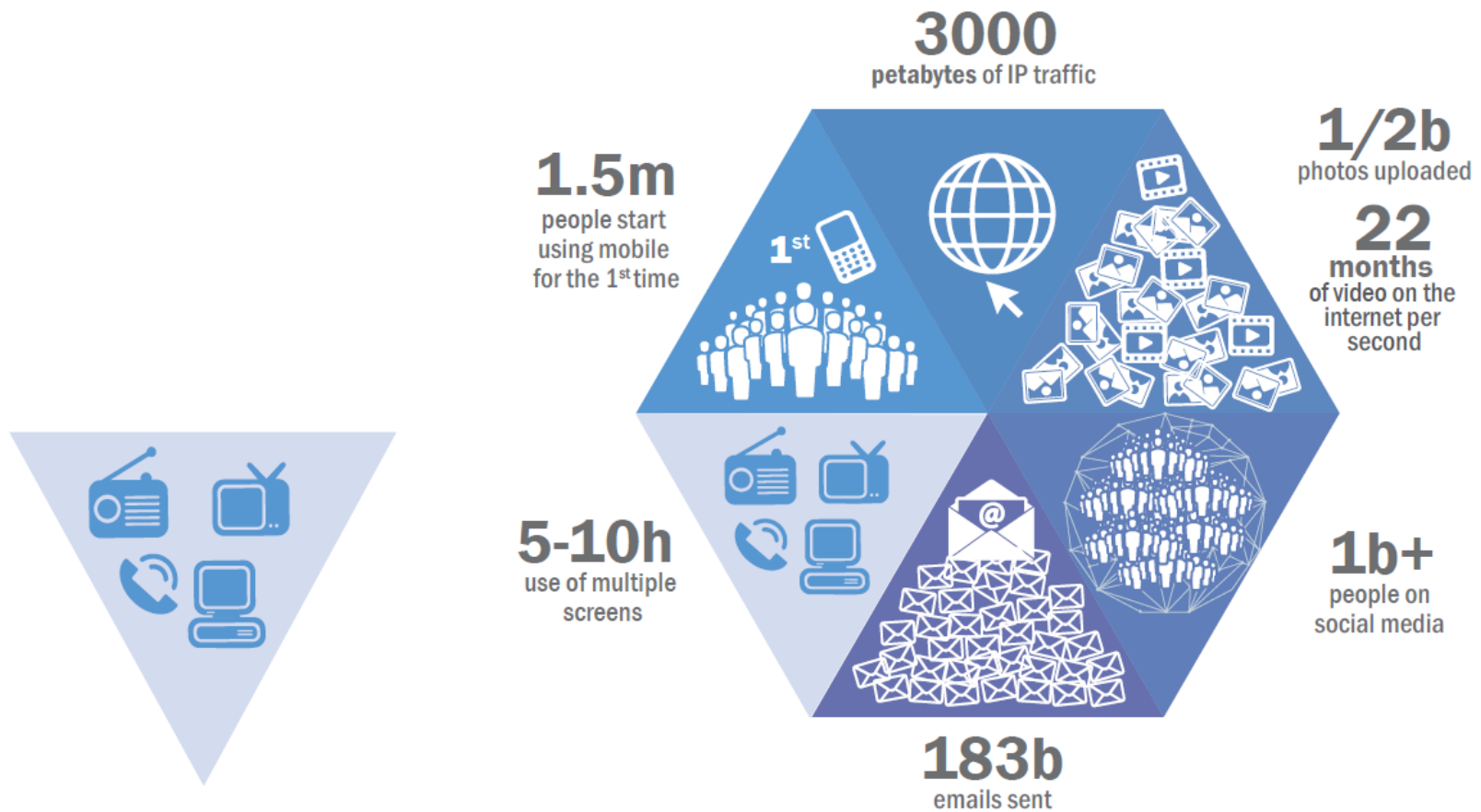
Committed to connecting the world

ICT – the integration thread

A day in the [digital] world

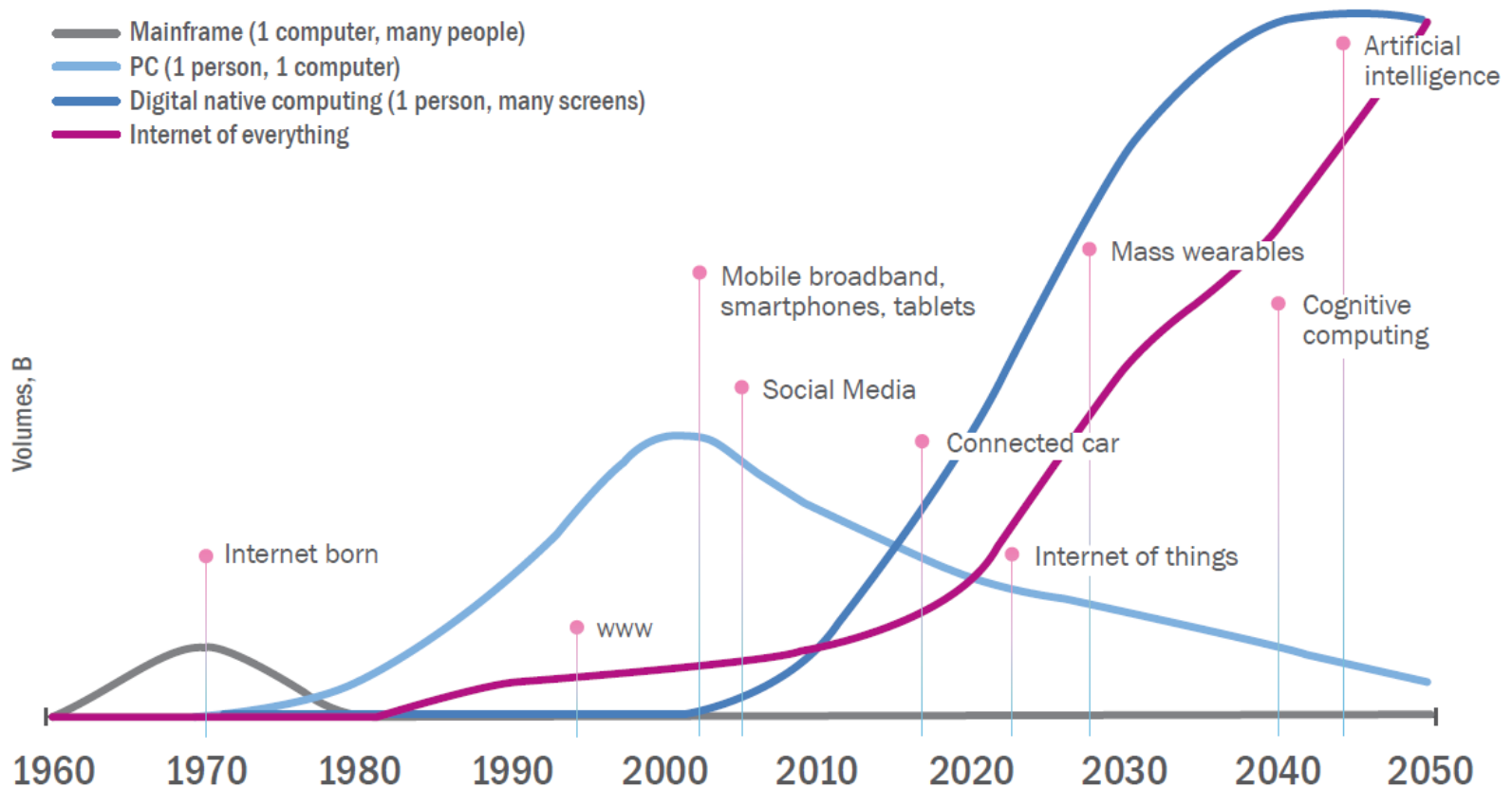
1994

2014



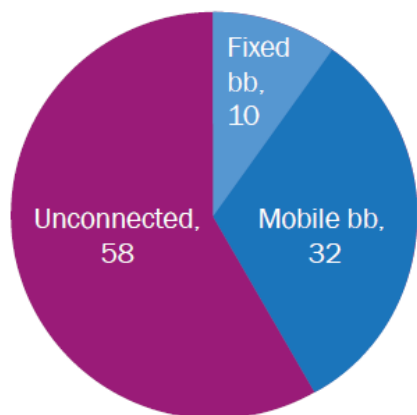
History of the future

One to many to any: ICTs from happy few to the masses

