Convergence
Africa and Europe

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Introduction

- Introduction
- Disruptions
- Broadband
- Multi-play
- Africa
- Europe
- Conclusions

Disruptions

- New spectrum bands
- New wireless services
  (sometimes in old spectrum bands)
- New tariff plans
- New bundles of services:
  - triple play (Internet, voice telephony and TV)
  - quadruple play (plus mobile telephony)
- New features and new devices
- Changes in fashion

Classes of convergence

- Packets
- Devices
- Services:
  - servers
  - programming
  - searching
- Offers to customers
- Companies (mergers and acquisitions)
- Policies, laws and regulations

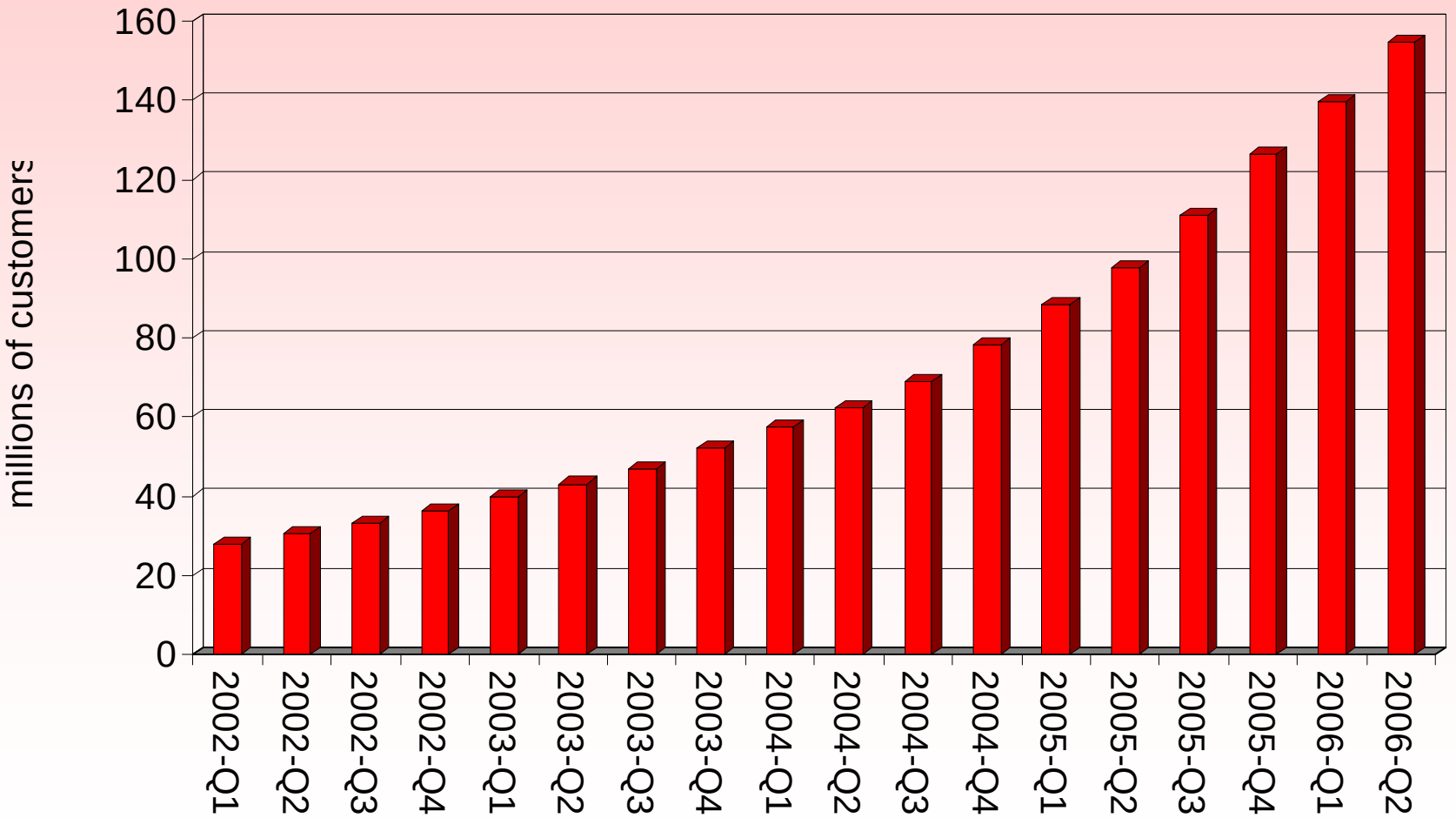
Africa

- Historical lack of access to networks:
  - even television is limited
- Improved by the deployment of GSM:
  - scaleable network technologies
  - rivalry amongst operators, but not competition
  - trans-national or continental operators (e.g., Celtel and MTN)
  - almost all pre-paid
  - extended by street-side resellers and telephone ladies
- The beginnings of 3G:
  - DR Congo, Egypt, Morocco, South Africa & Tanzania
  - only business model is expensive Internet access
  - no signs of value-added services
- A very few countries have xDSL broadband
- Promises of WiMAX, satellite radio and television

