



***ITU /ICTP Workshop on New Radiocommunication
Technologies for ICT in Developing Countries
(Africa Region)
Trieste, Italy, May 17-21, 2004***

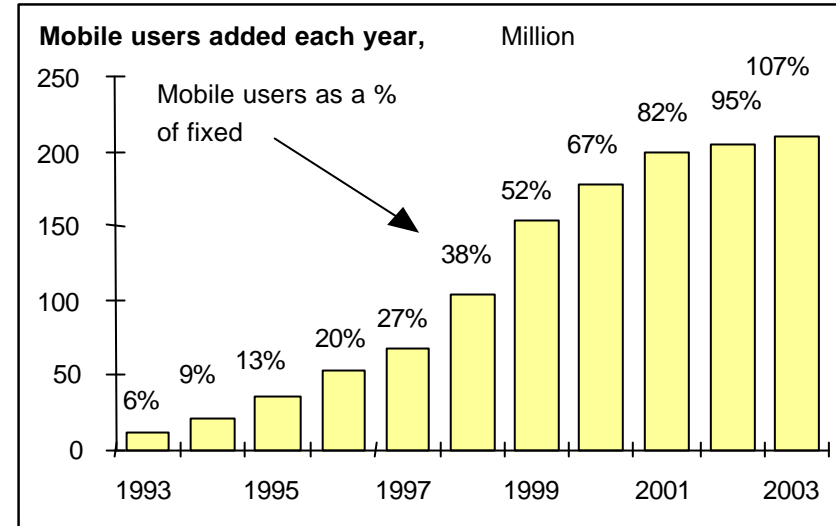
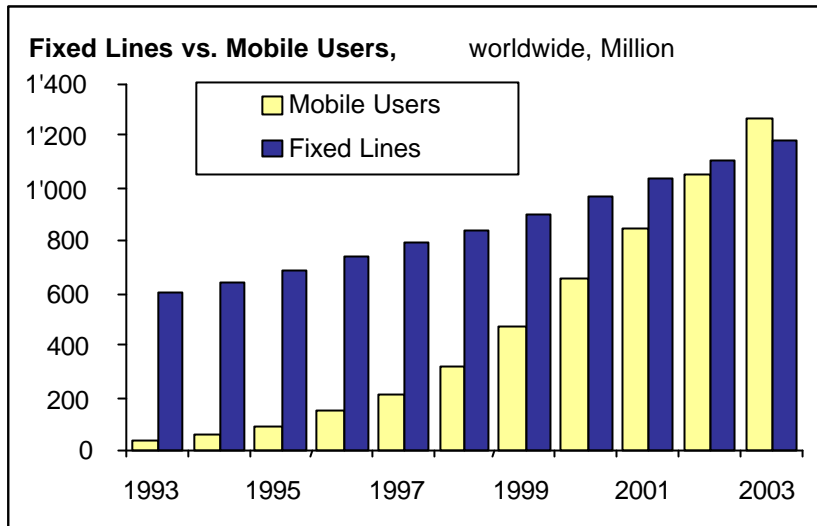
***Mobile Communications: present situation and
future development***

**Riccardo Passerini
Focal Point IMT-2000, ITU-BDT**



The growth of mobile cellular services

1993-1999 actual, with forecasts to 2003.



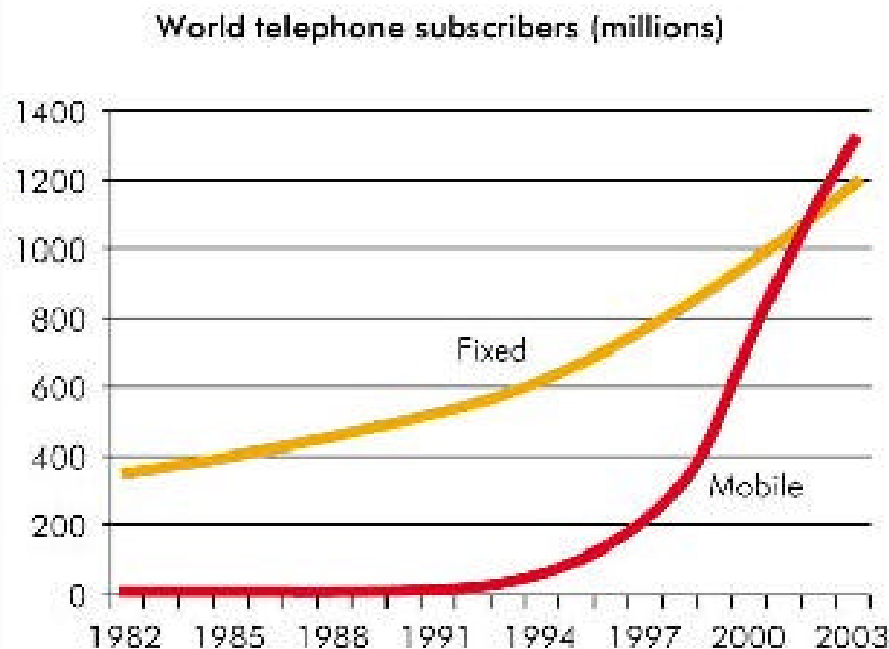
Source: *ITU World Telecommunication Indicators Database and ITU forecasts in Trends in Telecommunications Reform, 2000 -2001: Interconnection Regulation .*

The growth of mobile cellular services

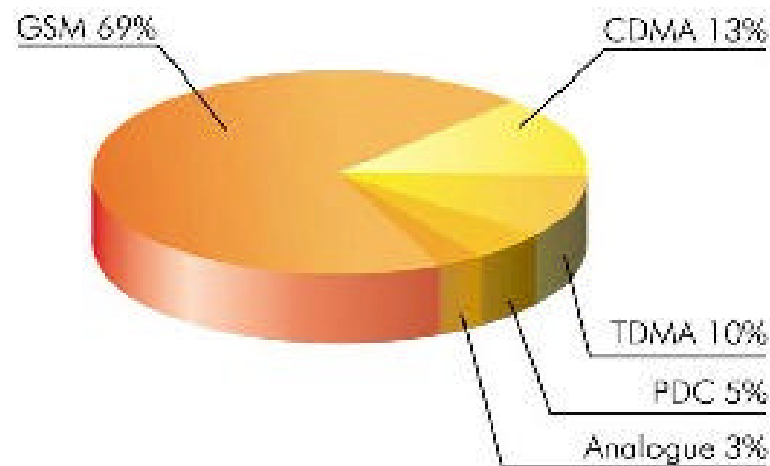


Figure 1 — Mobile overtakes fixed

Number of fixed and mobile telephone subscribers worldwide (1982-2003) and distribution of mobile subscribers worldwide by technology (December 2002)



World mobile subscribers by technology at year-end 2002
Total = 1134 million

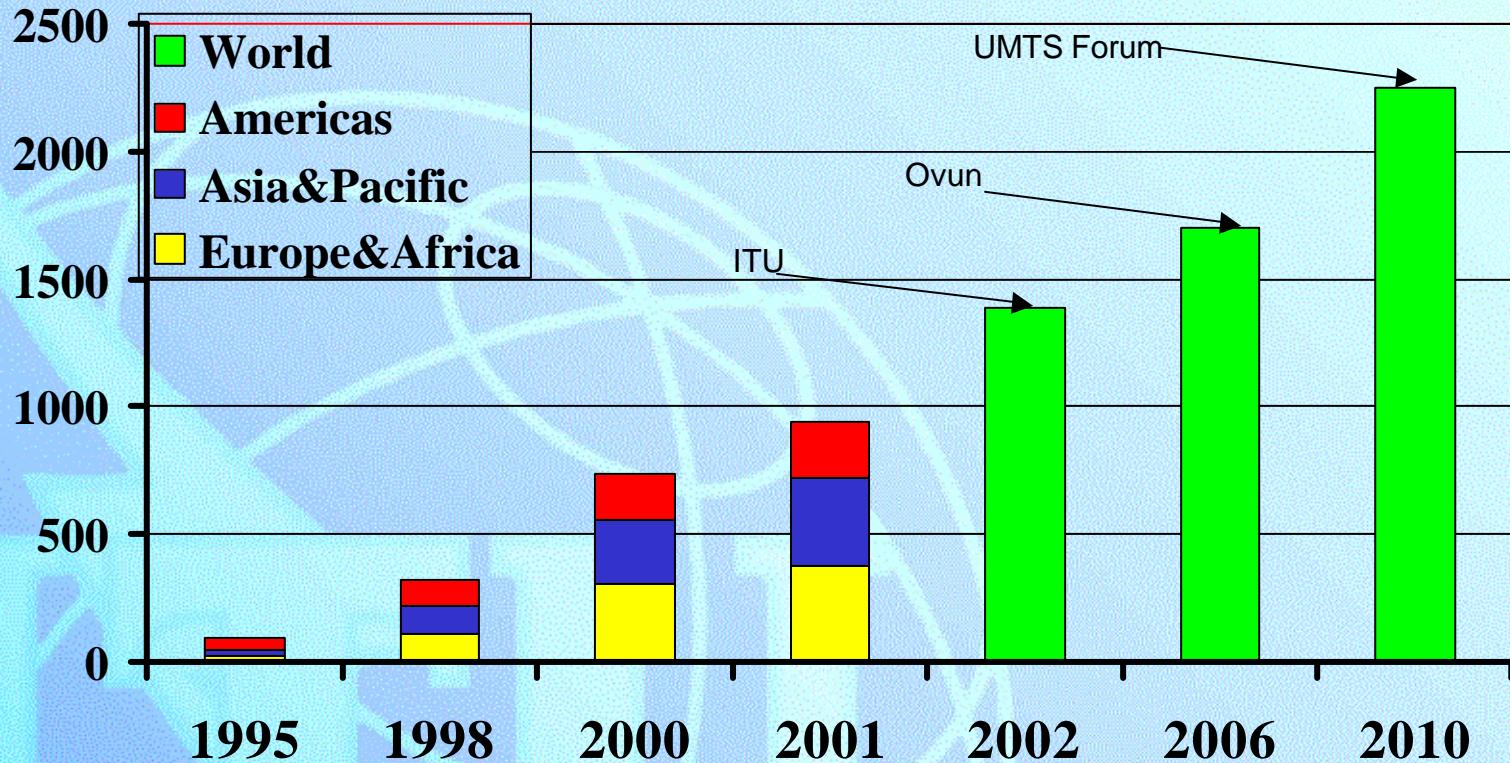


Source: Left chart: ITU World Telecommunication Indicator database.
Right chart: ITU adapted from GSM Association.