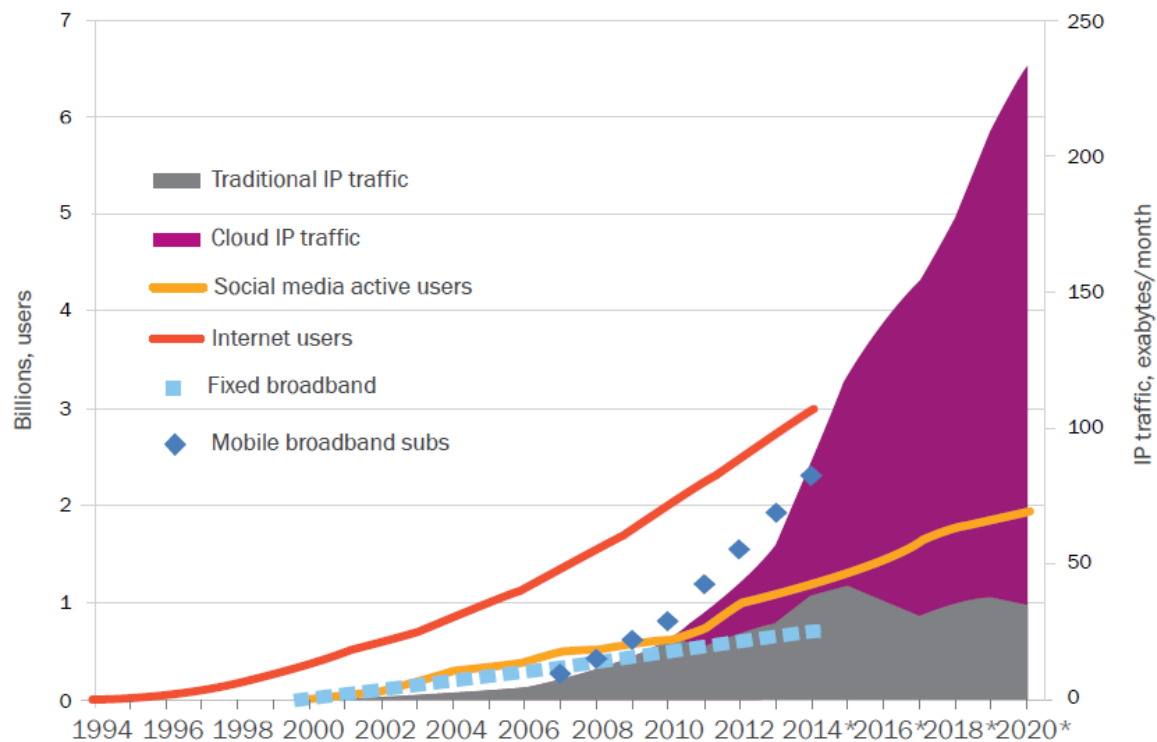


Growing digital

Digital haves vs. have-nots, 2014 %



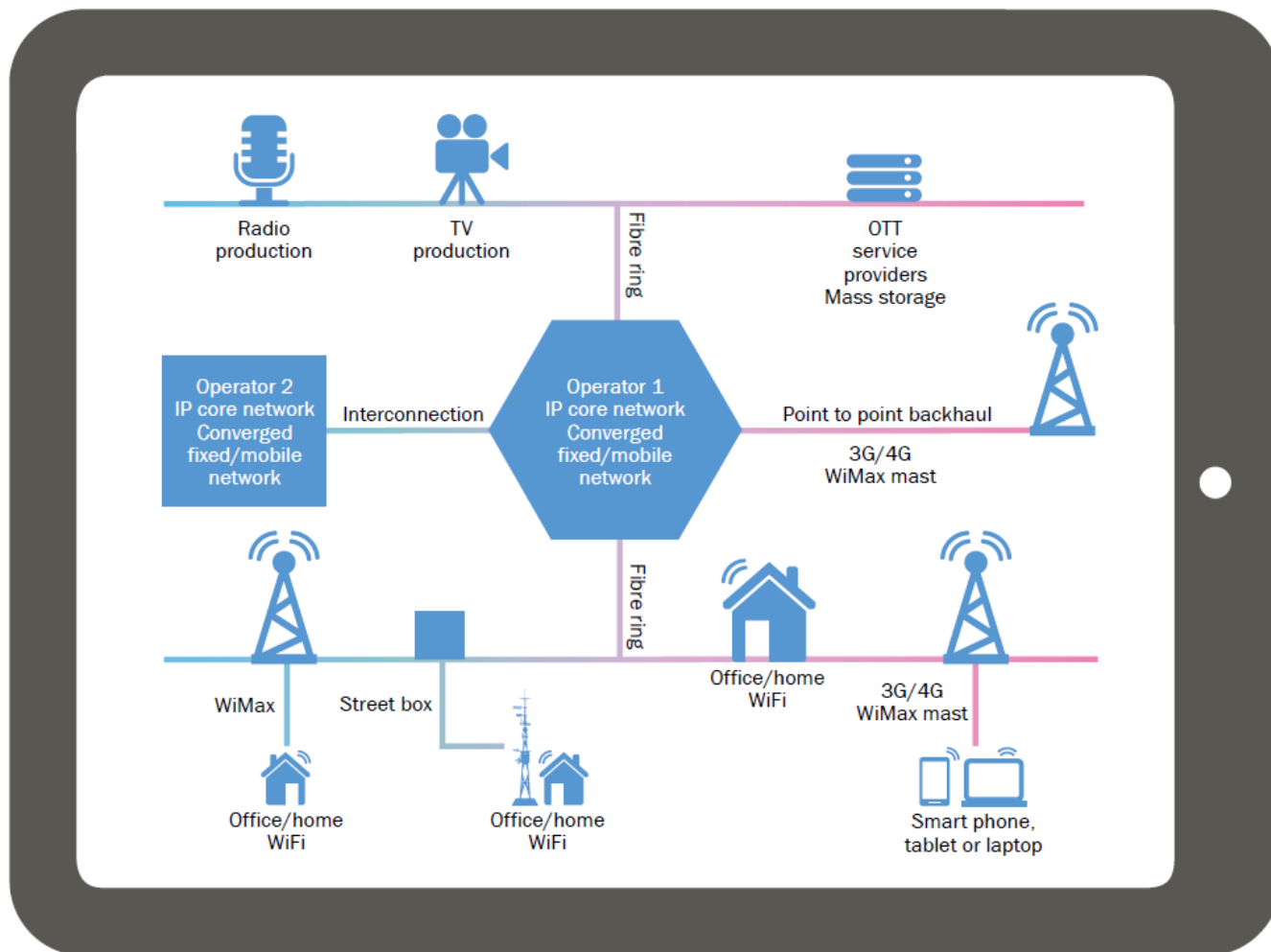
Growth in internet usage



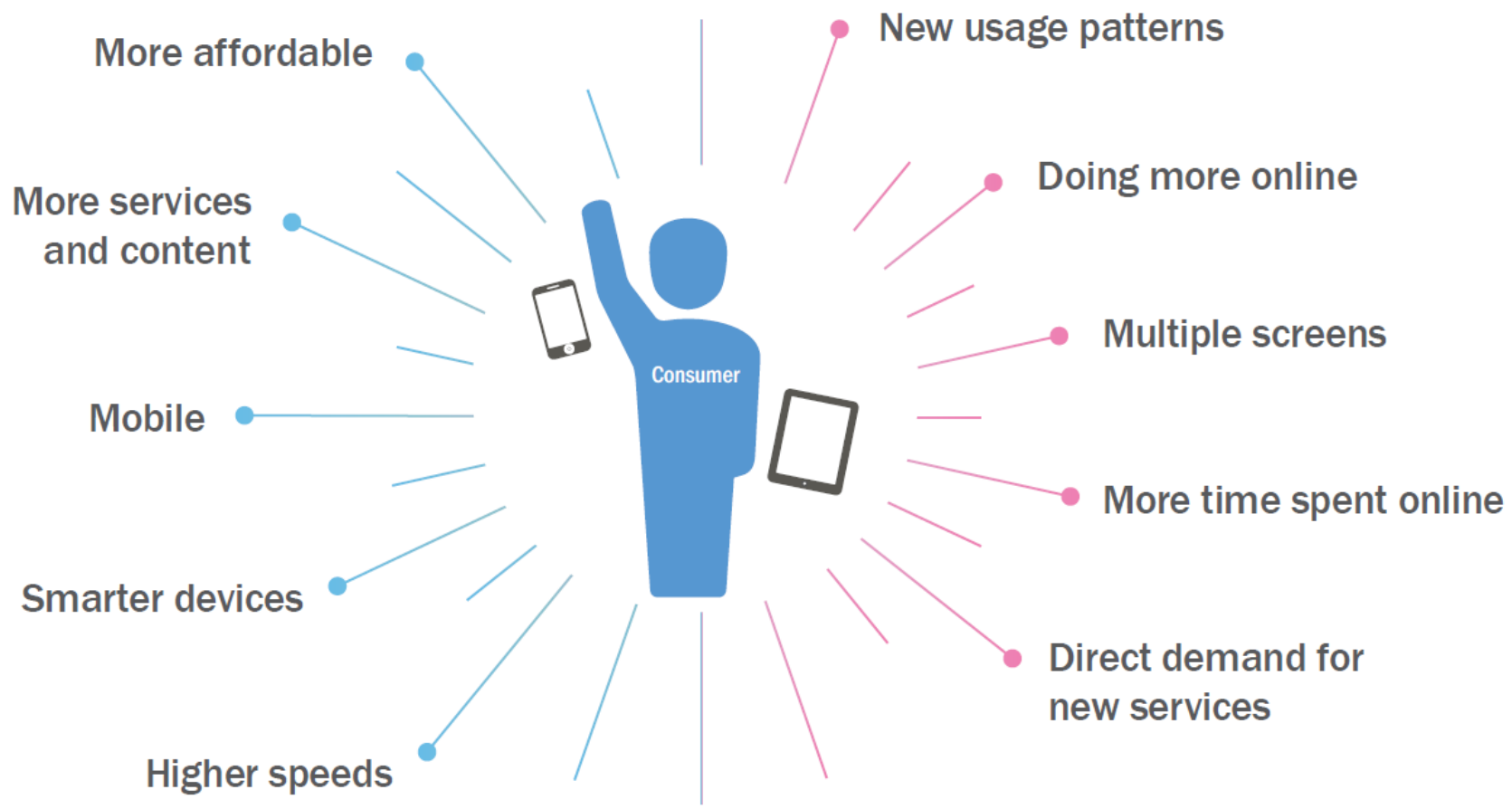
The sky is the limit



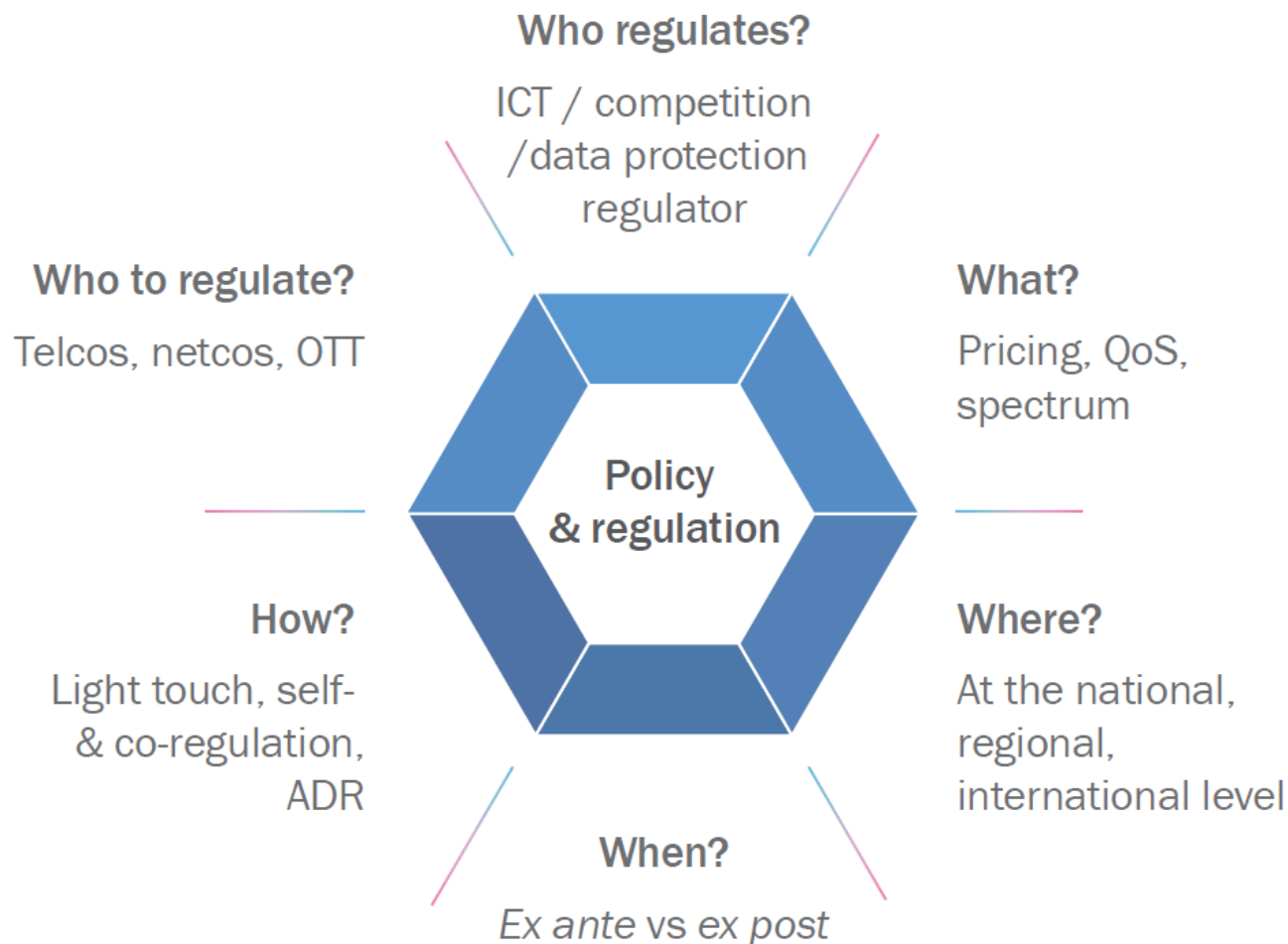
A selfie of the ICT sector today



Who's got the power?