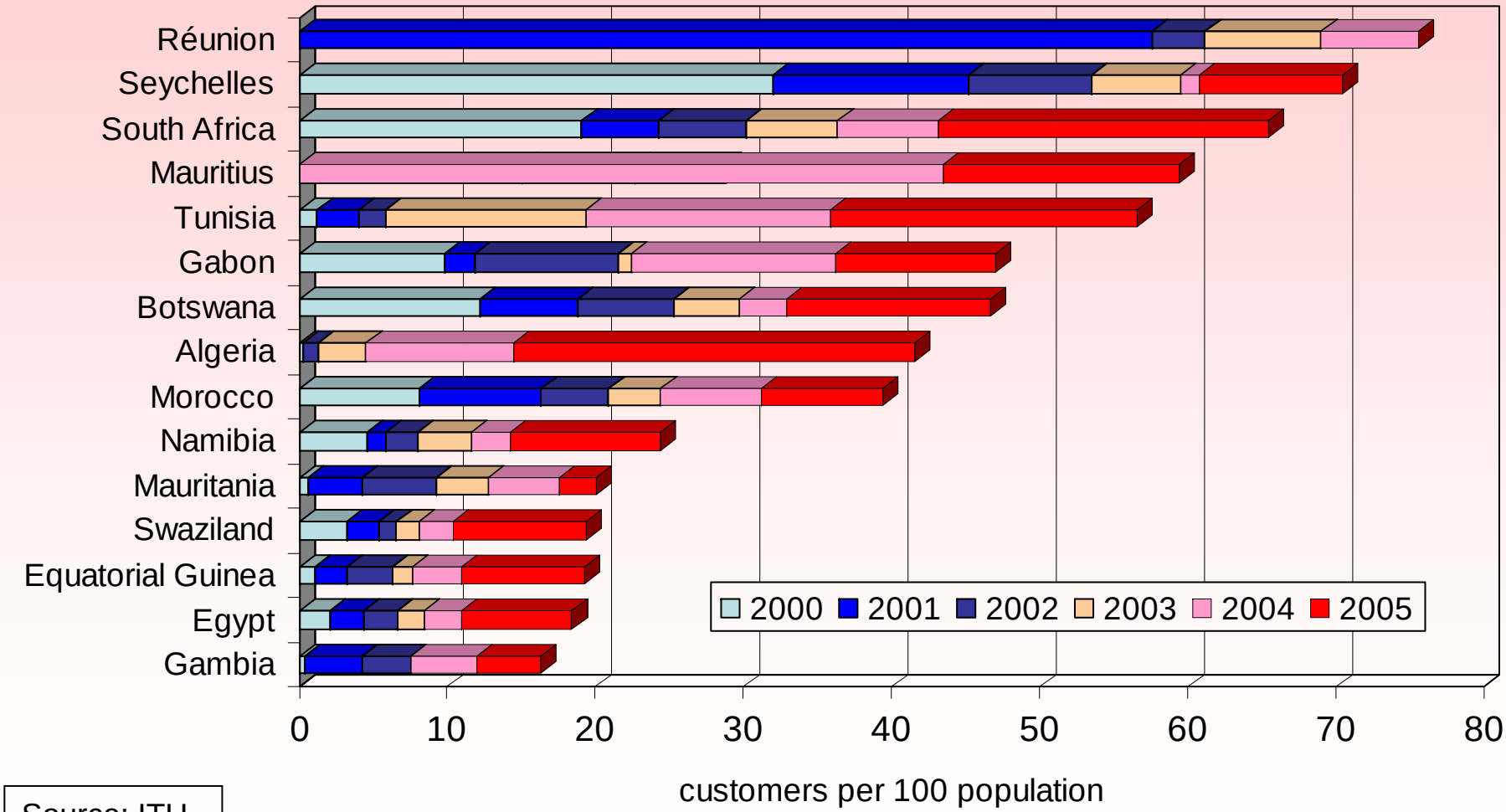
Telecommunications indicators per 100 population

	Fixed	*Mobile*	*Internet*	*Television*
Egypt	13.8	11.0	5.7	95
Sudan	3.1	2.2	0.9	49
Ethiopia	0.7	0.3	0.1	2
Uganda	1.0	10.8	1.5	19
Kenya	0.3	4.5	0.6	6
Tanzania	0.4	5.1	0.7	14
Malawi	0.8	1.2	0.3	2
Mozambique	0.4	4.7	0.5	6
South Africa	10.4	47.1	8.1	54
Note: televisions are per 100 households				