Trends – Mobile Growth (worldwide)



Cellular Subscribers (millions)



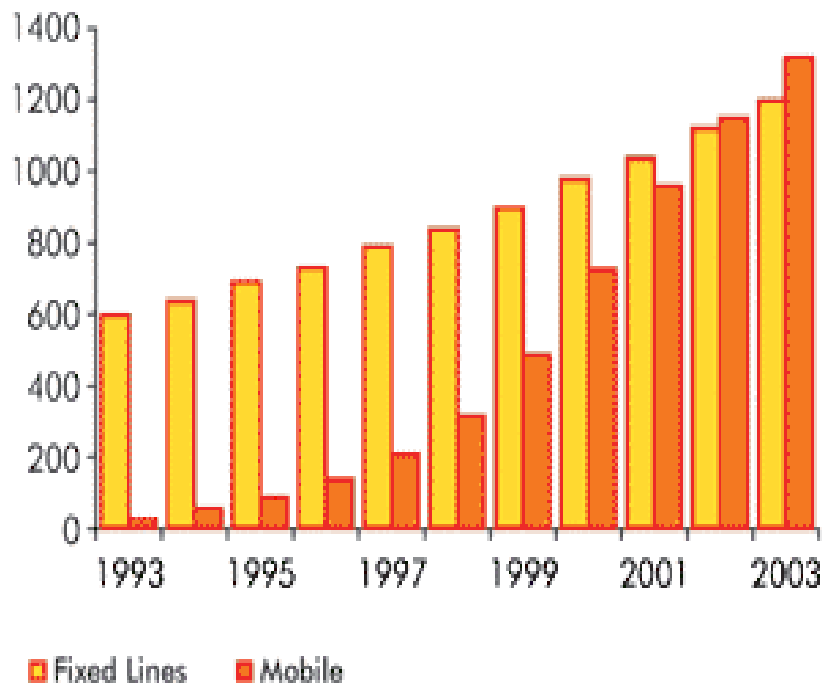
Source: ITU Indicators

Number of mobile subscribers already greater than fixed

Growth of mobile

Fixed lines and mobile subscribers (millions) and countries in which mobile has overtaken fixed

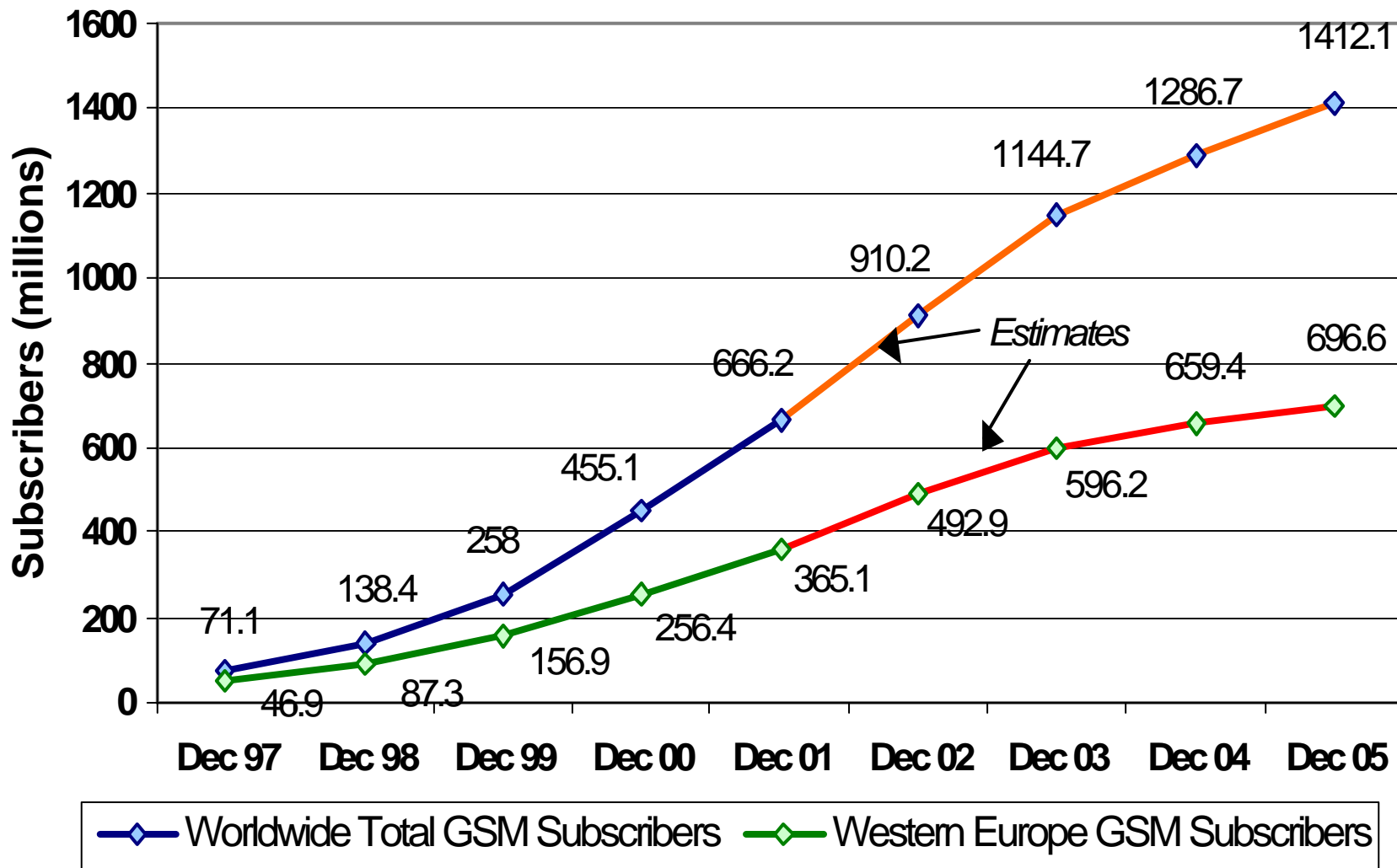
Mobile overtakes fixed:
total subscribers worldwide (millions)



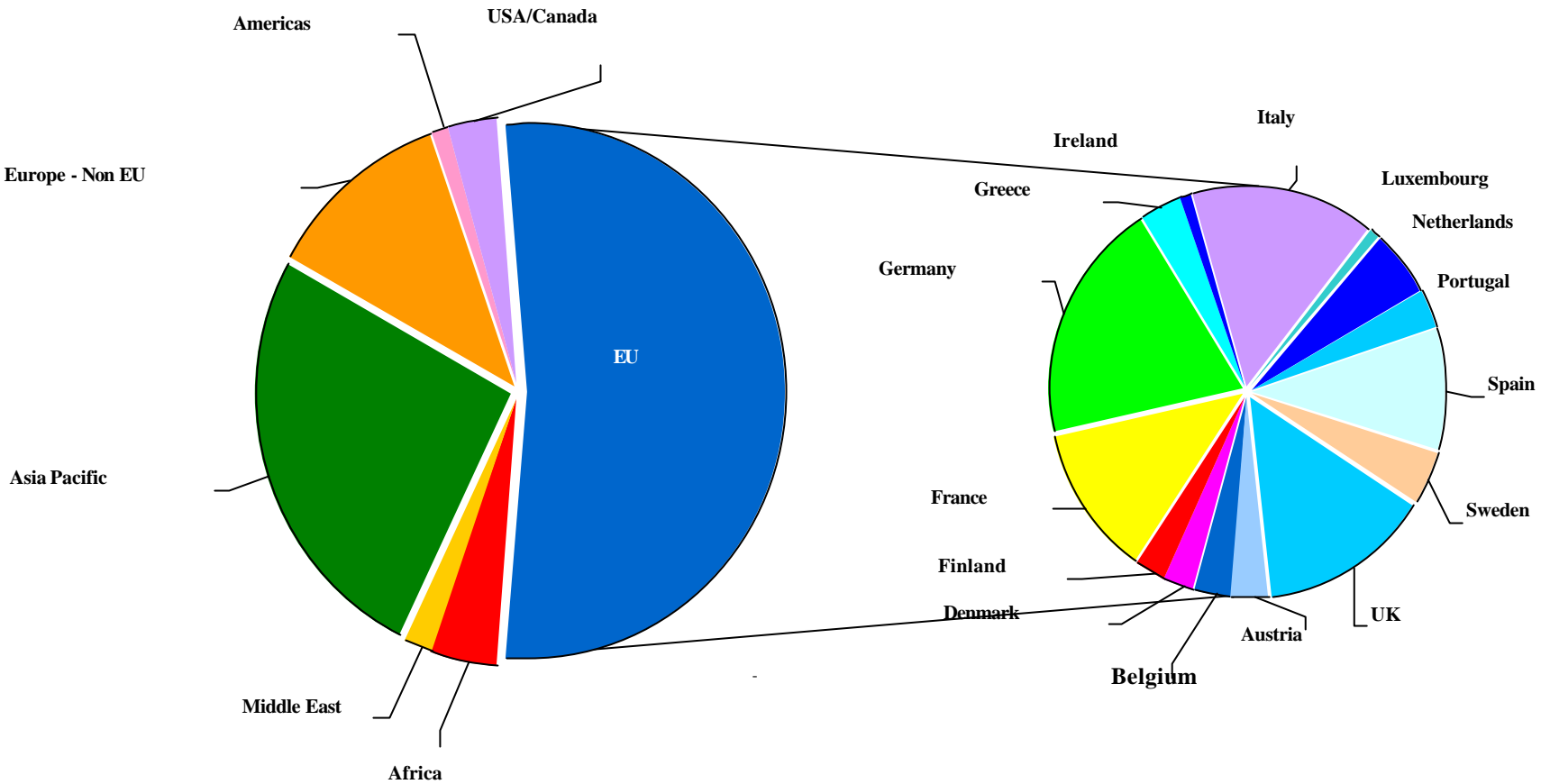
More mobile countries



Figure.1: Forecasted Adoption of GSM Mobile Phones in Western Europe and the World