6 shades of regulation



Digital futures



Agility, Creativity



Global flows



Trust



Openness & Sharing

Steep growth in mobile broadband.....

Figure 1.1: LTE deployments, 2010 and 2013

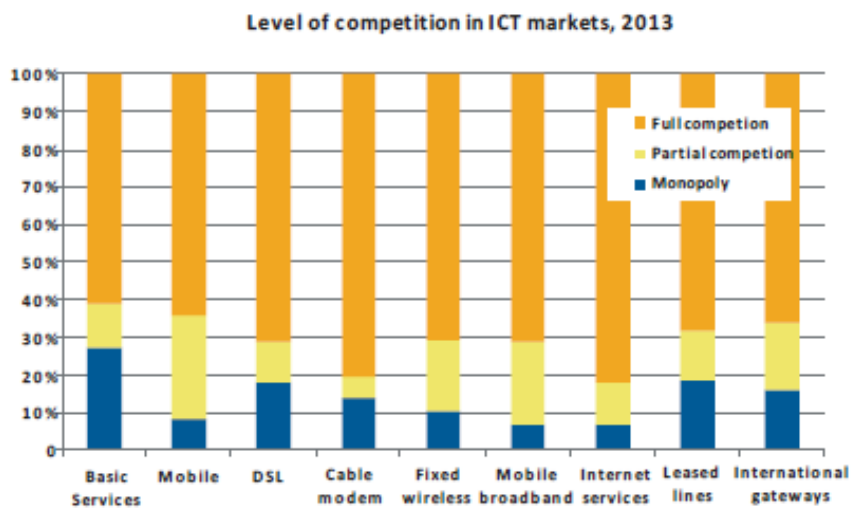


Source: GSMA <https://gsmaintelligence.com/analysis/2013/11/global-lte-network-forecasts-and-assumptions-201317/408/>

- *50 per cent of the world's population was covered by a 3G network in 2013.*
- *The migration to Long-Term Evolution (LTE) technology seems to be happening much faster than did the earlier migration from 2G to 3G networks.*
- *According to the GSM Association (GSMA), commercial LTE networks were operating in 88 countries in 2013, up from 14 in just three years. Another organization, the Global mobile Suppliers Association (GSA), puts that number at 101 countries.*

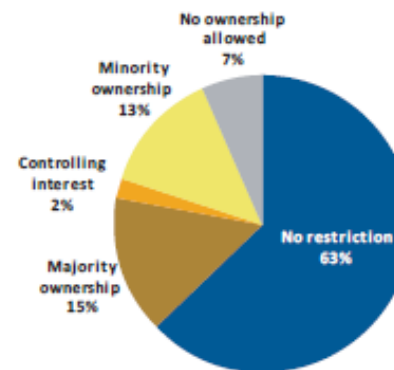
Competition Trends

Figure 1.9: Market liberalization highlights, 2013

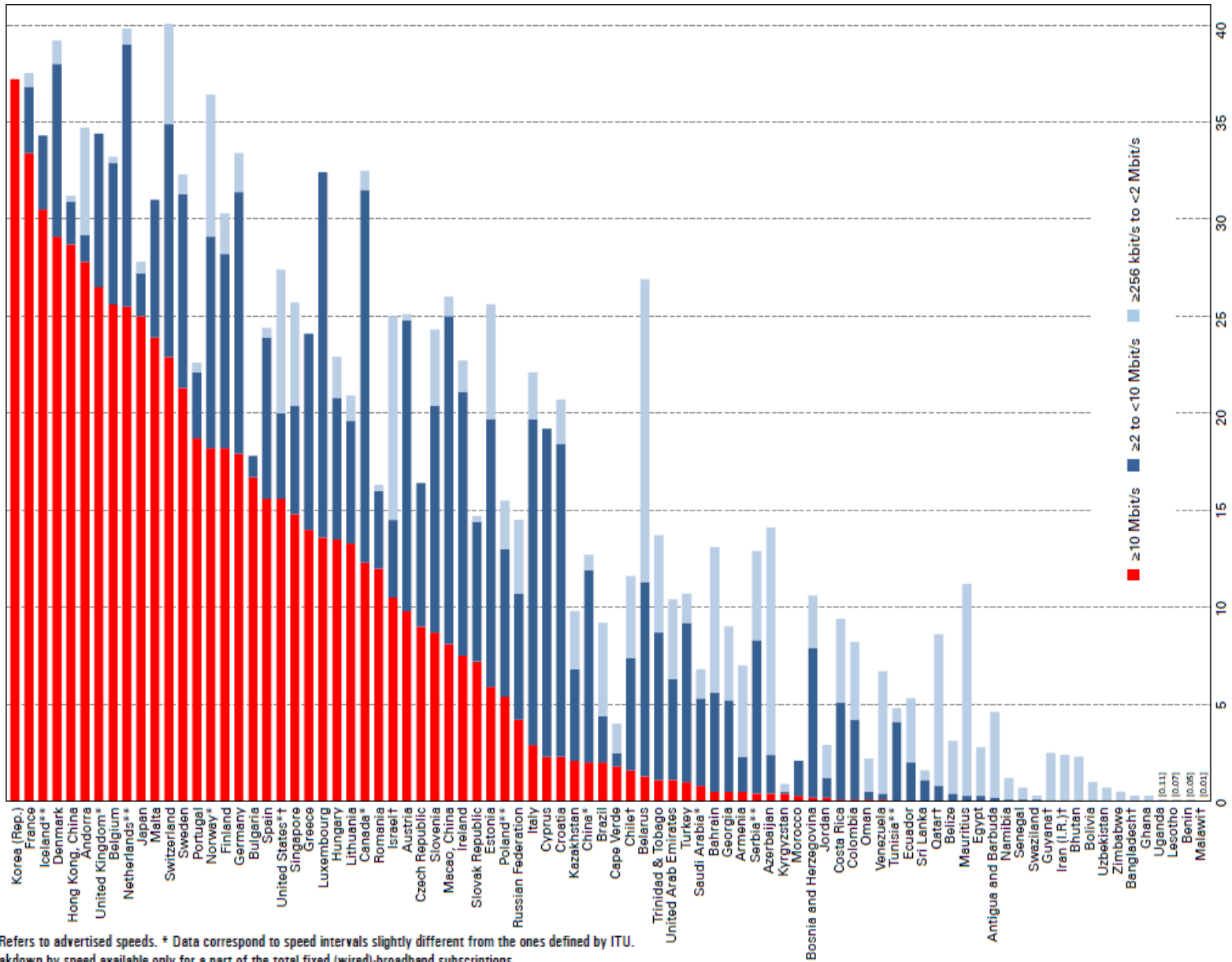


Source: ITU, www.itu.int/icteye.

Foreign ownership in the ICT sector, 2013



Fixed-broadband subscriptions per 100 inhabitants, by speed, early 2013.....



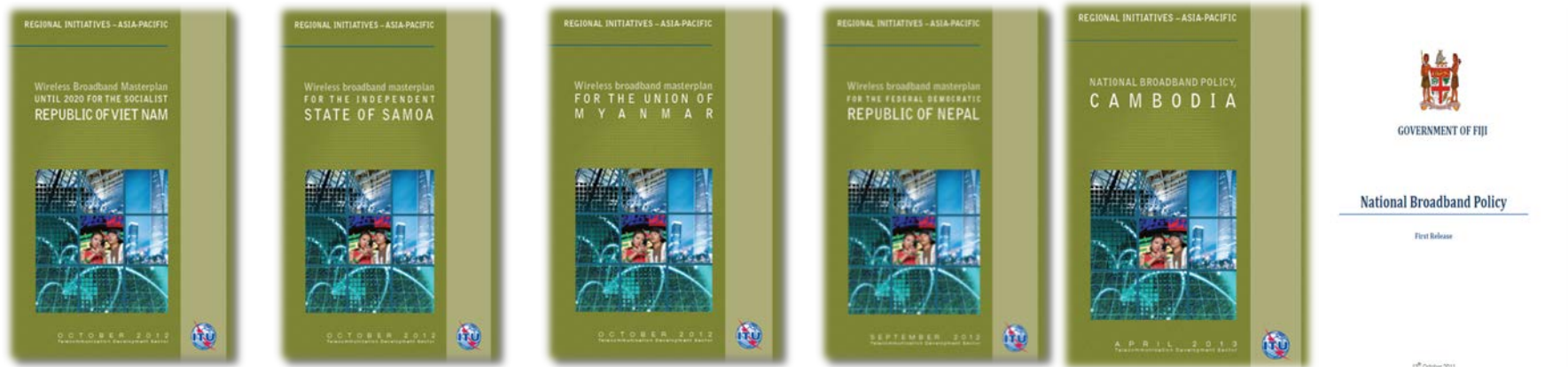
Note: Refers to advertised speeds. * Data correspond to speed intervals slightly different from the ones defined by ITU.

** Breakdown by speed available only for a part of the total fixed (wired)-broadband subscriptions.

† Early 2012 data.