Growth of GSM in Africa



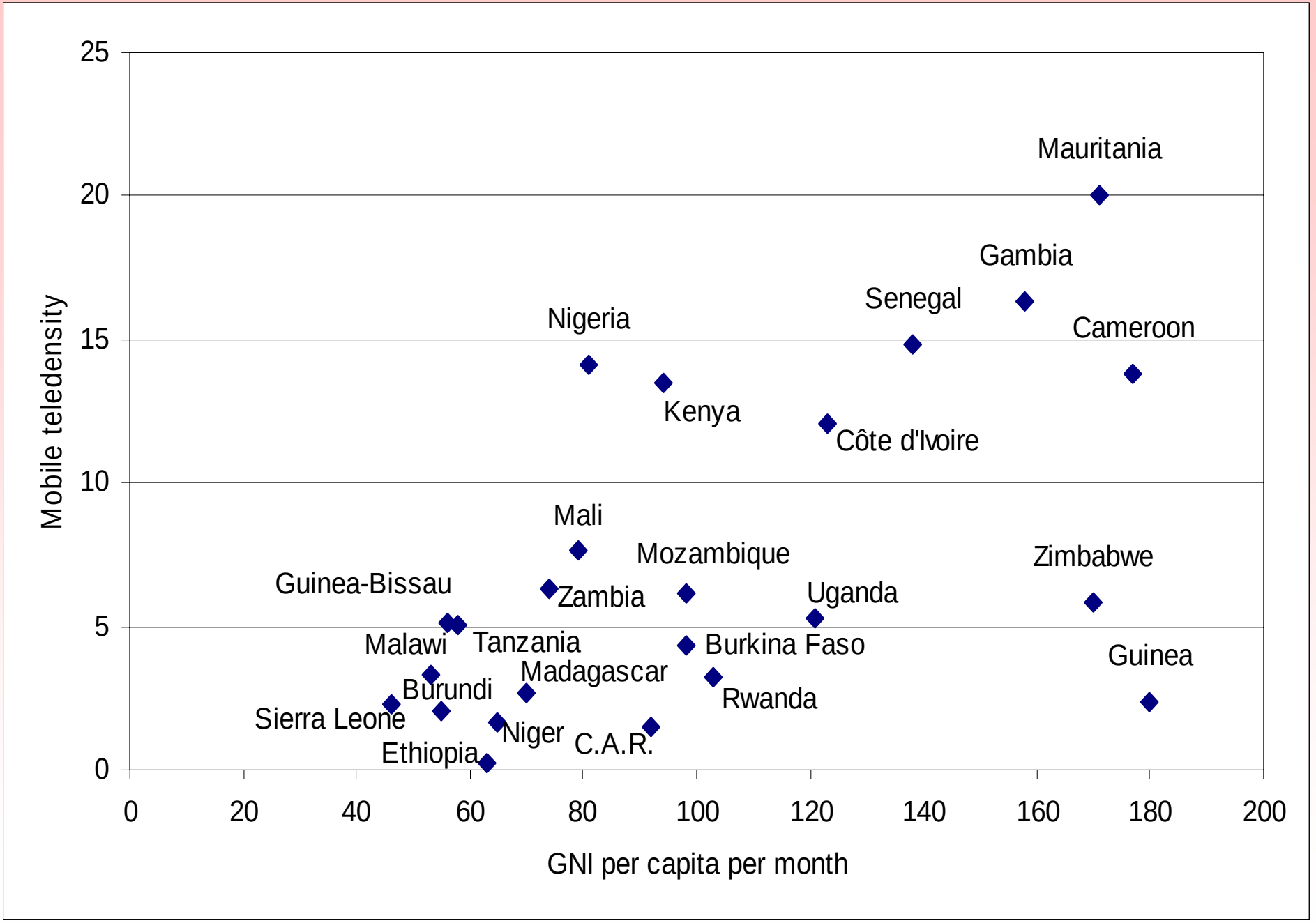
African leaders in mobile

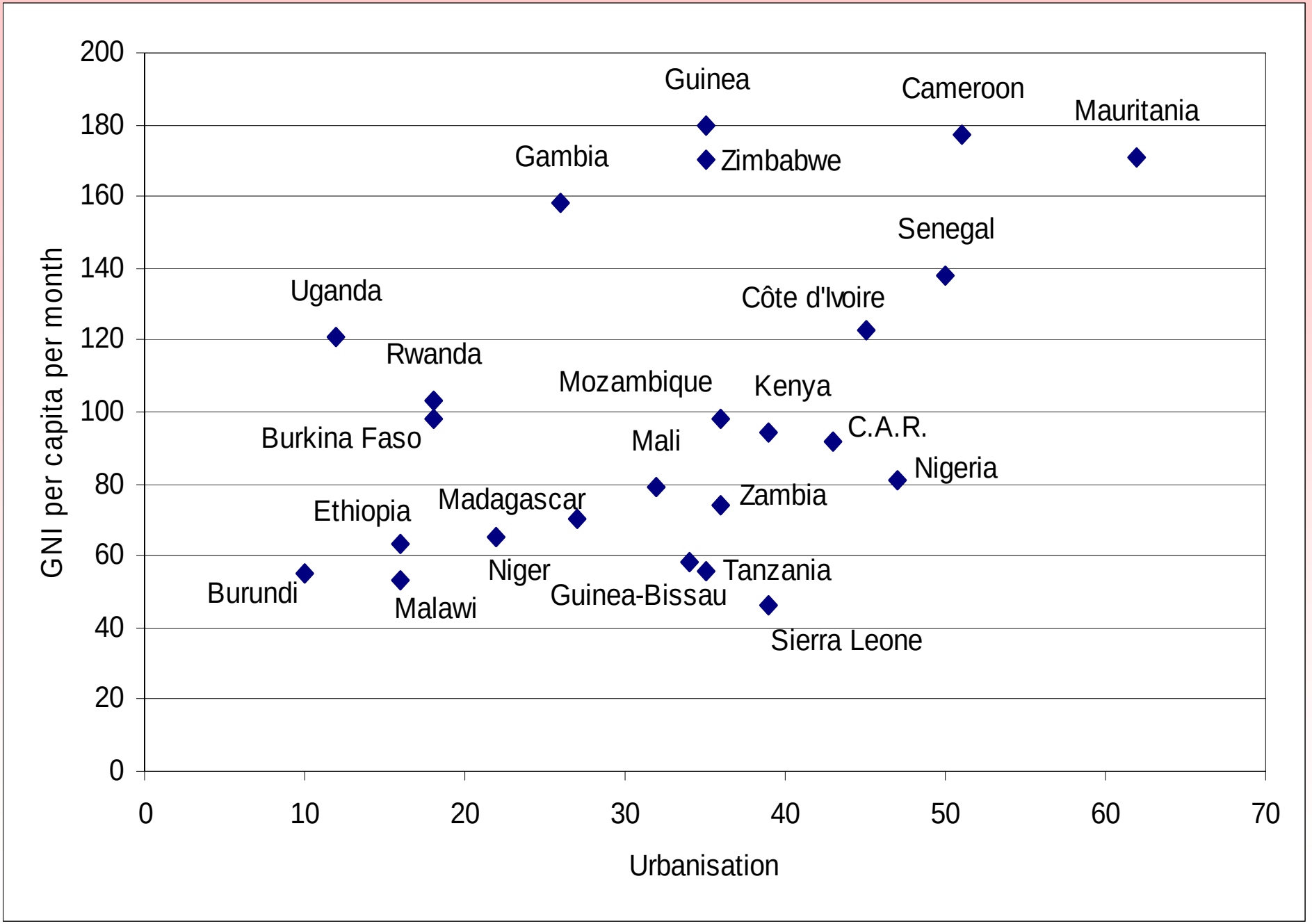


Source: ITU.