World GSM Cellular Subscribers to June 2001

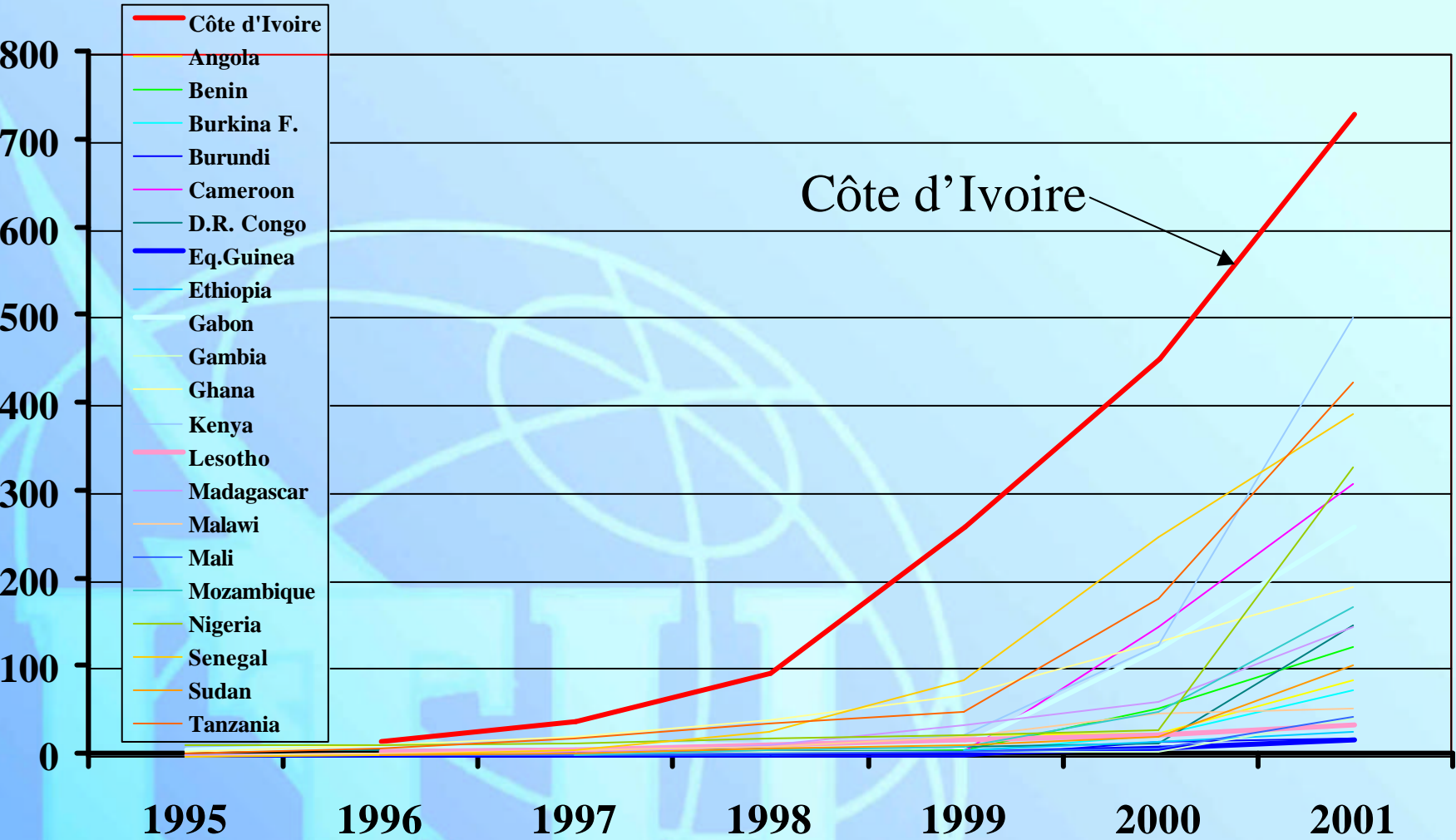


Source: <http://www.gsmworld.com>

Trends – Mobile Growth (Africa)-1



Cellular Subscribers (x1000)



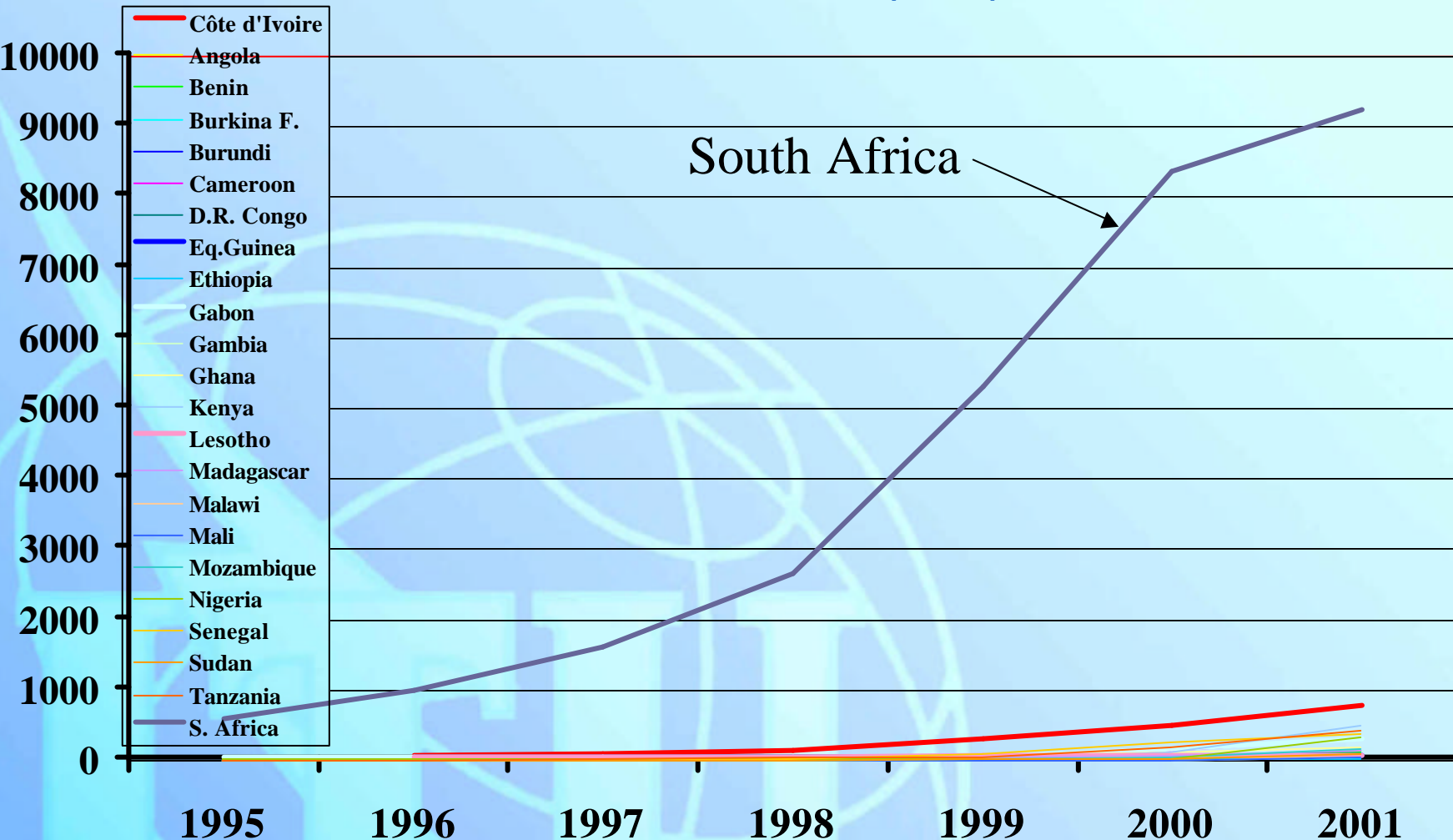
Source: ITU Indicators



Trends – Mobile Growth (Africa)-2



Cellular Subscribers (x1000)



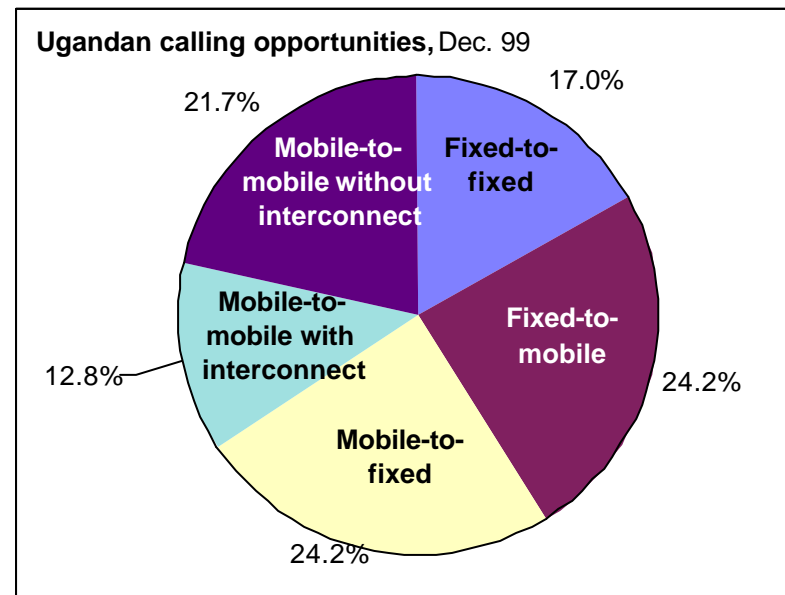
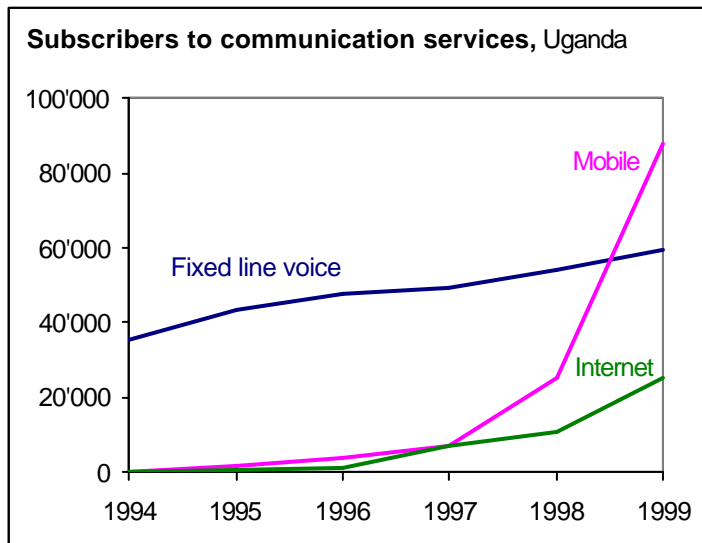
Source: ITU Indicators