Source: ITU World Telecommunication/ICT Indicators database

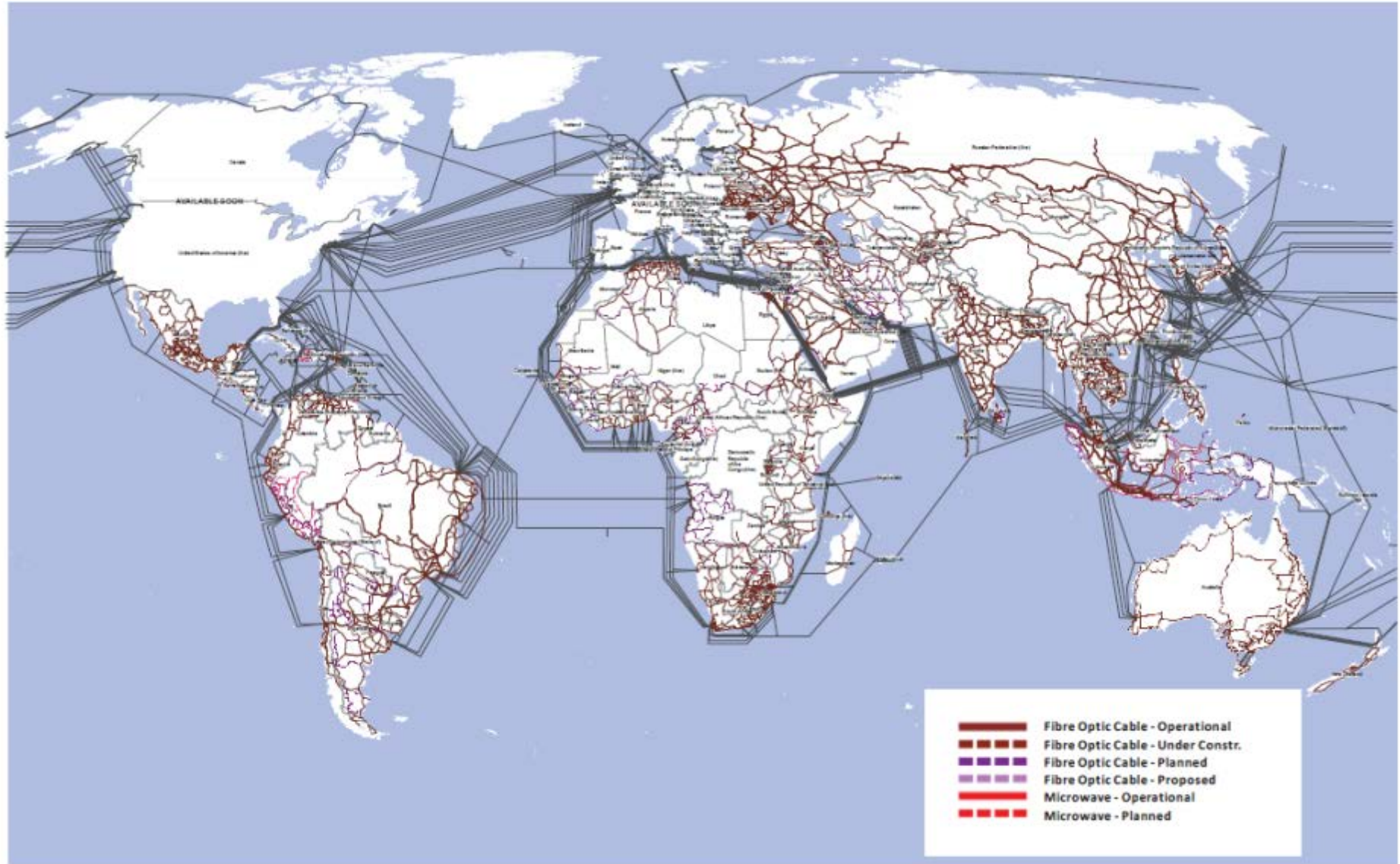
Asia-Pacific Broadband Plans – ITU activities



Broadband Policies adopted at highest level: Fiji, Cambodia, Brunei

Broadband policy support for Vietnam, Samoa, Nepal, Myanmar, Bhutan, Bangladesh, Cambodia, Nepal, PNG, Indonesia, Pakistan, Lao PDR, Vanuatu, Marshall Islands, Brunei, Philippines

Growing network.....

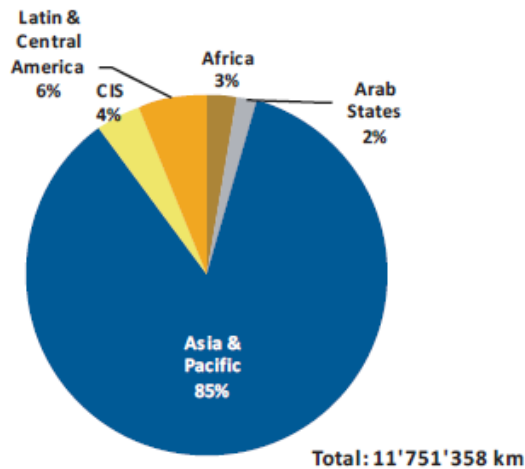


Note: Data collection for this map is a work in progress.

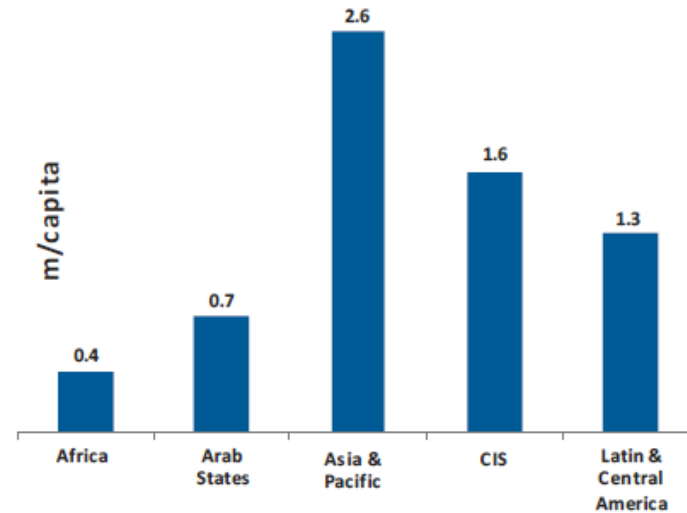
Source: ITU, Telegeography, www.itu.int/itu-d/tnd-map-public/.

Figure 1.4: Fibre and microwave routes in selected regions, 2013

Route km, fibres and microwaves, selected regions, 2013



Fibres and microwaves Routes, m/capita, selected regions, 2013



Note: The charts do not include data for Europe and North America. Data for these remaining regions will be available at the end of 2014.

Source: ITU.

IMPROVING QUALITY OF LIFE..



Emergency



Education



Health



Agriculture



Investment



Applications



Policy & Regulation



Governance



Sensor Networks



Universal Broadband



Green ICT & E-Waste



Capacity Building



Transport



Measurements



Electricity



**SMART
SUSTAINABLE
CITIES**



Infrastructure Security



Privacy & Security



Water



Digital Inclusion



Spectrum Management



Standards, Conformity & Interoperability

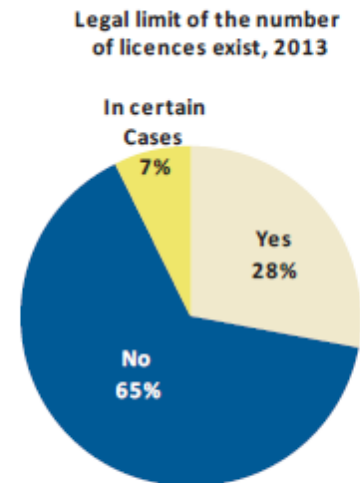
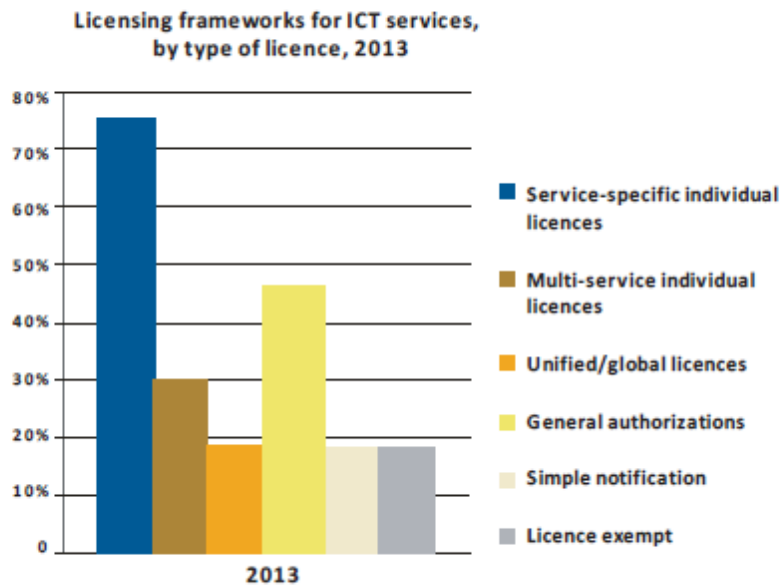


Teleworking

Regulatory Trends

Licensing framework

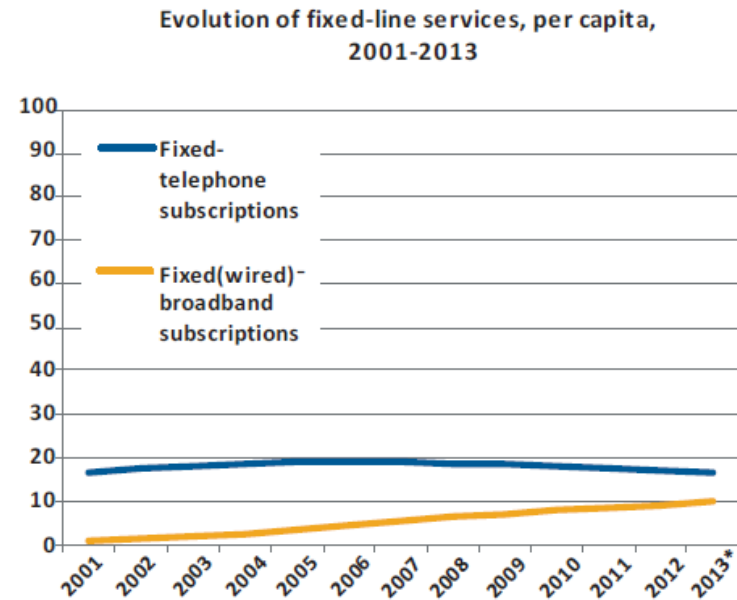
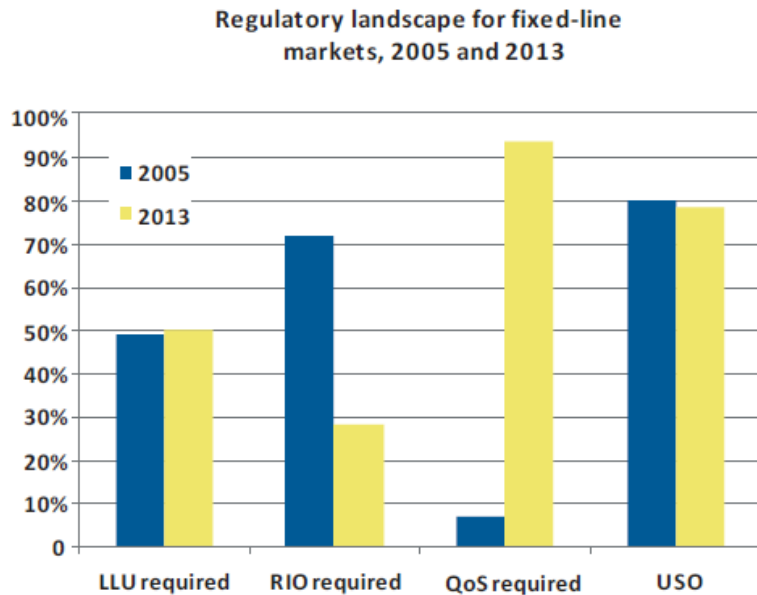
Figure 1.8: Licensing frameworks for ICT services, 2013



Source: ITU, www.itu.int/icteye.