What lies beyond GSM?

- Rising to 20 per cent of Africans with GSM
- Cannot reach all but, perhaps, 40 per cent
- Cheap handsets help, but they still need infrastructure
- Too many very poor people, often in rural areas
  - cannot wait for economic growth
- Many markets are still highly concentrated
  - considerable scope for further market entry
- Business model is flawed:
  - high mobile termination rates
  - relatively unaffordable call rates
- No signs of a 3G business model:
  - Need to rethink the pre-paid model


Mobile teledensity
GNI per capita per month
0
5
10
15
20
25
0
20
40
60
80
100
120
140
160
180
200
Mauritania
Gambia
Senegal
Cameroon
Nigeria
Kenya
Côte d'Ivoire
Mali
Mozambique
Zimbabwe
Guinea-Bissau
Zambia
Uganda
Malawi
Tanzania
Burkina Faso
Guinea
Madagascar
Burundi
Rwanda
Sierra Leone
Niger
C.A.R.
Ethiopia

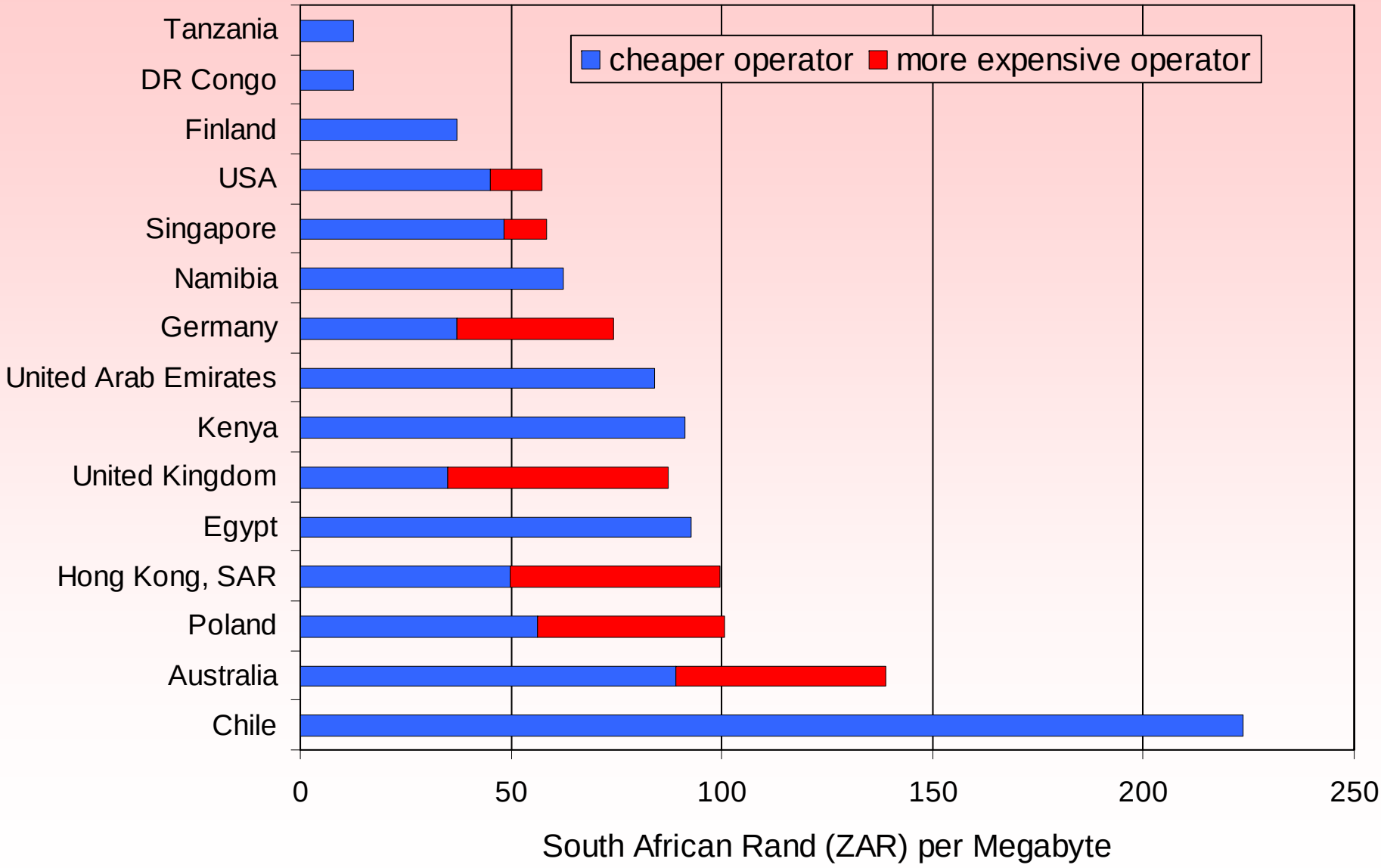

GNI per capita per month
Urbanisation
200
180
160
140
120
100
80
60
40
20
0
0
10
20
30
40
50
60
70
Guinea
Cameroon
Mauritania
Gambia
Zimbabwe
Senegal
Uganda
Côte d'Ivoire
Rwanda
Mozambique
Kenya
Burkina Faso
Mali
C.A.R.
Nigeria
Ethiopia
Madagascar
Zambia
Niger
Tanzania
Burundi
Malawi
Guinea-Bissau
Sierra Leone