Uganda mini case study



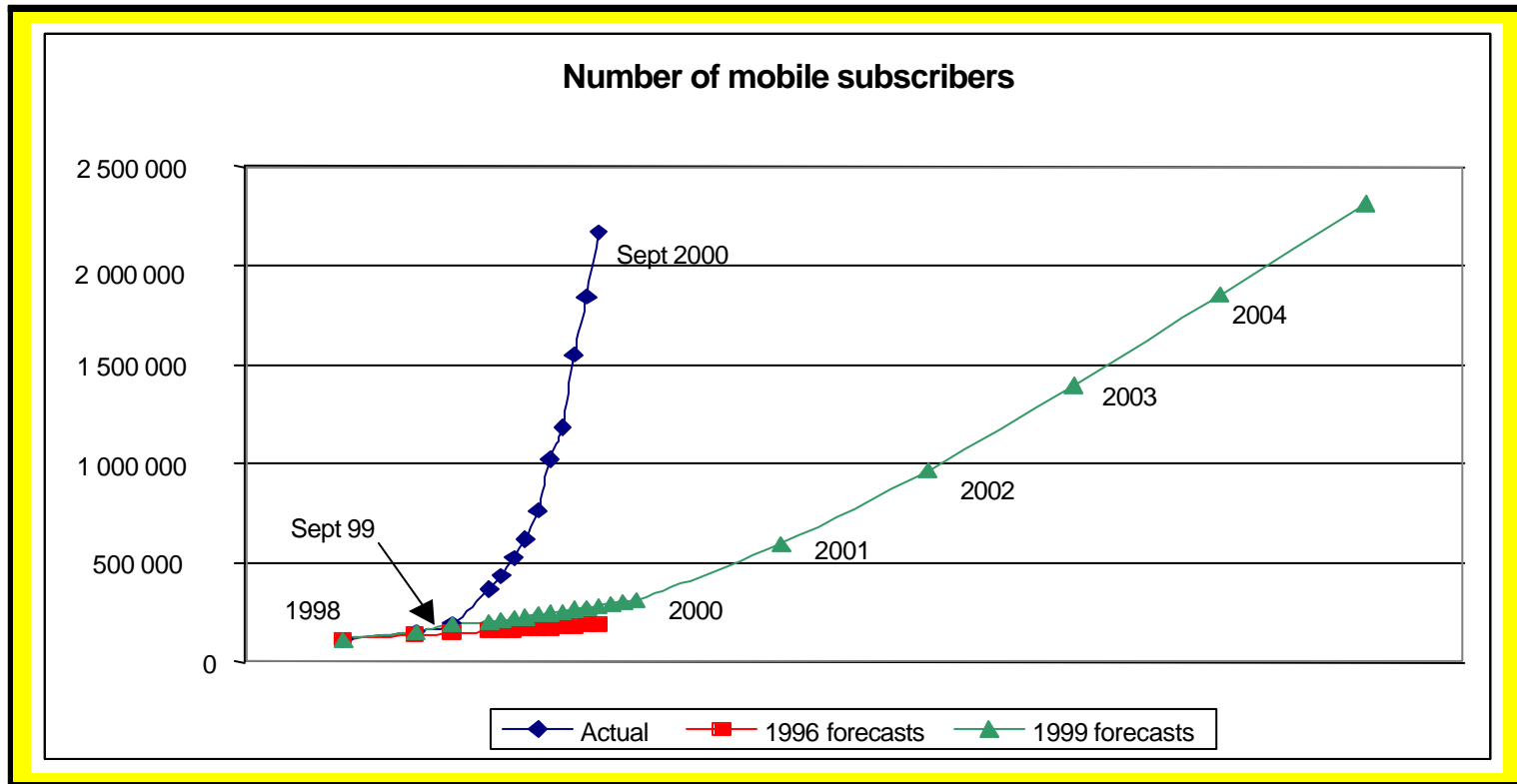
Mobile lines overtakes fixed lines in Uganda



Note: Mobile-to-mobile without interconnect denotes mobile calls terminated on the same mobile network.

Source: ITU, Uganda Internet Case Study, available at: http://www.itu.int/interconnect/case_studies.html

Growth of Moroccan mobile subscribers



Source: ITU Effective Regulation: Moroccan Case Study.

CPP vs. RPP



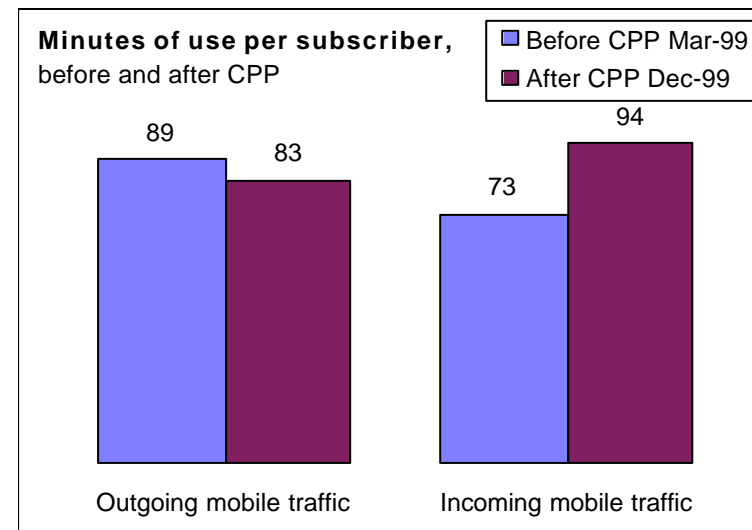
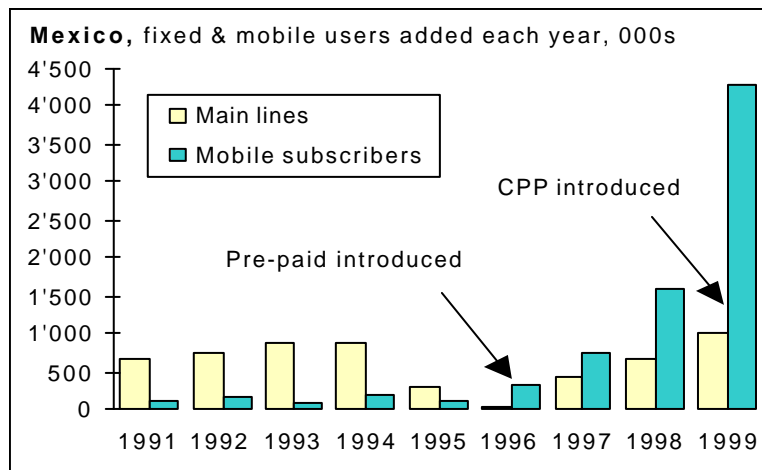
•RPP: Receiving Party Pays

Mobile party pays for incoming calls and fixed party pays only local tariff

•Calling Party Pays

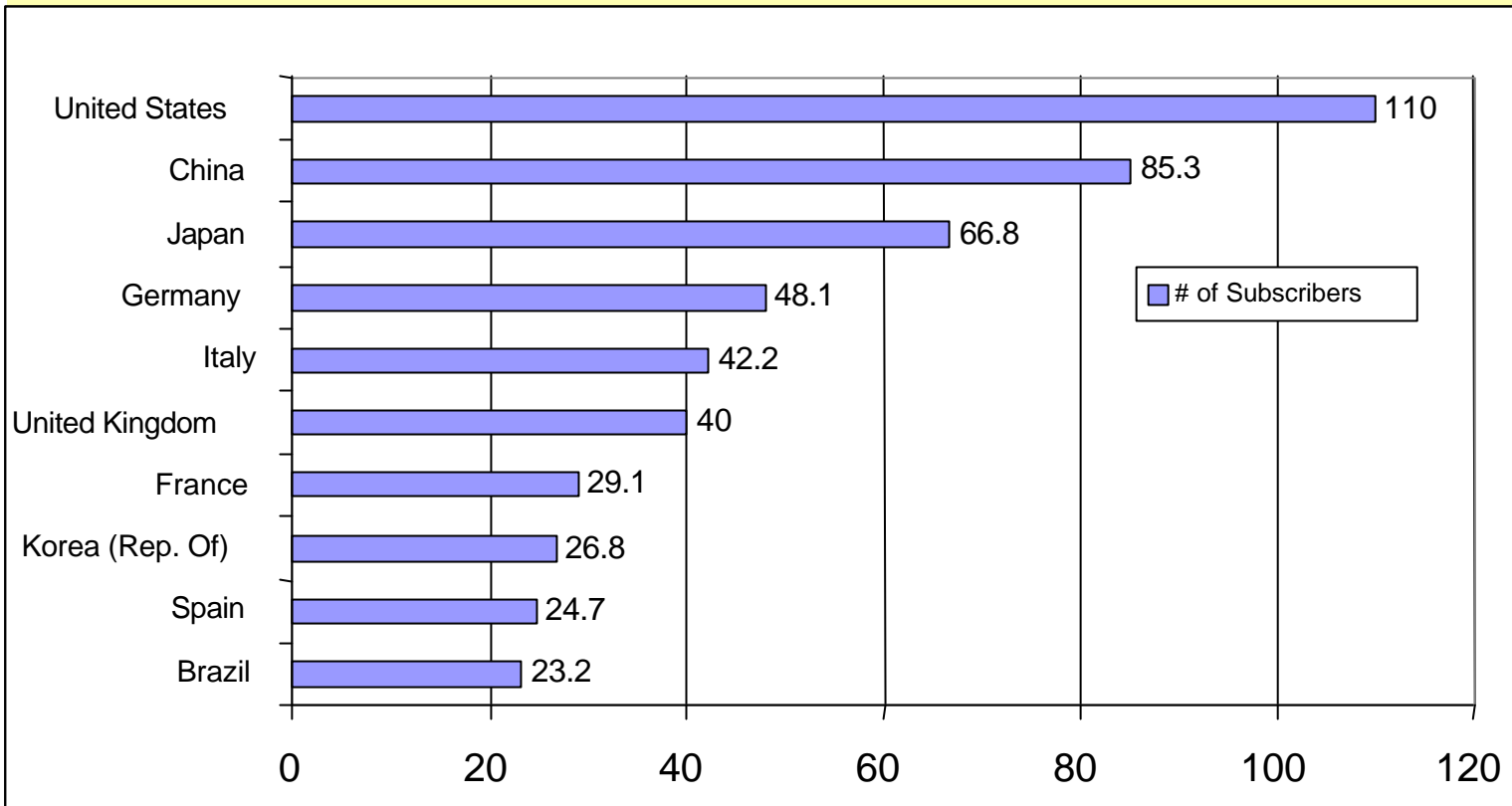
Mobile party does not pay for incoming calls and fixed party pays a premium to call the mobile party