Regulating fixed line services

Figure 1.6: Regulating fixed lines



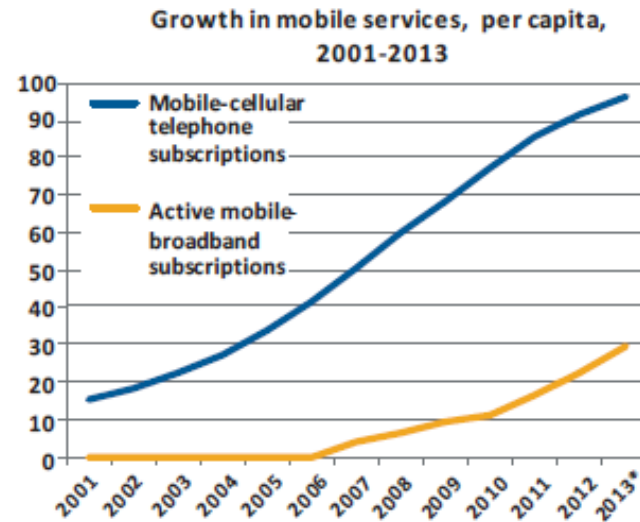
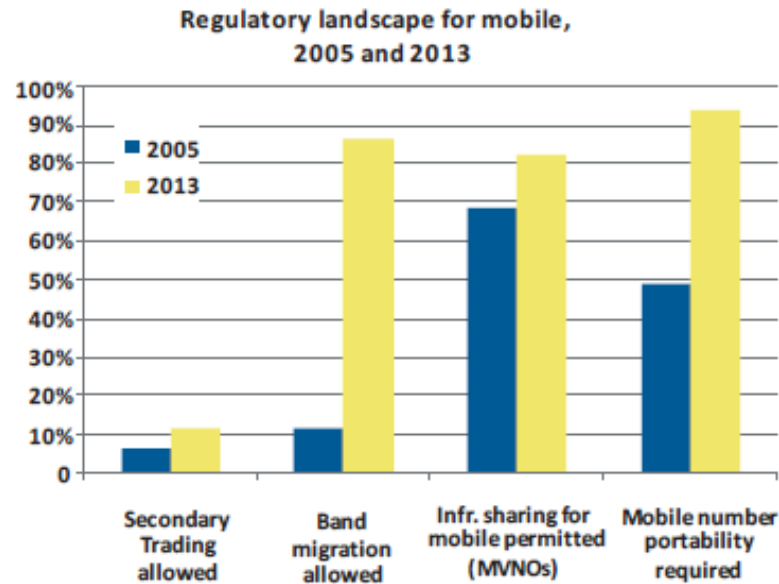
Legend: LLU = Local Loop Unbundling
 RIO = Reference Interconnection Offer
 QoS = Quality of Service
 USO = Universal Service Obligations

Note: * estimates.

Source: ITU, www.itu.int/icteye.

Regulating mobile services

Figure 1.7: Incentive regulation and growth in mobile services



Note: * estimates.

Source: ITU, www.itu.int/icteye.

Summary of Universal Service / Access Trends

Number of countries/economies

		Africa	Arab States	Asia & Pacific	CIS	Europe	The Americas	Total
Definition of universal service/access exists	Yes	33	14	30	5	38	27	147
	No	10	6	6	7	3	7	39
Voice services included in Universal service/access definition *	Fixed line private residential service as part of universal service definition	20	13	19	5	37	18	112
	Fixed line public payphone service as part of universal service definition	27	9	20	5	31	19	111
	Individual mobile cellular service as part of universal service definition	14	7	13	0	5	13	52
	Public mobile payphone service as part of universal service definition	14	4	6	0	2	8	34
Internet services included in Universal service/access definition *	Dial-up Internet access as part of universal service definition	13	6	10	0	28	6	63
	Broadband as part of universal service definition	11	5	15	2	13	13	59
Other services included in Universal service/access definition *	Telecentres as part of universal service definition	21	6	15	1	3	14	60
	Schools (primary, secondary post secondary)	9	3	8	2	3	12	37
	Health centres	7	3	7	0	2	8	27
	Emergency services as part of universal service definition	23	10	17	3	31	17	101
	Services for impaired/ elderly	7	2	8	2	25	12	56
	Directory services as part of universal service definition	16	8	11	2	32	6	75
Region size		44	21	40	12	43	35	195

* This indicator allows multiple choice per country/economy

Source: ITU World Telecommunication/ICT Regulatory Database

Summary of key regulatory trends – retail price control

Number of countries/economies

Indicator		Africa	Arab States	Asia & Pacific	CIS	Europe	The Americas	Total
Retail telecommunication services: Access to network for fixed services	With price control	15	12	14	6	21	19	87
	Without price control	24	3	14	0	11	8	60
Retail telecommunication services: Local voice fixed services	With price control	22	12	14	6	14	20	88
	Without price control	15	3	14	0	17	5	54
Retail telecommunication services: National long distance (voice) fixed services	With price control	19	11	9	4	14	17	74
	Without price control	16	3	17	2	17	9	64
Retail telecommunication services: International voice fixed service	With price control	19	12	7	3	6	15	62
	Without price control	19	3	20	3	25	11	81
Retail telecommunication services: IP Telephony fixed services	With price control	6	9	4	1	5	5	30
	Without price control	27	4	20	5	26	18	100
Retail telecommunication services: Internet access fixed services	With price control	16	11	7	0	1	5	40
	Without price control	21	4	21	7	30	21	104
Retail telecommunication services: Leased lines retail fixed services	With price control	15	9	7	3	10	10	54
	Without price control	11	2	19	3	19	12	66
Retail telecommunication services: Other retail fixed services	With price control	0	0	1	1	3	4	9
	Without price control	0	1	0	0	0	0	1
Other retail fixed services		0	0	1	1	2	4	8
Other retail fixed services without price regulation		1	1	0	0	0	1	3
Region size		44	21	40	12	43	35	195

* This indicator allows multiple choice per country/economy

Year: 2013 or latest available data.

Source: ITU World Tariff Policies Database

ITU ICT-Eye: <http://www.itu.int/icteye>

Indicator		Africa	Arab States	Asia & Pacific	CIS	Europe	The Americas	Total
Wholesale telecommunication services: Fixed origination	With price control	22	11	13	3	29	13	91
	Without price control	9	2	13	3	3	14	44
Wholesale telecommunication services: Fixed termination	With price control	32	16	18	5	32	21	124
	Without price control	5	0	8	1	1	7	22
Wholesale telecommunication services: Mobile origination	With price control	24	10	11	3	2	10	60
	Without price control	8	4	14	2	29	15	72
Wholesale telecommunication services: Mobile termination	With price control	34	15	17	6	30	20	122
	Without price control	3	1	8	0	3	7	22
Wholesale telecommunication services: National voice roaming	With price control	6	6	5	1	2	2	22
	Without price control	23	6	17	4	28	23	101
Wholesale telecommunication services: International voice roaming	With price control	5	7	3	1	17	2	35
	Without price control	27	6	21	4	15	25	98
Wholesale telecommunication services: Unbundled local loop	With price control	6	9	7	2	31	5	60
	Without price control	19	2	15	4	2	19	61
Wholesale telecommunication services: broadband access/bistream	With price control	13	11	9	1	23	6	63
	Without price control	17	1	14	4	9	20	65
Wholesale telecommunication services: line rental	With price control	16	8	11	3	20	6	64
	Without price control	14	2	14	3	11	20	64
Wholesale telecommunication services: leased lines	With price control	17	11	13	5	27	9	82
	Without price control	16	2	13	1	6	18	56
Wholesale telecommunication services: access to Internet exchange points (IXPs)	With price control	5	3	5	0	0	2	15
	Without price control	22	8	18	5	31	22	106
Wholesale telecommunication services: access to international gateways	With price control	11	10	6	1	0	4	32
	Without price control	21	3	19	4	31	22	100
Wholesale telecommunication services: Other wholesale telecommunication services	With price control	1	0	2	0	5	3	11
	Without price control	0	1	0	0	0	0	1
Other wholesale telecommunication services		1	0	1	0	5	2	9
Other wholesale telecommunication services without price regulation		1	1	0	0	1	0	3
Region size		44	21	40	12	43	35	195

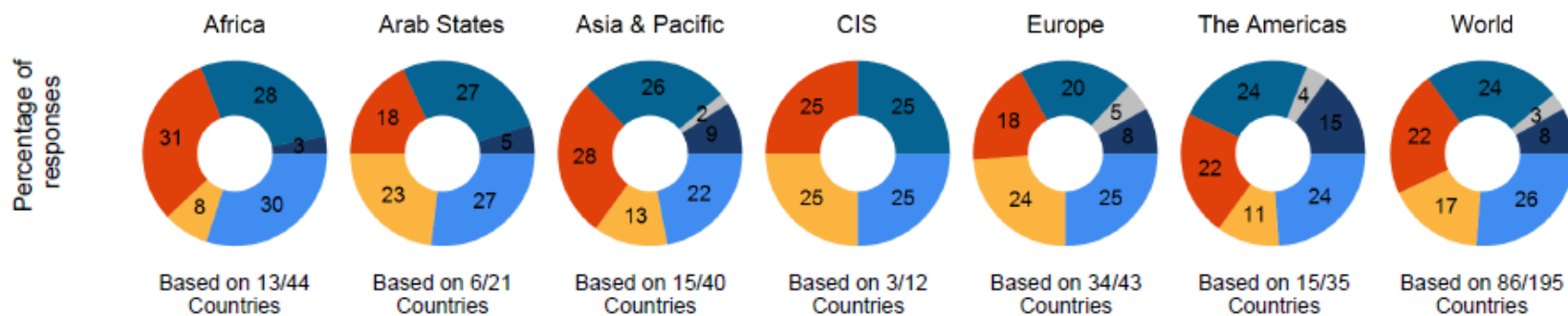
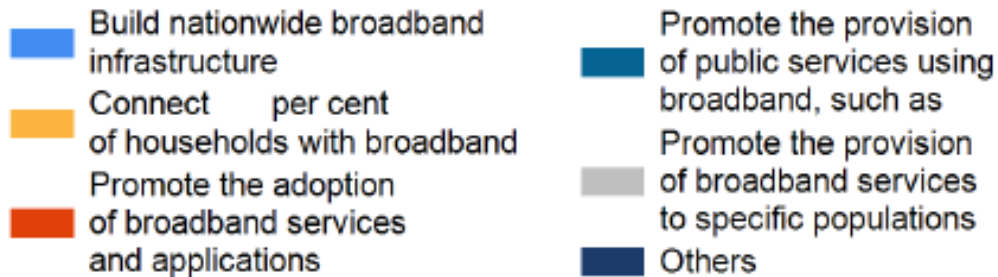
* This indicator allows multiple choice per country/economy

Year: 2013 or latest available data.