Republic of South Africa

- Monopoly fixed network provider:
  - retail network shrinking, but not for enterprise customers
  - Neotel will enter the retail market in 2007
- Two mobile operators: Vodacom and MTN
  - market is almost saturated
- One small mobile operator and one MVNO
- MTN & Vodacom have both launched HSDPA:
  - business users with data cards for lap-top computers
  - little evidence of data revenues or value-added services
- MTN trial of DVB-H:
  - with broadcasting partner: Multichoice/DSTV
  - offers Fashion TV and CNN
- Vodacom now offers a credit card with First National Bank and Visa

South African data roamers

KRW 126 = ZAR 1



Cape Verde Islands

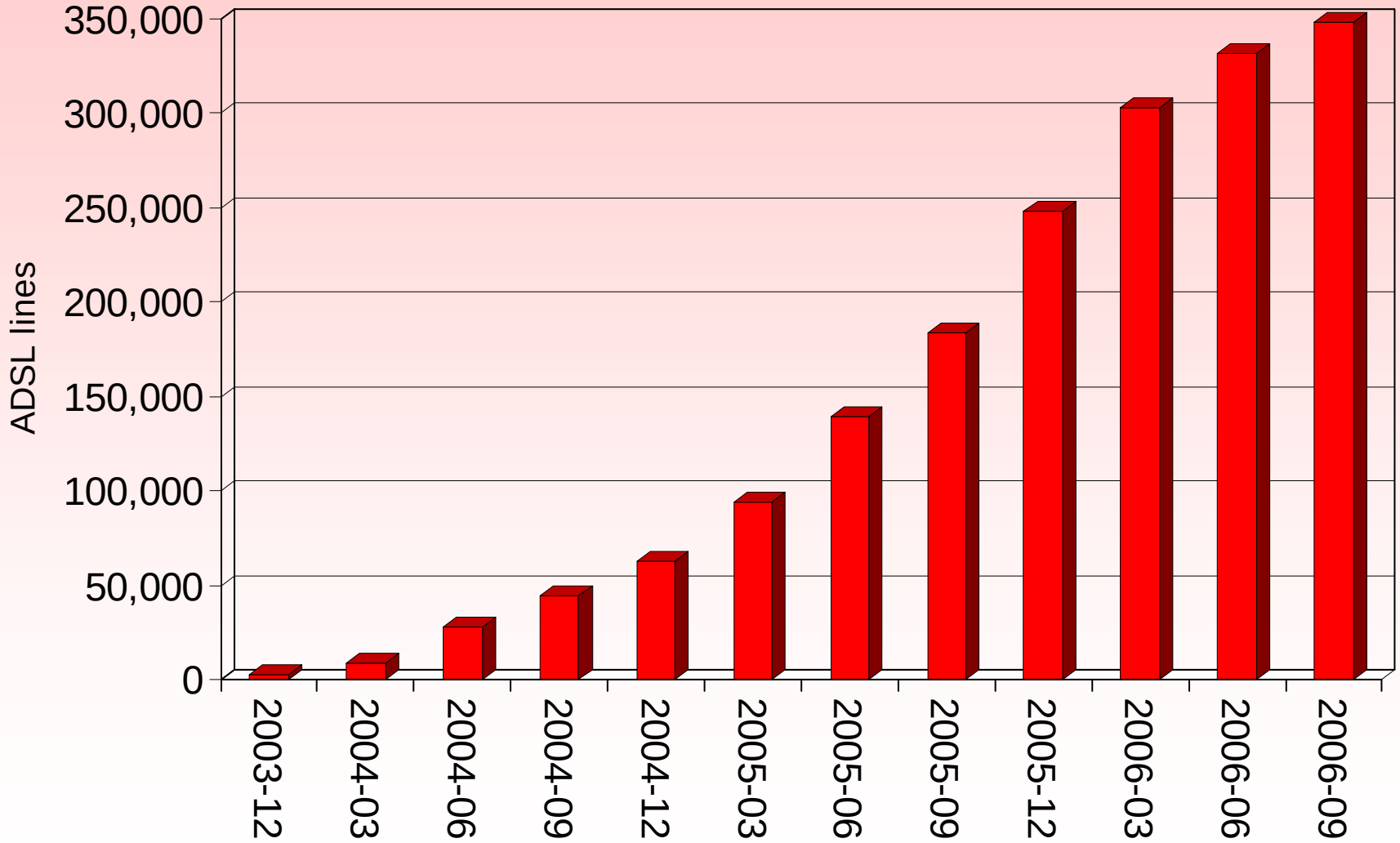
- A small group of islands in the Atlantic
- 420,000 people on 4,000 sq km
- Formerly a part of Portugal
- CV Telekom ADSL:
  - 256kbps CVE 6,000 per month
  - 512kpbs CVE 15,000 per month
  - 1Mbps CVE 40,000 per month
- DVB-H two licensees:
  - CV Multimedia (CV Telecom)
  - Cabo Verde Digital (Xiamen Sinonets Electronics)
- CV Telecom can now offer triple-play

CVE 1 = KRW 11

Kingdom of Morocco

- 33 million people, with US$ 4,200 GDP/capita
- An early mover amongst Arab countries towards telecommunications liberalisation
- Creation of independent regulator – ANRT
- Introduced second mobile operator in 1999
- Early deployment of GPRS
- 3G UMTS licensed in 2006:
  - Both existing operator and new third player
- Broadband already at 1%