The impact of CPP introduction in Mexico



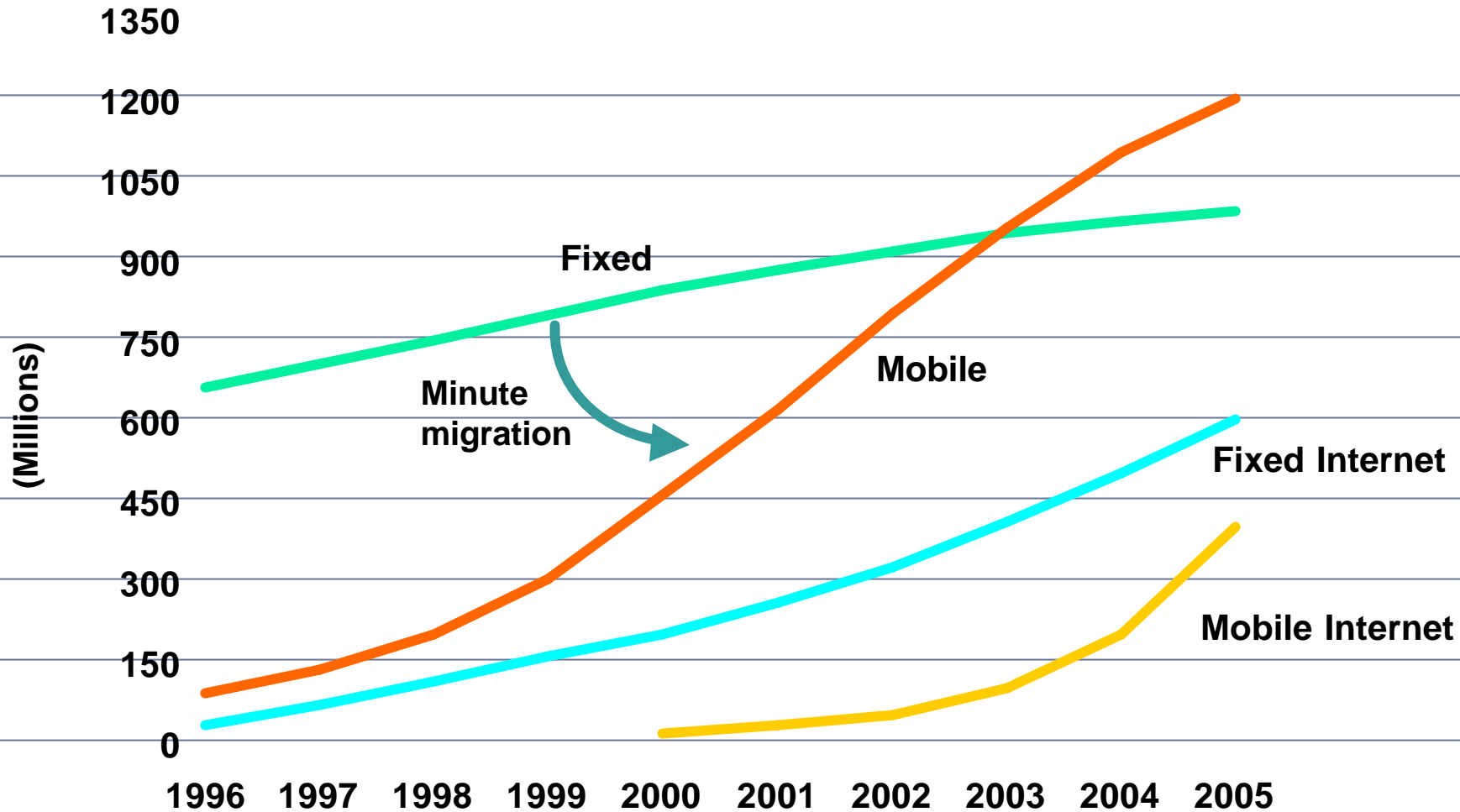
Source: ITU Trends in Telecommunications Reform 2000-2001

Figure 1: Top Mobile Economies (2000, millions)

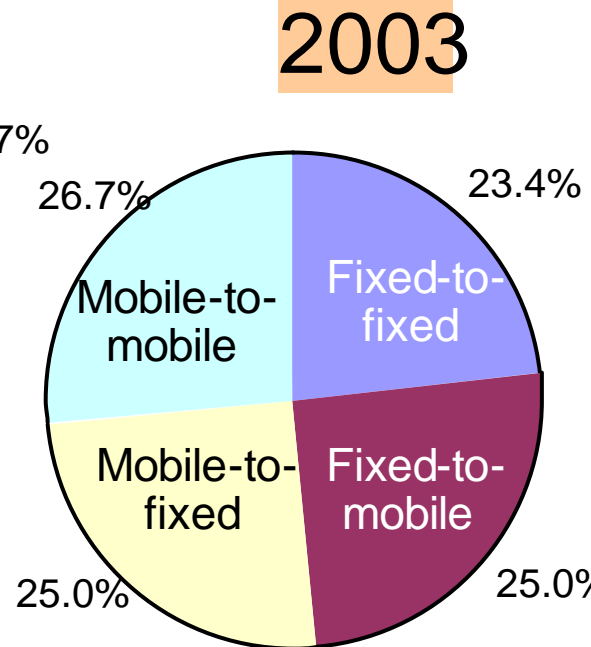
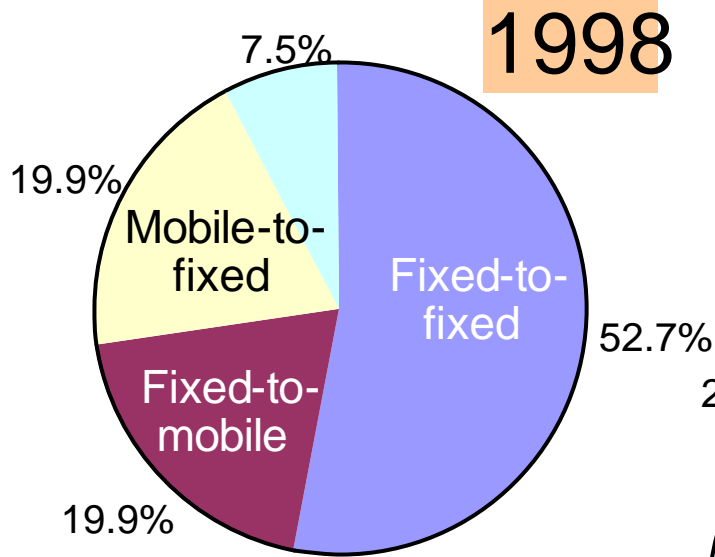
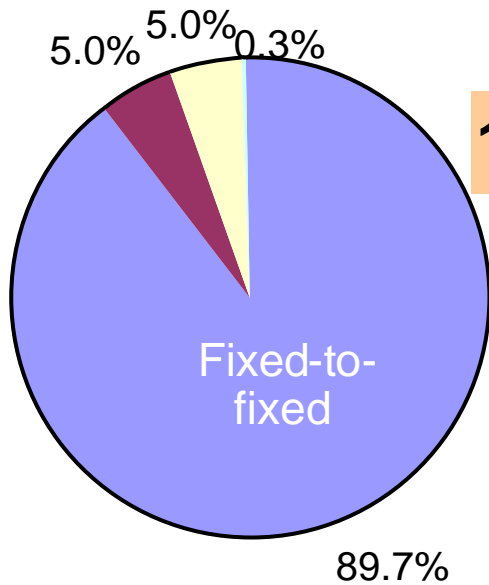