Source: ITU World Tariff Policies Database

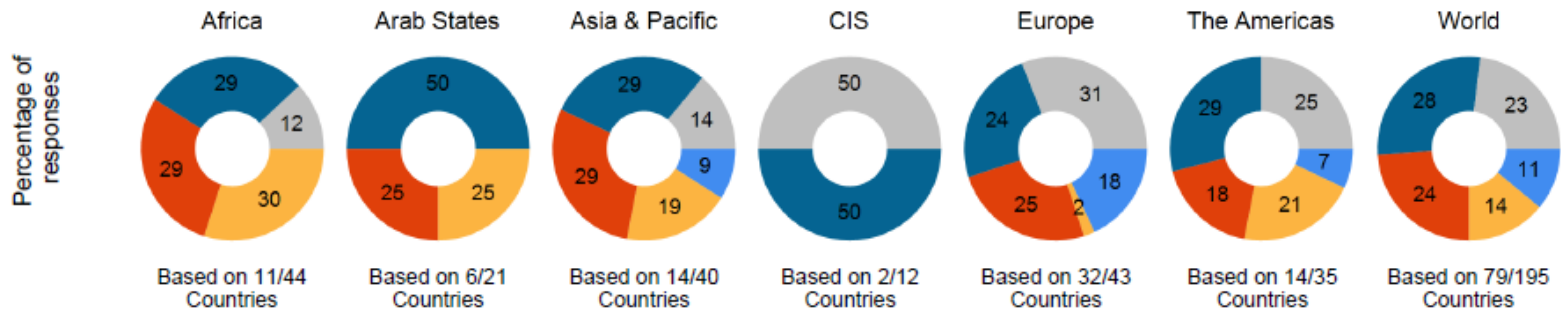
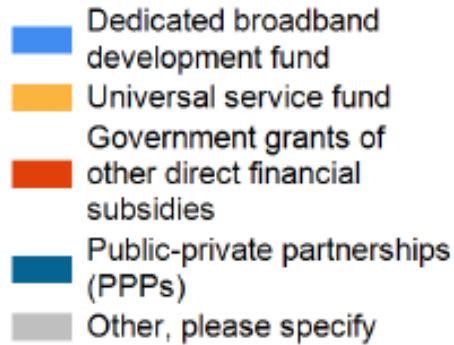
Summary of key regulatory trends – wholesale price control

What are the goals of the broadband plans?



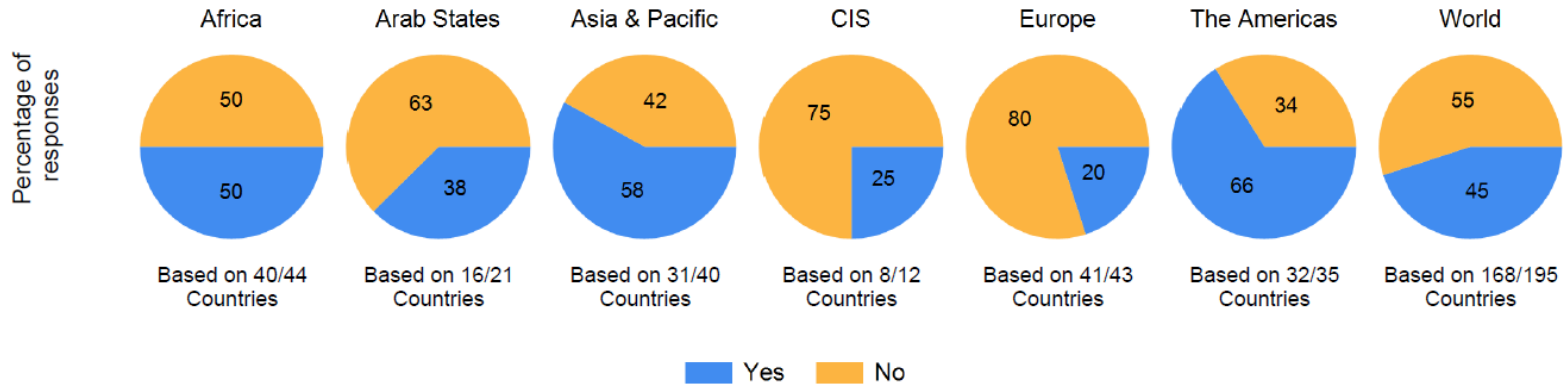
Source: ITU Telecommunication/ICT Regulatory Database

How are broadband plans being funded?

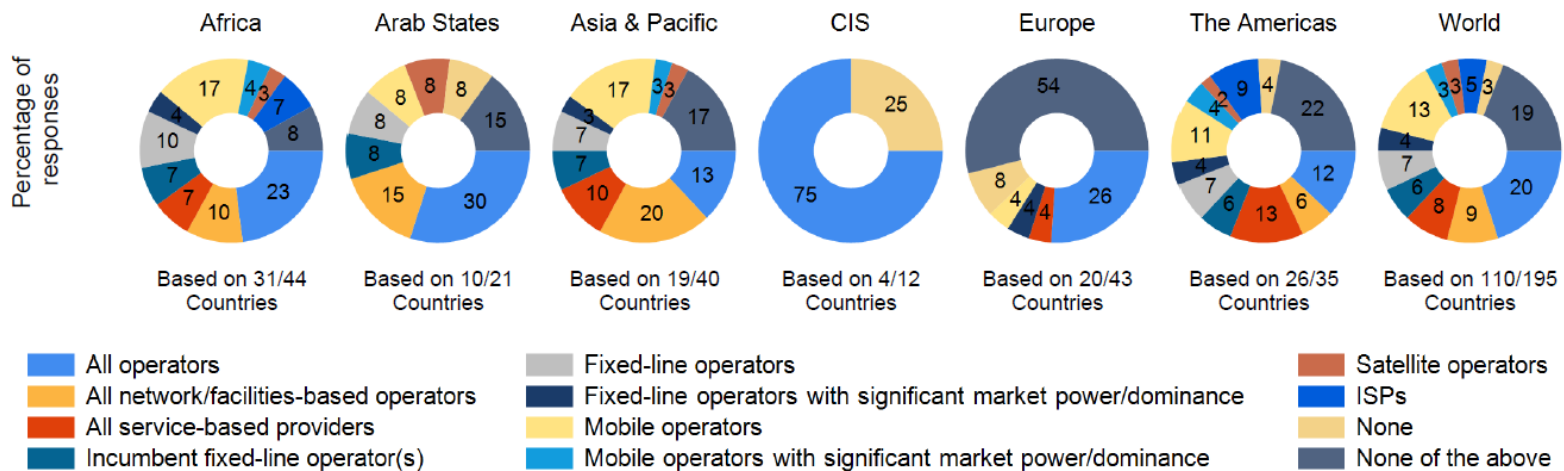


Source: ITU Telecommunication/ICT Regulatory Database

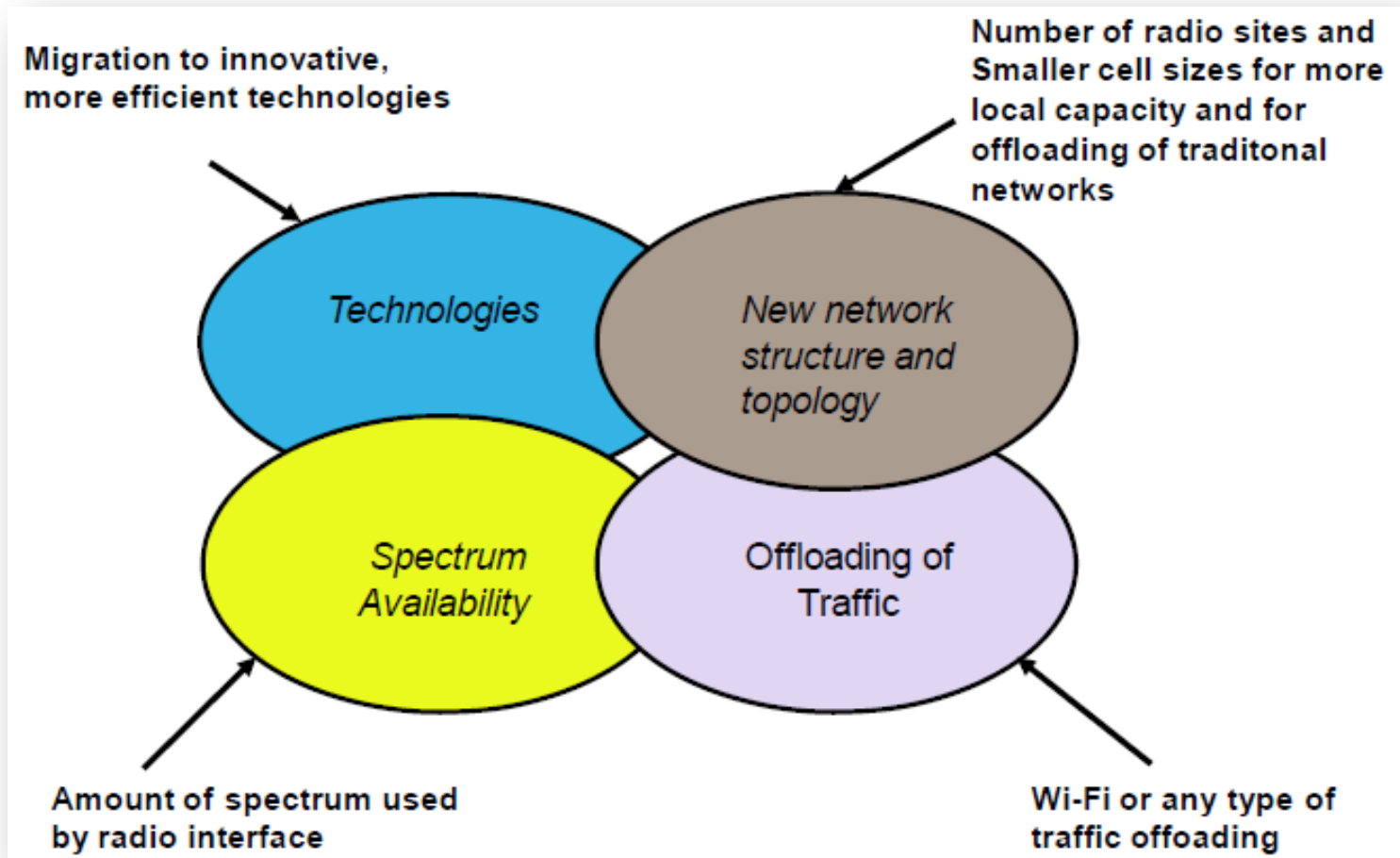
Operational USO Funds



Operators/ service providers required to contribute to USF



Options to manage mobile demand



Source: Report ITU-R M.2243 (00/2011)