Morocco - ADSL



Content regulation

- Usually state controlled broadcasters
- Limited diversity with strict controls
- Little experience from the Internet
- Laws are few and technology specific
- Institutions are not designed to cope with diversity of content
- Potential service providers face enormous uncertainty and high risks
- No sources of finance for start-ups or expansion

GSM as a bank

- Operators are very keen to using banking as a new source of revenues
- A way to provide services to the “unbanked”
- Severe risks to existing banks
- Leveraging power between markets
- May try to evade banking regulations
- GSM Association argues that it would:
  - capture the unofficial cash float
  - enable the advancement of micro-loans
  - facilitate loan repayments
  - minimise money-laundering

http://www.gsmworld.com/documents/services/micro_payment.pdf

Europe

- Policy frameworks:
  - history of anticipation of convergence
  - relevant markets are still separate
  - fixed and mobile are still different
  - television and telecommunication are also different
  - uncertainty about what convergence will be
- Legal frameworks for:
  - cross-border television
  - electronic communications
  - data protection
- Research and development:
  - many initiatives to push forward hardware and applications

Convergence policies

- Consultations in the 1990s:
  - convergence was to be an influential factor in market developments
- The 1999 Review and 2002 legislation:
  - principle of technological neutrality
  - economic regulation
  - but kept distinct markets for:
    - fixed and mobile
    - voice and data
  - some areas of broadcasting brought under the telecommunications regulatory framework
- 2006 Review:
  - covers all telecommunications legislation
  - makes only modest changes

Economic regulation

- Moving towards competition law, eliminating sector specific regulations
- Designation of specific markets considered to require action
- National regulatory authorities conducted analyses
- Remedies imposed on dominant operators to resolve competition problems
- Subject to veto by European Commission
- Regular cycles of review and analysis

Television without frontiers

- Original directive in 1989
- Country of origin principle for the single market
- Now being reviewed
- Renamed Audiovisual Media Services, but not yet formally adopted
- Disputes over issues such as record keeping by “broadcasters”
- Also work on fostering content creation

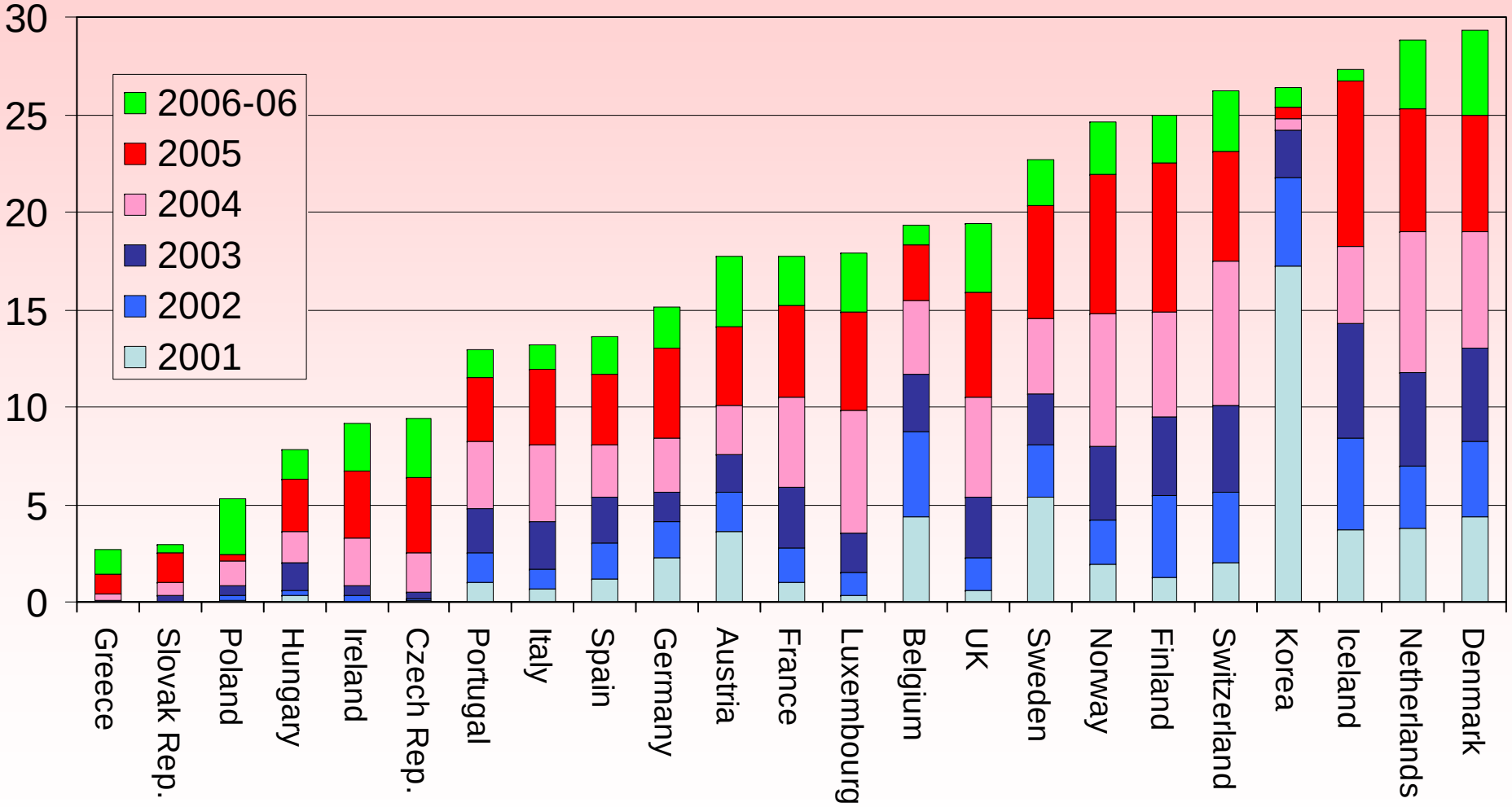
Single market

- Limited progress towards the goal of a unified market of 400 million people and businesses
- Telecommunications markets are still largely national
- The exceptions are:
  - trans-national consumer market for handsets
  - trans-national fixed networks for enterprises
- Television markets are also substantially national or sometimes provincial