Source: International Telecommunication Union

Subscriber Growth



Calling opportunities worldwide

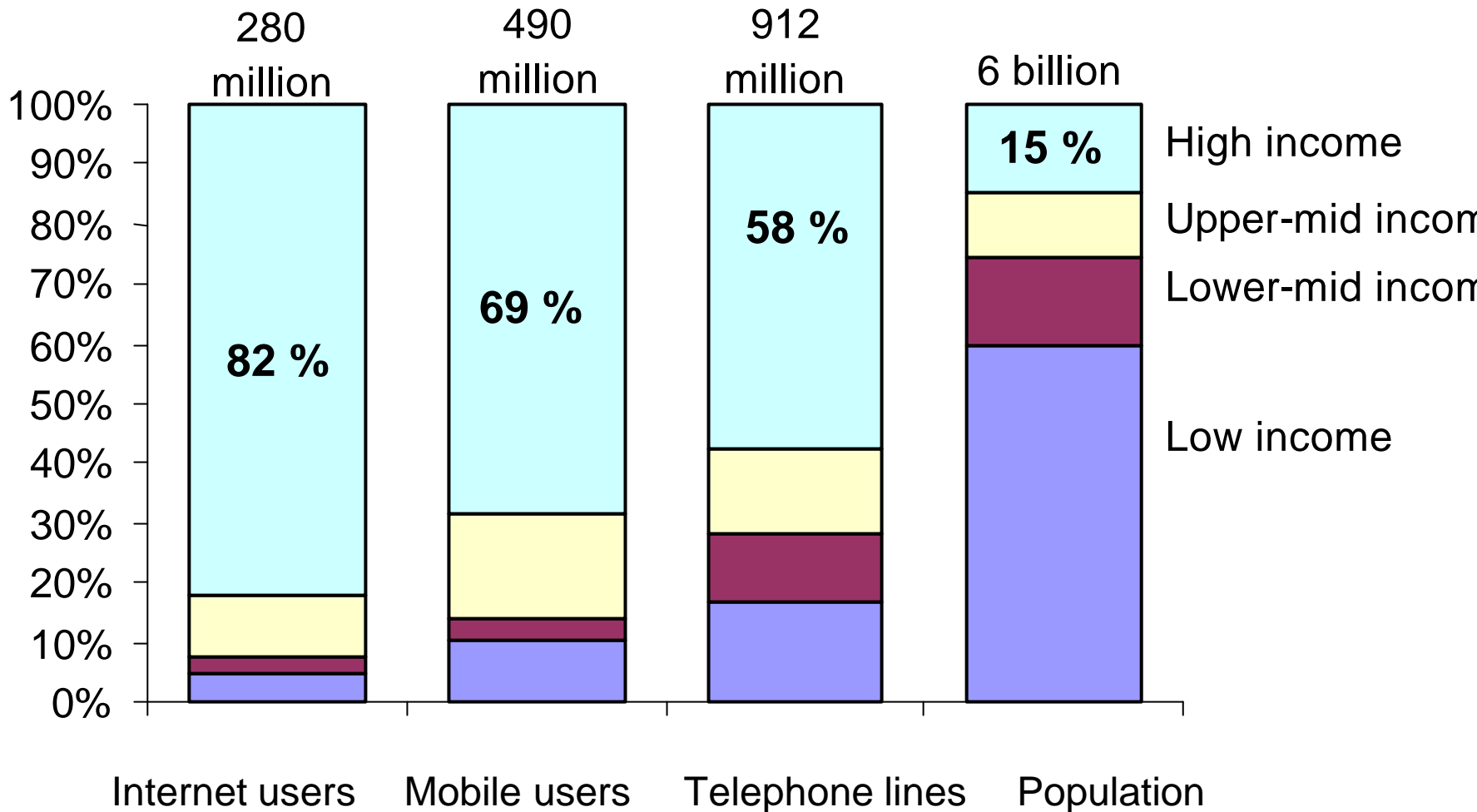


Source: ITU Fixed-Mobile Interconnect website:
<http://www.itu.int/interconnect>

Digital divide = Telecoms divide



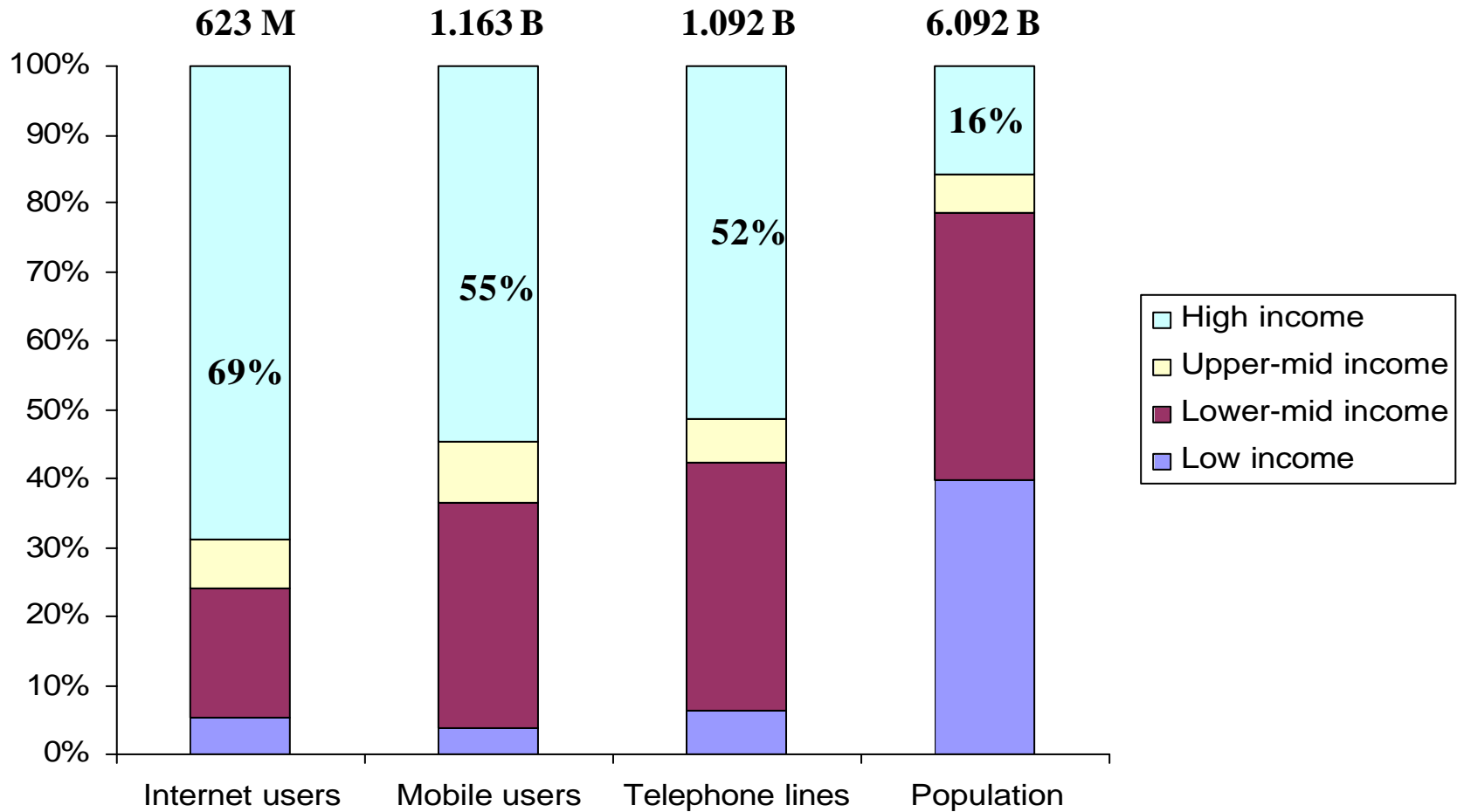
User distribution, by income group, Jan 2000



Source: ITU World Telecommunication Indicators Database.

Digital divide reflected in the Telecoms divide

User distribution, by income group, Jan 2003



Source: ITU World Telecommunication Indicators Database.

The digital divide is shrinking, but also shifting



Share of low and lower-middle income countries in:

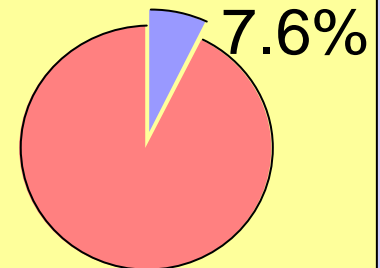
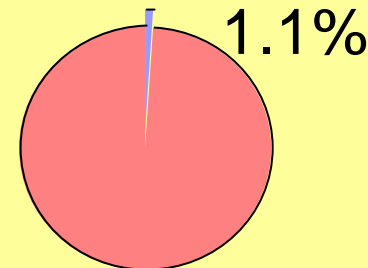
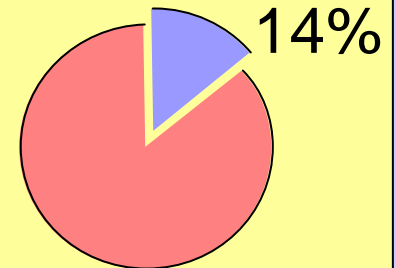
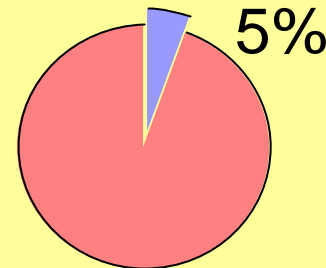
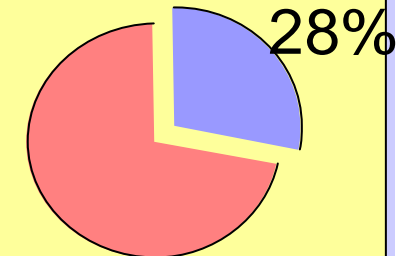
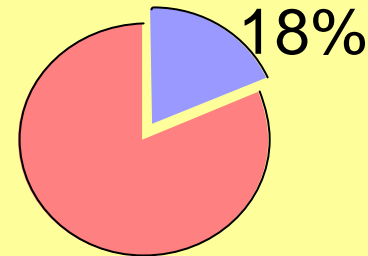
Telephone main lines

Mobile subscribers

Estimated Internet Users

Jan. 1995

Jan. 2000

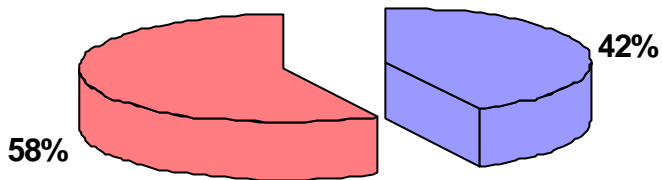


Source: ITU World Telecommunication Indicators Database.

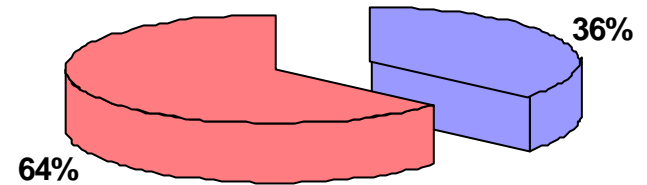
The digital divide in January 2003



Telephone lines



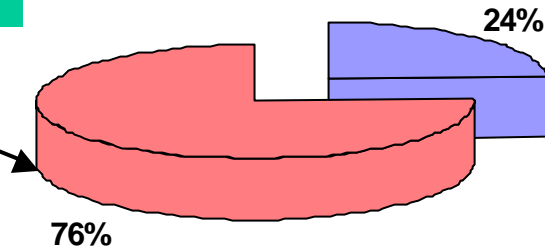
Mobile users



Upper-mid income + High income

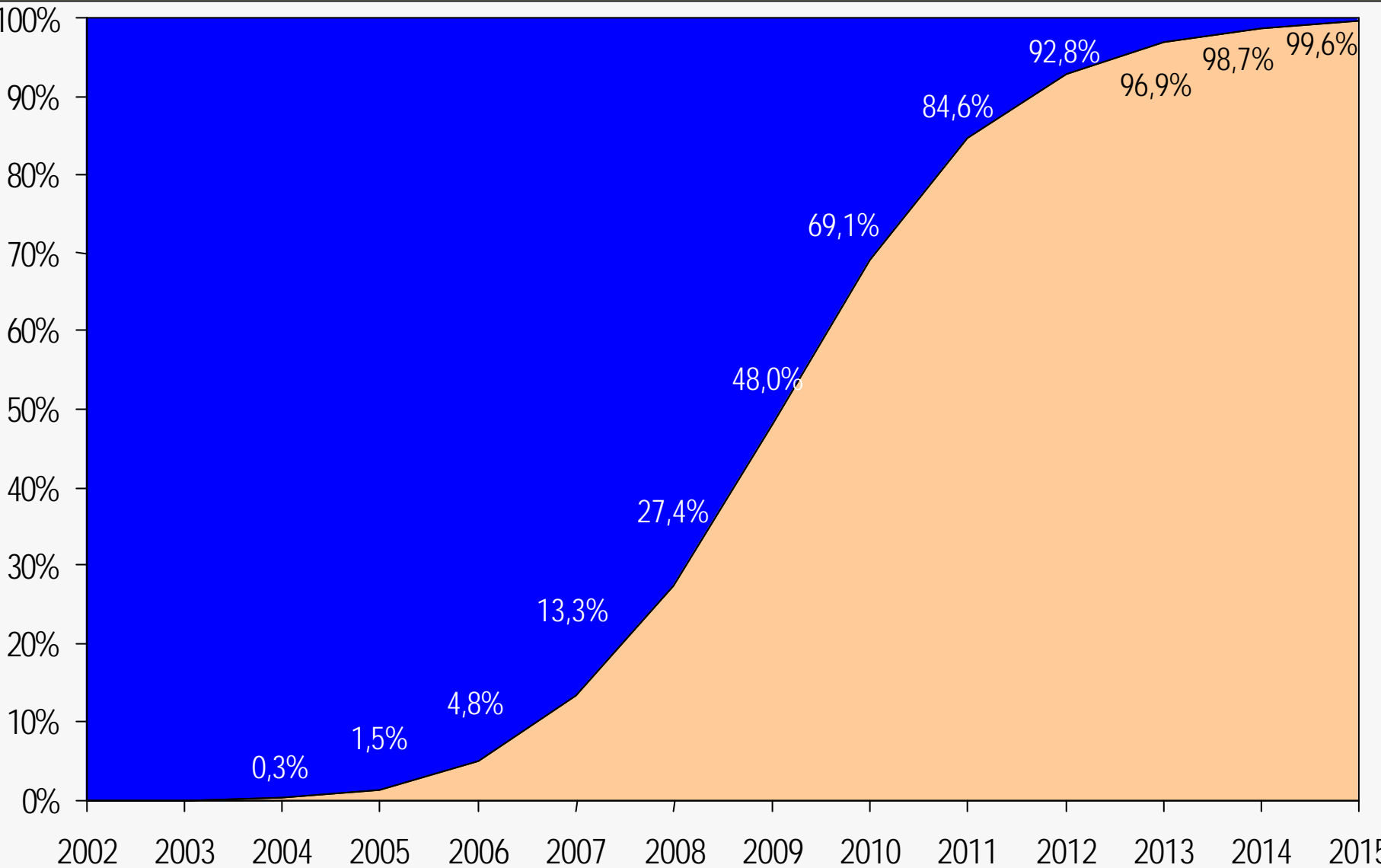
Low income + Lower-mid income

Internet users



Source: ITU World Telecommunication Indicators Database.