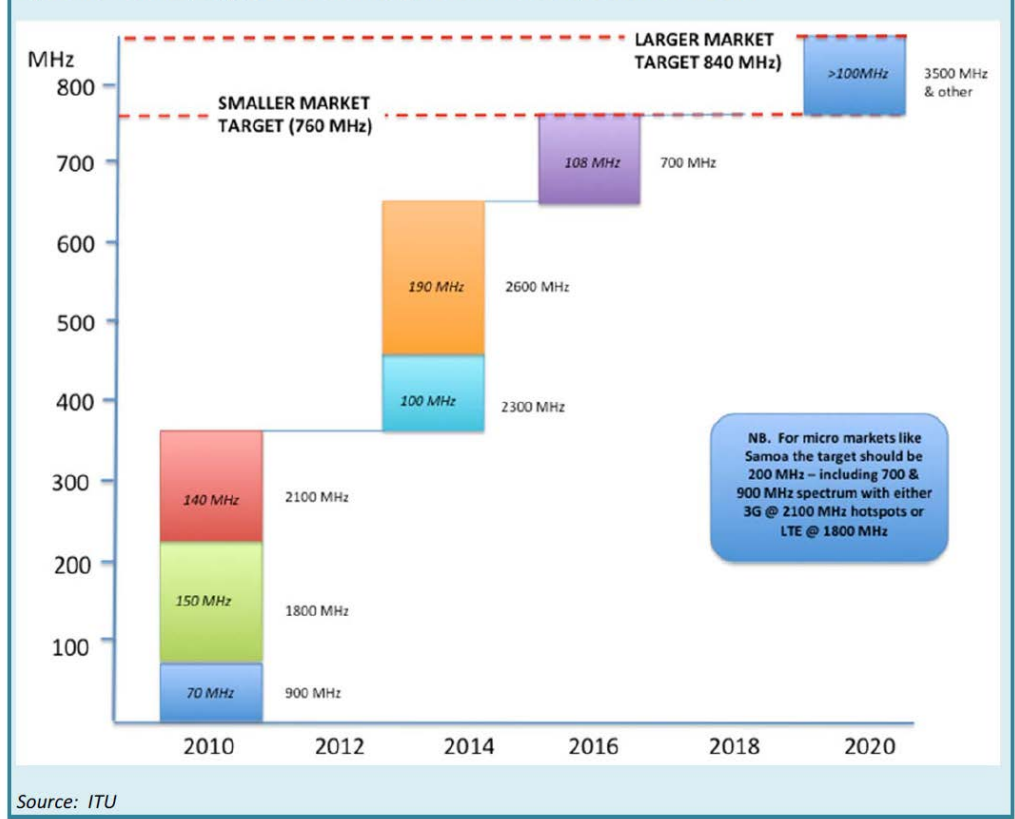
Wireless broadband spectrum estimates

	Amount (in MHz)
European Union	At least 1200 MHz by 2015
Australia	At least 950 MHz by 2015 and 1100 MHz by 2020
India	Additional 500 MHz for IMT Service by 2020*
Japan	1500 MHz by 2020
Republic of Korea	988 MHz
United States	Additional 500 MHz

Source: Report ITU-R M.2243 (00/2011)

* NTP 2012

Figure 16: Country suggest allocation targets for wireless spectrum until 2020



Source: [http://www.itu.int/ITU-](http://www.itu.int/ITU-D/tech/broadband_networks/WirelessBDMasterPlans_ASP/Masterplan%20guidelines%20EV%20BAT1.pdf)

[D/tech/broadband_networks/WirelessBDMasterPlans_ASP/Masterplan%20guidelines%20EV%20BAT1.pdf](http://www.itu.int/ITU-D/tech/broadband_networks/WirelessBDMasterPlans_ASP/Masterplan%20guidelines%20EV%20BAT1.pdf)

Wireless broadband spectrum estimates

RATG 1:
Pre-IMT,
IMT-2000 and
its enhancements

RATG 2:
IMT-Advanced
(new mobile access
and new nomadic/
local area access)

RATG 3:
Existing radio
LANs and their
enhancements

RATG 4:
Digital mobile
broadcasting
systems and their
enhancements

Total spectrum requirements for both RATG 1 and RATG 2 in the year 2020

	Total spectrum requirements for RATG 1	Total spectrum requirements for RATG 2	Total spectrum requirements RATGs 1 and 2
Lower user density settings	440 MHz	900 MHz	1 340 MHz
Higher user density settings	540 MHz	1 420 MHz	1 960 MHz

Source: Report ITU-R M.2290-0 (12/2013)