Consumer markets

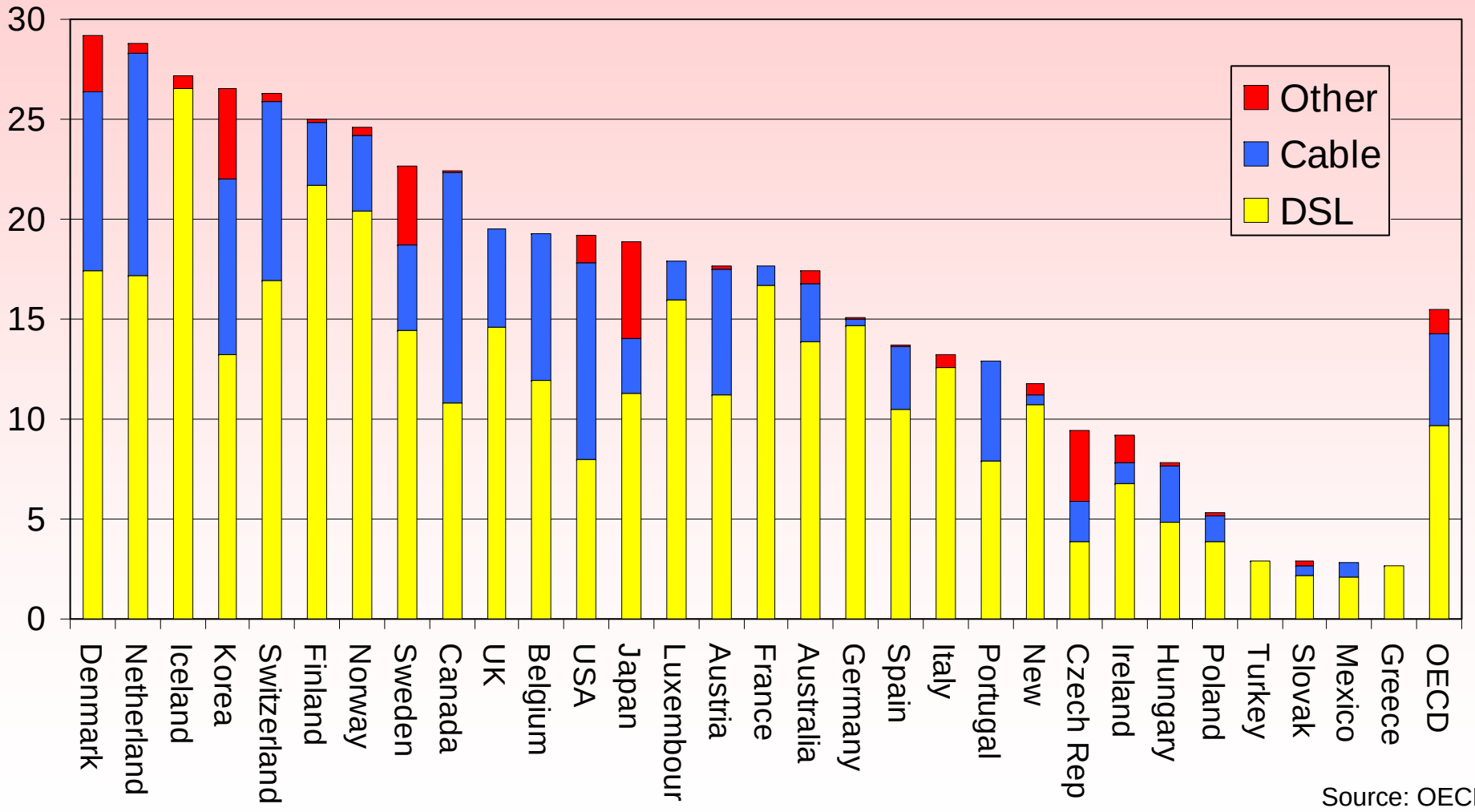
- Widespread adoption of GSM
- GPRS is available and accessible but seldom used with very little spending
- UMTS roll out is much slower than expected, again very little spending
- Broadband goes from very good to appallingly bad:
  - local loop unbundling has proved difficult
  - some broadband is not very broad

Growth of broadband teledensity



Source: OECD

Broadband in the OECD



Source: OECD

Vodafone

- Once a non-copper operator
- Now making deals with and buying ISPs:
  - iHug in New Zealand
  - BT in UK
- Offering multi-play to its retail customers:
  - voice telephony in “home zone”
  - mobile data with GPRS and UMTS
  - fixed data using unbundled local loops
- In Italy it is offering fixed telephone numbers

This is convergence and no longer substitution!