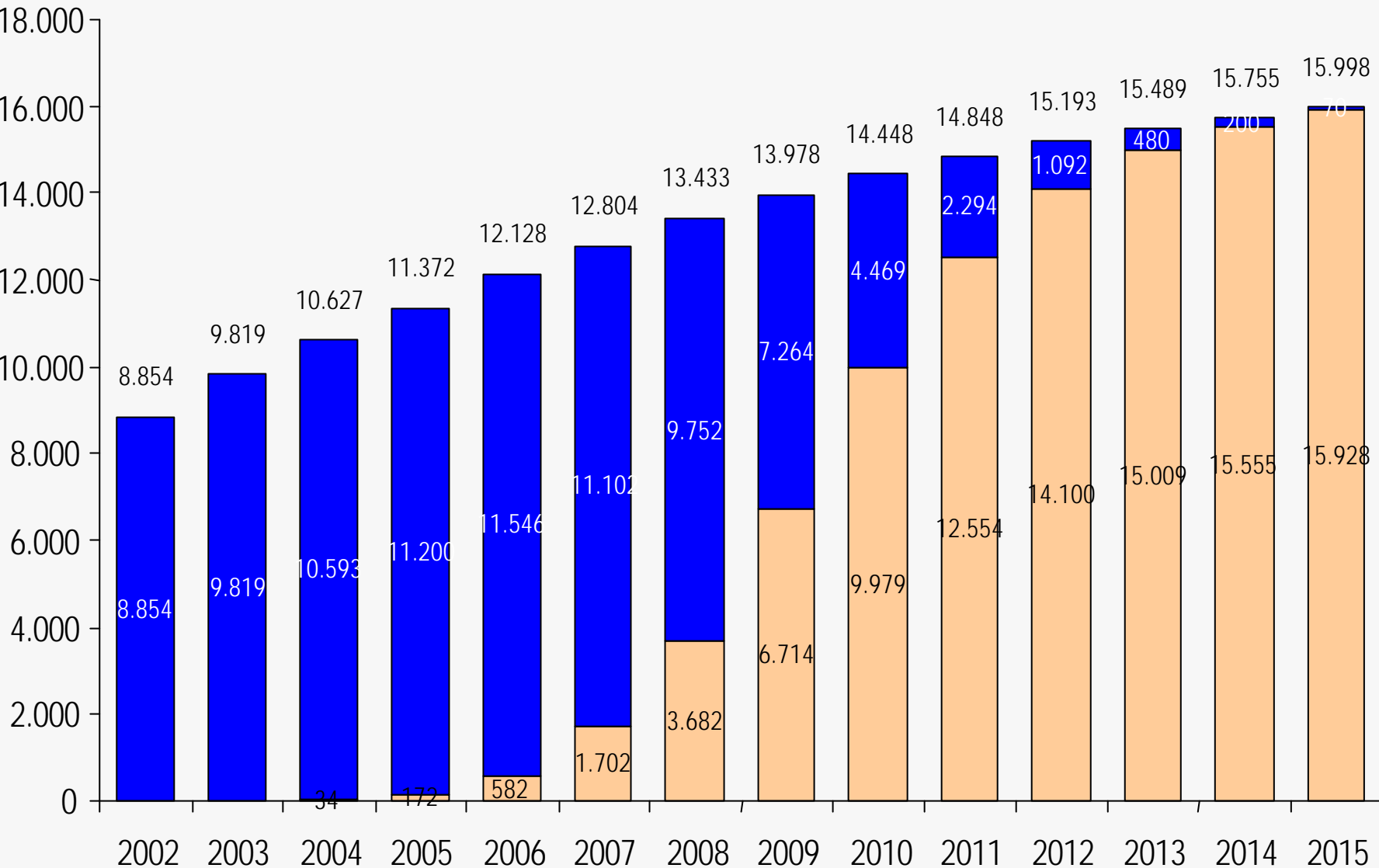
Mobile Technology Split (%)



Source: ITU Draft Guidelines on Smooth Transition to 3G



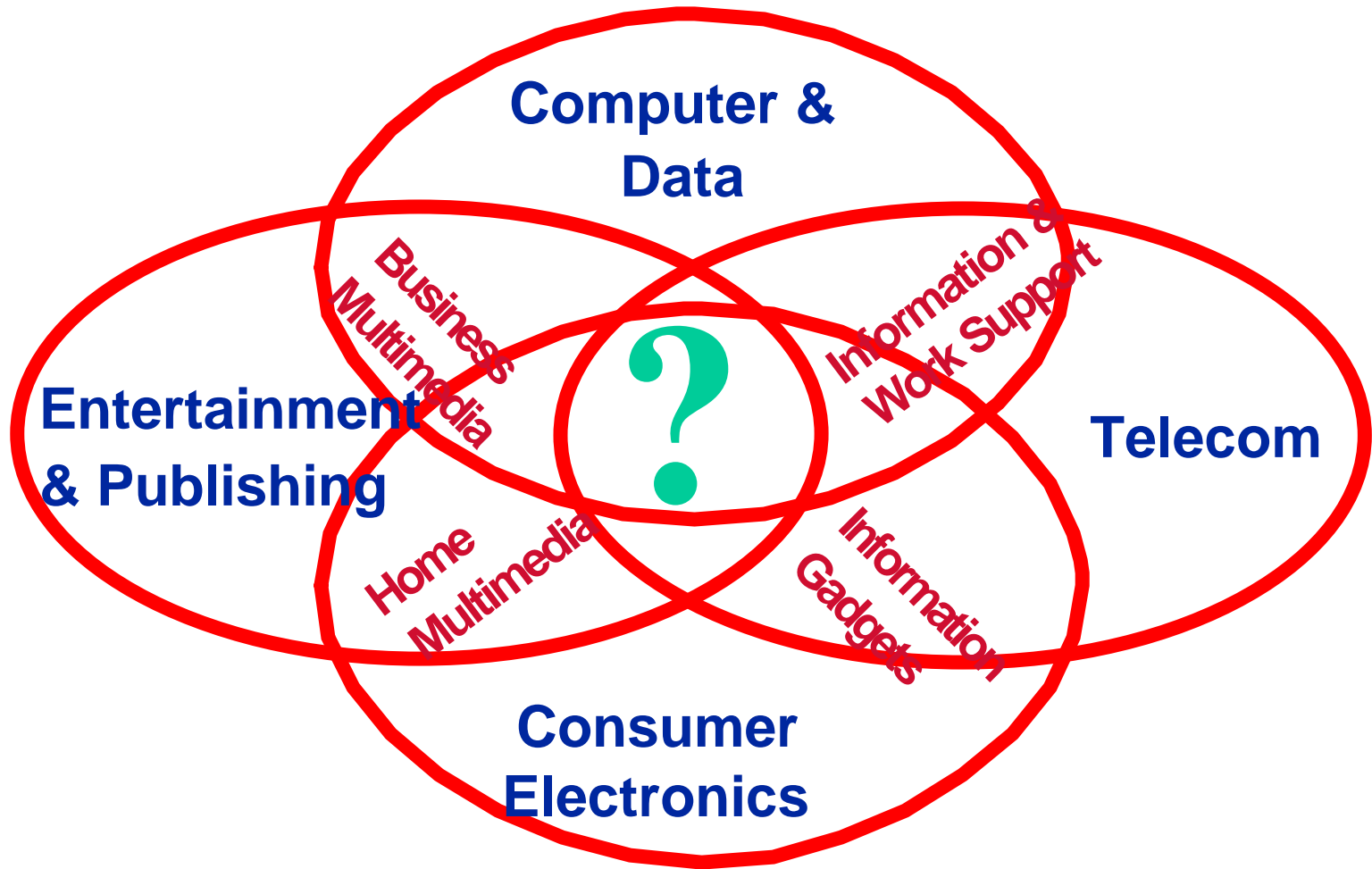
Mobile Subscribers(000)



Source: ITU Draft Guidelines on Smooth Transition to 3G

3G Subs 2G Subs

Convergence

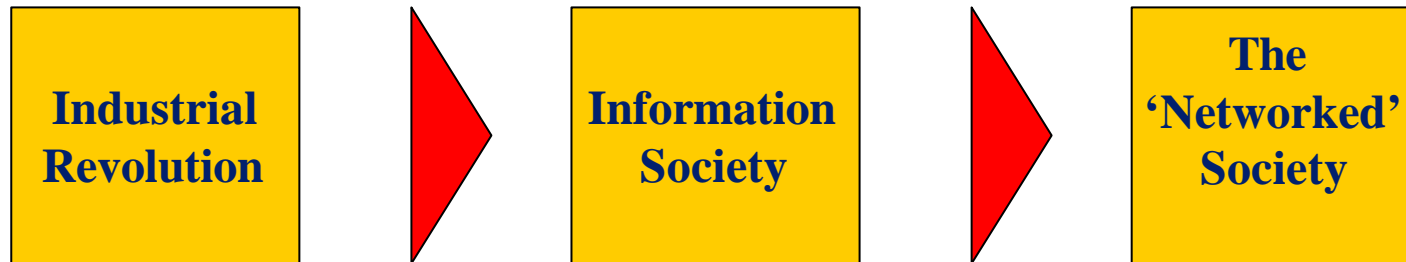


Convergence



- The coming together of telecommunications, computing and broadcasting into information and communications technologies (ICT)
- Within telecom the convergence of voice and data and fixed and mobile services
- ICT uses same:
 - Technology used to code voice, data and video
 - Carrier for voice, data and video
- Expands the range and quality of services
- Requires broadband technologies
- Encourages the use of a single communications regulator