Committed to connecting the world

Means to control dominance

Wholesale price controls

Accounting separation

Non-discrimination rules

Ex-post competition law



Functional Separation

Virtual Separation

Equivalence of Input

Monitoring & effective enforcement



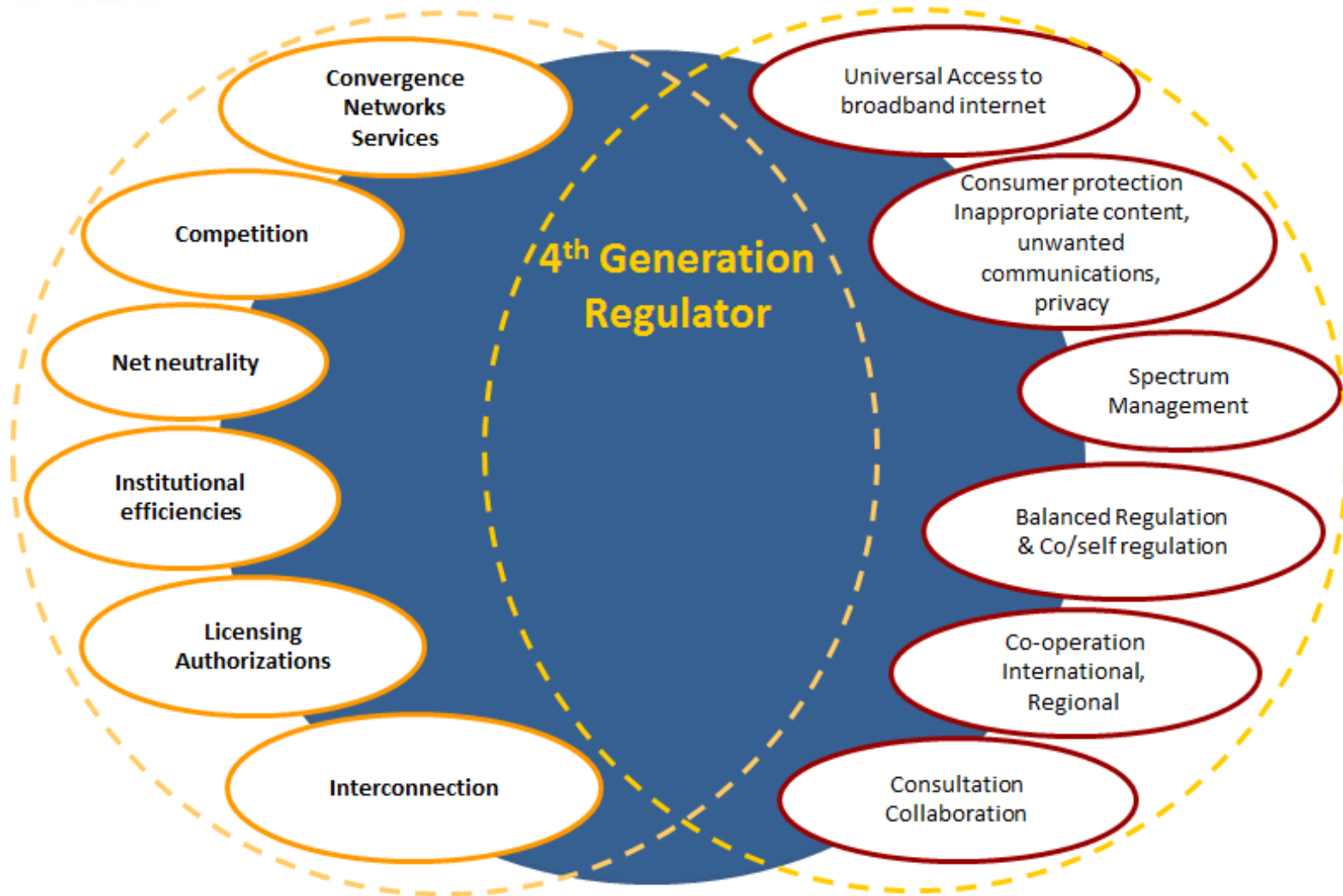
Legal Separation

Structural Separation

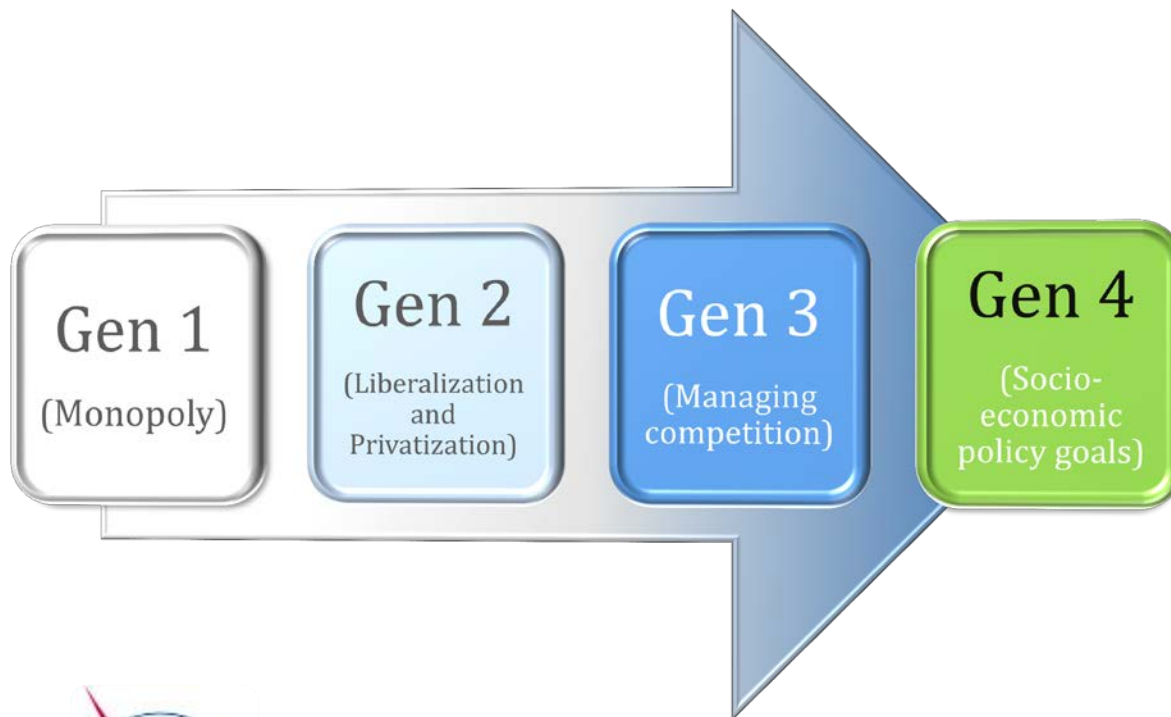




Regulation 4.0



Regulation 4.0 - GSR 13 Best Practices



1 Innovative and smart regulatory approaches fostering equal treatment of market players without putting extra burden on operators and service providers

2 The evolving role of the regulator: the regulator as a partner for development and social inclusion

3 The need to adapt the structure and institutional design of the regulator to develop future regulation



Broadband, Millennium Development Goals, WSIS



Environment



Gender Equality



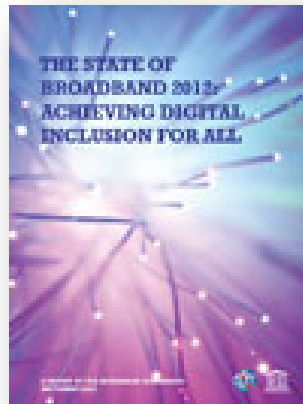
End Poverty & Hunger



Maternal health



Universal Education



Partnership



HIV/AIDS



Child Health



ICT embedded society and cross-sectoral collaboration



Policy & Regulation

Need for cross-sector collaboration



Sensor Networks



Universal Broadband



Green ICT & E-Waste



Infrastructure Security

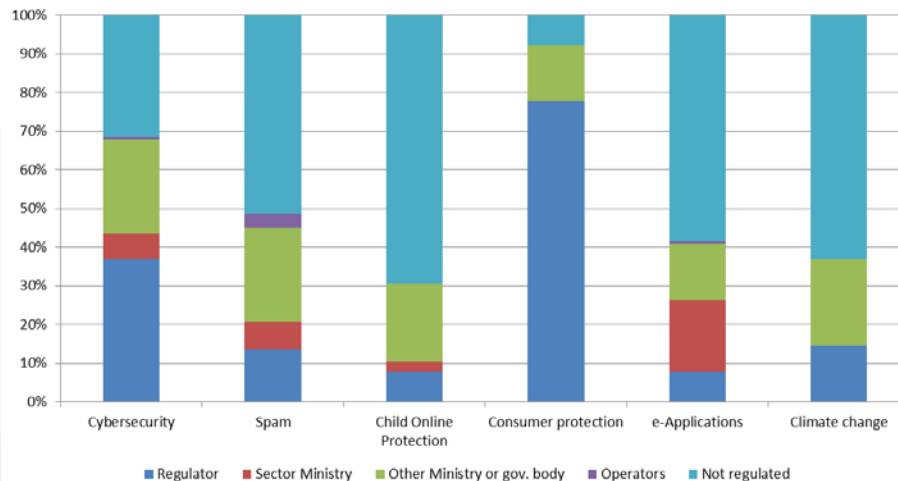


Spectrum Management

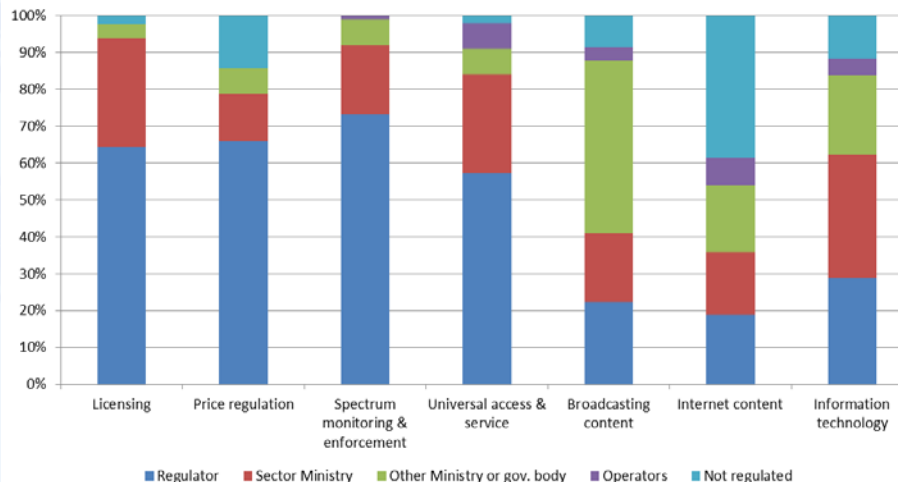


Standards, Conformity & Interoperability

New mandate of the ICT regulator, 2013



Who regulates what in the ICT sector?, 2013



ICT SECTOR REGULATORY RESPONSIBILITY - Who regulates what?

NATIONAL REGULATORY ENTITY (Lead Agencies Examples)..



Emergency

National Disaster Management Authority, Military, Internal Affairs



Education

Ministry of Education, Education Boards, Local Government



Health

Ministry of Health, Local Government



Electricity

Ministry of Power, Regulator Local Government



Governance

City, Municipal, provincial, Central Government Agencies



Transport

Local Government, Department of Transport



Water



Teleworking

Ministry of Finance, Banking Regulator



Finance & Payment



Sensor Networks



Universal Broadband



Green ICT & E-Waste



Infrastructure Security



Spectrum Management

Competition Authority

Security Agencies

Ministry of ICT

Standardization Bodies

Sector Regulators



Standards, Conformity & Interoperability



SMART SUSTAINABLE CITIES

COLLABORATION MECHANISMS



Emergency



Education



Health



Electricity



Governance



Transport, Trade, Logistics



Water



Teleworking



Infrastructure Security



Integrated Policy



Legislation



Co-Regulation



Standardization (International / National)



MoU or Cooperation Agreement



Coordination Committee



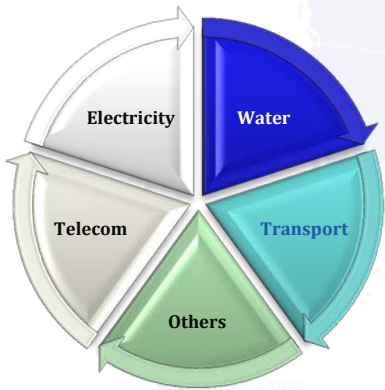
Projects, Coordination on Case to Case basis





**SMART
SUSTAINABLE
CITIES**

REGULATORY COLLABORATION



**MULTI UTILITY
REGULATOR**

■ NBP - planning





Mobile Banking

Tanzania	MoU signed between Bank of Tanzania (BoT) and Tanzania Communication Regulatory Authority (TCRA).
India	Statutory guidelines for operationalizing M-Banking issued by the Reserve bank of India (RBI) for banks and Regulations by the Telecom Regulatory Authority of India (TRAI) on QoS, Tariffs for service providers.
Pakistan	MoU between Pakistan Telecommunication Authority (PTA) and State Bank of Pakistan (SBP)



Competition

Australia	Legislation separates powers between Australian Consumers and Competition Commission (ACCC) and Australian Communications and Media Authority (ACMA). Chairman of ACCC and ACMA are Associate Members in ACMA and ACCC respectively.
Mauritius	MoU Signed between Competition Commission (CCM) and ICT Authority (ICTA)
United Kingdom	Agreement on procedures between Office of Fair Trade (OFT) and Office of Communications (OFCOM).



Green ICT & E-Waste

Egypt	Green ICT Strategy implemented through a MoU between Ministry of Communications & IT (MCIT) and Ministry of Environmental Affairs (MEA)
Singapore	E2PO is a multi-agency committee led by the National Environment Agency (NEA) and the Energy Market Authority (EMA) and comprises the Economic Development Board (EDB), Land Transport Authority (LTA), Building and Construction Authority (BCA), Housing and Development Board (HDB), Infocomm Authority of Singapore (IDA) , Agency for Science, technology and Research (A*STAR), Urban Redevelopment Authority (URA), Jurong Town Corporation (JTC) and National Research Foundation (NRF). The Ministry of the Environment and Water Resources (MEWR) and Ministry of Trade and Industry (MTI) are also represented in the committee.



Health

-
- | | |
|---------------|--|
| Singapore | Joint project on Tele-health by Ministry of Health and Infocomm Development Authority (IDA) |
| United States | Joint Statement and MoU between Federal Communications Commission (FCC) and Food and Drug Administration (FDA) on broadband and wireless enabled medical devices |
-



Electricity

-
- | | |
|-----|---|
| UAE | <u>Environment Agency - Abu Dhabi (EAD)</u> and the Telecommunications Regulatory Authority (TRA) have signed a Memorandum of Understanding (MoU) to promote cooperation and partnership in the field of technology and information security, |
|-----|---|
-



Transport, Trade, Logistics

-
- | | |
|-----------|---|
| Egypt | Green ICT Strategy implemented through a MoU between Ministry of Communications & IT (MCIT) and Ministry of Environmental Affairs (MEA) |
| Singapore | Infocomm@SeaPort programme is a collaboration between the Infocomm Development Authority of Singapore (IDA) and the Maritime and Port Authority of Singapore (MPA). e-freight is a joint programme between IDA and Civil Aviation Authority of Singapore seeking to enhance competitiveness and increase productivity in the air cargo logistics sector through infocomm. |
-

UK Regulators' Network (UKRN) is an initiative of the UK economic regulators: CAA, FCA, Ofcom Ofgem, ORR, Ofwat, UR. Monitor and the Water Industry Commission for Scotland (WICS) are also participating as observers