SMS and television

- A very profitable form of convergence
- Voting for television programmes
- Premium rate SMS
- Large flows of revenues
- Taken up in many countries
- Perhaps the beginnings of interactive television

2.5 G

- Adding an IP interface to voice and SMS
- Required upgrading of:
  - network infrastructure
  - handsets
- Required development of new business models:
  - raw IP access
  - value-added services
- Required extension of the value chain to include:
  - service providers
  - content aggregators
  - Mobile Virtual Network Operators (MVNOs)

Games, Gambling and Girls

- Sport
- Games
- Betting
- News
- Music (downloads and streaming)
- Television (broadcasts and “mobisodes”)
- Location Based Services (LBS)
- The content that nobody talks about

Mobile operators are trying to tie in mobile television for fear it competes with 3G

Location Based Services

- The originally “killer application” for 3G
- Adoption has been painfully slow
- Very little evidence of revenues
- Now there are many alternatives to cellular:
  - Global Positioning System (GPS)
  - Bluetooth and Wi-Fi
  - Ultra Wide Band (UWB)
  - Radio Frequency Identification (RFID) tags
  - embedded systems in cars

http://www.oecd.org/dataoecd/19/7/34884388.pdf

Searching

Mobile operators

- Very reluctant to release control over customers
- Network architecture allows total control
- Weak brands
- Some handset manufacturers pre-loading Internet search engines!

Internet search engines

- Established brands
- New to mobile
- Need to have access to the networks
- Needs to be combined with:
  - location data
  - personal profile

Convergence says Internet search engines will win.

Audio and video streaming

- Alternatives exist to delivery over cellular networks, it need not be on-demand or directly interactive
- Competing standards for mobile television:
  - Digital Audio Broadcast (DAB)
  - Digital Multimedia Broadcast (DMB)
  - Digital Video Broadcast (DVB)
  - on which there is no agreement!
- Broadcasting for news, sports and music:
  - satellite with local boosters
  - terrestrial
- Wi-Fi and WiMAX where demand is not immediate:
  - residential
  - public hot-spot

Wireless VoIP

- Multiple possible devices:
  - lap-top computer
  - Personal Digital Assistant (PDA)
  - Skype and other Wi-Fi phones
- Wi-Fi chips are cheap and easily added to consumer electronic devices
- Games consoles
- New multimode handsets

VoIP over 3G

- Theoretically possible, but questions of:
  - pricing
  - download limits
  - operators filtering out VoIP
- Some deals for Skype over 3G:
  - Hutchison Whampoa (a.k.a. Three)
  - E-Plus (KPN)
- Enormous reluctance of 3GSM operators:
  - but how long can they resist the pressure?
- For the present, data roaming charges make VoIP very expensive to use over 3G

Enterprises

- Once separate voice and data networks
- Now merged in IP-VPNs, using MPLS
- Supplied by near-global service providers
- Prioritised for different traffic classes
- Secure access from:
  - offices
  - factories
  - homes
  - hotels and conference centres

Business communications services

	Voice	*Data*
Fixed	European and global service providers Now largely integrated with good SLAs	
Mobile	National markets Absence of SLAs	National markets Absence of SLAs Slow adoption

Enterprise mobility

- Serious boundaries between fixed and wireless:
  - prices
  - wholesale access for third parties
  - mobile operators want to take all fixed voice revenues
- Very difficult to get Europe-wide mobile offers
- So it is impossible to integrate the two
- Punitive data roaming charges block its adoption
- Some recent progress from Nokia:
  - E-series of handsets
  - SIP over Wi-Fi
- Success of the Canadian Blackberry, an unconverged device

Television

- Great enthusiasm to offer TV, but:
  - limited expertise
  - weak brands
- IP Television over broadband
  - part of multi-play offers
- Mobile television:
  - digital broadcasting technologies
- Many potential formats:
  - broadcasting
  - on-demand (real and near real)

France – consumer packages

- Iliad “free.fr” €29.99 per month:
  - ADSL 2+ on unbundled local loops
  - Television channels (up to 200 and VOD)
  - Any Wi-Fi hotspot with “freebox”:
    - your home
    - your neighbours’ wi-fi
    - people in the next street, village or town
  - Free calls to fixed networks in France and 14 countries
- France Telecom:
  - Orange and Disney for trans-national content delivery
  - Orange and Microsoft for instant messenger

KRW 1200 = € 1

Belgium

- Powers of the converged regulator require the political agreement of:
  - Federal government
  - three language communities
  - this has proved very difficult
- Belgacom has two separate television initiatives:
  - Belgacom IPTV over copper network (allegedly losing € 2,500 per line)
  - Proximus TV over digital television network
  - Dutch, French, English and “adult” channels

Germany

- Broadcasting is not a federal responsibility
- Bad Pyrmont agreement of the 16 provinces (Länder) to levy from 1 January 2007 a licence fee of €5.52 per month for access to radio and television, including the Internet, from:
  - computers
  - mobile phones
- Households and companies that have a radio licence will already be covered
- A television licence is €17 per month
- The funds are used for four national public broadcasters, several local broadcasters and the several public radio stations.

KRW 1200 = € 1

United Kingdom

- Convergence of regulators
- Office of Communications:
  - networks & spectrum
  - content
  - application of competition law (except mergers)

Not only, but also:

- DTI
- ICSTIS
- ICRA
- OTELO
- OTTA
- BBC
- etc.

Very hard to judge if this has yet been a success, but UK still looks very average

Conclusions

- Enormous uncertainty about demand for:
  - data services
  - value added services
- Enormous uncertainty about access to networks by value-added service providers
- The pre-paid business model worked well for voice, but does not look plausible for value-added services
- Television is proving difficult to integrate, both fixed and mobile operators underestimate the problems
- Mobile network operators appear able to delay further convergence
- Convergence keeps changing!

Thank you

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