The emergence of the 'networked' society



We are at the outset of a truly remarkable revolution where

- **Anything that can be connected will be!**
- **Anything that can be digital will be!**
- **Anything that can become mobile will become!**

**Dismantling of traditional industry structures,
disaggregation of traditional business models,
a wealth of opportunities and considerable threats**

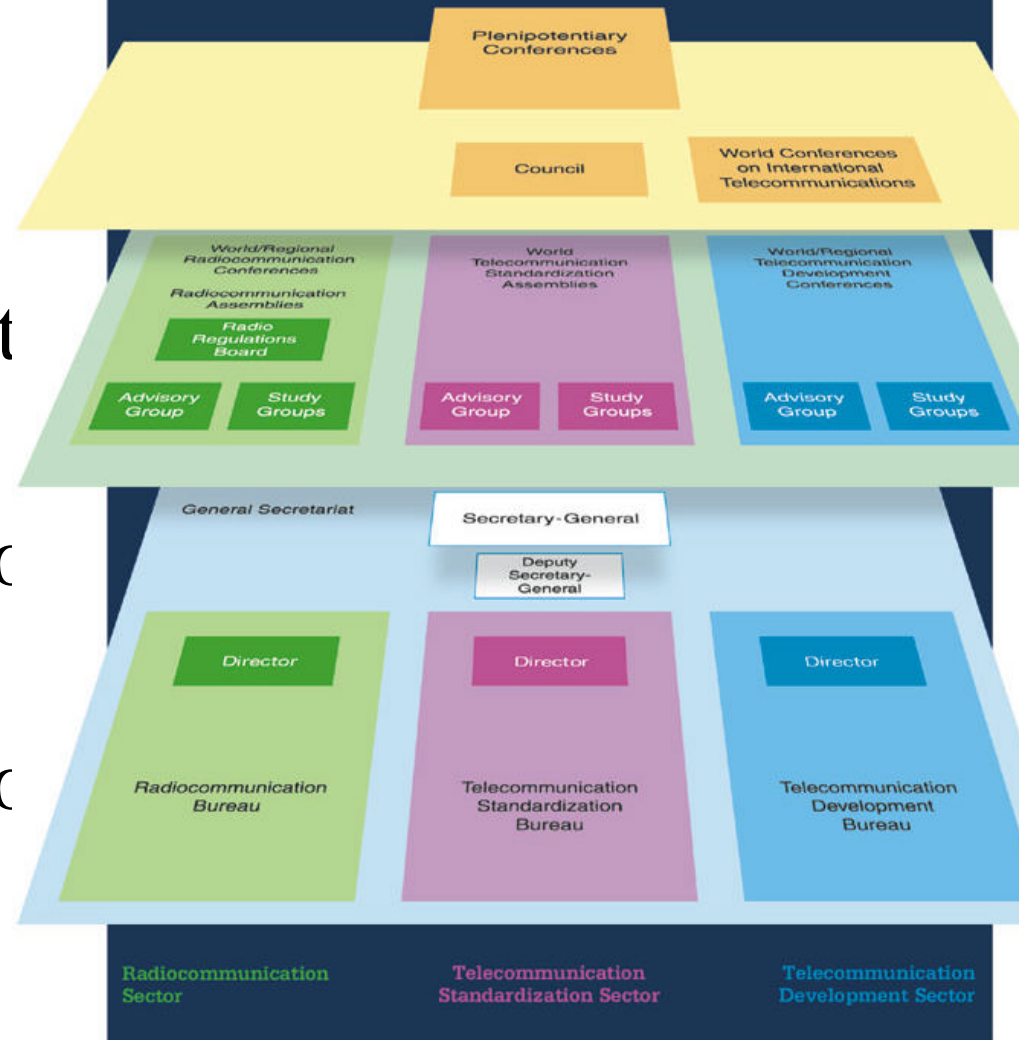
ITU

Structure



3 sectors:

- Radiocommunication
- Telecommunication Standardization
- Telecommunication Development





ITU Sector Roles and Mission

- ITU-R: management of radio-frequency spectrum
- ITU-T: standards covering all fields of telecommunications
- ITU-D: facilitate connectivity and access, foster policy, regulatory and network readiness, and expand human capacity through training programs, formulate financing strategies and enable enterprises in developing countries

World Radiocommunication Conference (WRC)



- Held every ~2-3 years; WRC-03: June 2003, Geneva
- Role: review and revise the Radio Regulations
 - international treaty on use of the radio-frequency spectrum and satellite orbits
 - determine Questions for study by the RA and SGs



Additional details available in handouts and on ITU web site



Radiocommunication Assembly

(RA)

- Meets every ~2-3 years; may be with a WRC
 - RA-03: June 2003, Geneva
- RAs: work priorities, urgency and time-frames
- Approve ITU-R Recommendations, technical studies in support of regulatory work of WRCs



Additional details available in handouts and on ITU web site



Radio Regulations Board (RRB)

- approves Rules of Procedure for applying Radio Regulations and registering frequency assignments made by Member States

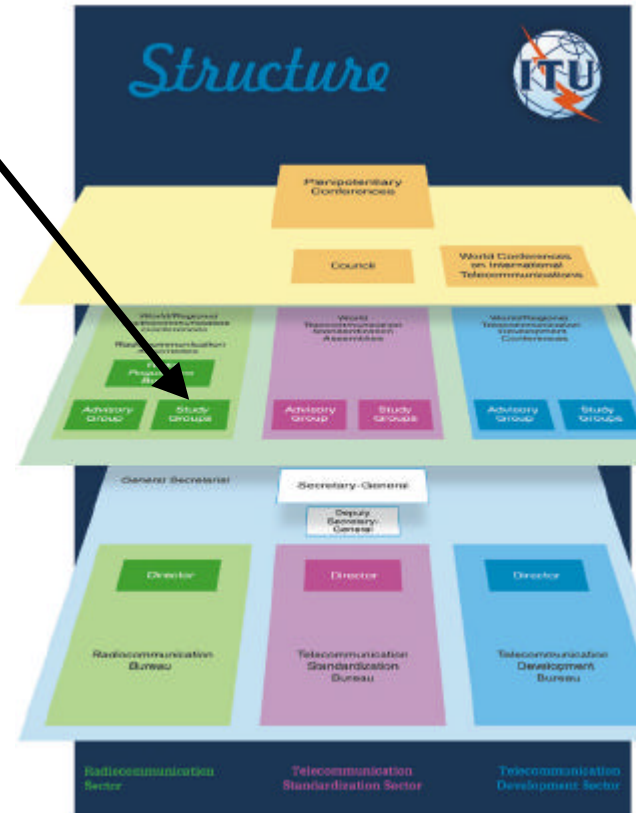


Additional details available in handouts and on ITU web site

ITU-R Structure - Study Groups



- 1 Spectrum Management
- 3 Radiowave Propagation
- 4 Fixed Satellite Service
- 6 Broadcasting Services
- 7 Science Services
- 8 Mobile, Radiodetermination, Amateur and related Satellite Services
- 9 Fixed Service
- SC Special Committee on Regulatory/Procedural Matters
- CCV Coord. Committee for Vocabulary
- CPM Conference Preparatory Meeting





ITU Sector Roles and Mission

- ITU-R: management of radio-frequency spectrum and satellite orbits
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World Telecommunication

Standardization Assembly (WTSA)

- normally held every 4 years; WTSA-2000 in Montreal, WTSA-2004 to be in Florianopolis, Brazil
- approves ITU-T work program
- determines priorities, urgency and time-frame for completion of standards work
- approves ITU-T Recommendations
- considers reports of study groups and TSAG
- decides on structure of study groups, allocation of Questions

Extensive Work Program -Major topics by Study Group



- 2 Operational aspects of service provision, networks and performance
- 3 Tariff and accounting principles including related telecommunications economic and policy issues
- 4 Telecommunication management, including TMN
- 5 Protection against electromagnetic environment effects
- 6 Outside plant
- 9 Integrated broadband cable networks and television and sound transmission
- 11 Signalling requirements and protocols
- 12 End-to-end transmission performance of networks and terminals
- 13 Multi-protocol and IP-based networks and their internetworking
- 15 Optical and other transport networks
- 16 Multimedia services, systems and terminals
- 17 Data Networks and Telecommunication Software
- SSG "IMT-2000 and Beyond"



ITU Sector Roles and Mission

- ITU-R: management of radio-frequency spectrum and satellite orbits
- ITU-T: standards covering all fields of telecommunications
- ITU-D: facilitate connectivity and access, foster policy, regulatory and network readiness, and expand human capacity through training programs, formulate financing strategies and e-enable enterprises in developing countries



World Telecommunication Development Conference (WTDC)

- normally held every four years: WTDC 2002 in Istanbul, next WTDC in 2006
- fix objectives and strategies for worldwide and regional development of telecommunications
 - priority to expansion and modernization of networks and mobilization of resources to boost telecommunication penetration and access in the world's poorer countries.
- review progress made in telecommunication development in developing countries
- promote the international cooperation
- provide direction to BDT
- establish ITU-D study groups



ITU-D Study Groups

- ITU-D not involved in technical standardization so manages only two study groups
 - serve as forum for developing and developed countries, and public and private sector organizations to meet
 - purpose: devise innovative solutions to address specific problem areas as identified by WTDC
- study focus: telecommunications development strategies
- SG 1 - Telecommunication development strategies and policies
- SG 2 - Development and management of telecommunication services and networks



World Radiocommunication Conference (WRC)

- Held every ~2-3 years; WRC-03: June 2003, Geneva
- Role: review and revise the Radio Regulations
 - international treaty governing the use of the radio-frequency spectrum and the geostationary-satellite and non-geostationary-satellite orbits
 - general scope of WRC agenda established 4 - 6 years in advance; final agenda set by ITU Council 2 years before
 - give instructions to the Radio Regulations Board and the Radiocommunication Bureau, and review their activities.
 - determine Questions for study by the RA and SGs in preparation for future radiocommunication conferences



Radiocommunication Assembly (RA)

- Meet every ~2-3 years; may be associated with a WRC; RA-03: June 2003, Geneva
 - WRCs determine Questions for study by RA and SGs in preparation for future WRCs
- RAs:
 - approve work program for study groups
 - set up structures required to carry out work
 - work assignments priority, urgency and time-frame
- Approve ITU-R Recommendations on technical specifications of systems
- Approve technical studies in support of regulatory work of WRCs



Radio Regulations Board (RRB)

- approves Rules of Procedure used in applying Radio Regulations and registering frequency assignments made by Member States
- addresses matters which cannot be resolved through application of Radio Regulations and Rules of Procedure
- considers reports of unresolved interference investigations carried out by the Bureau at request of administrations and formulates Recommendations
- advises WRCs and RAs
- Bureau Director is Executive Secretary

ITU and IMT-2000

