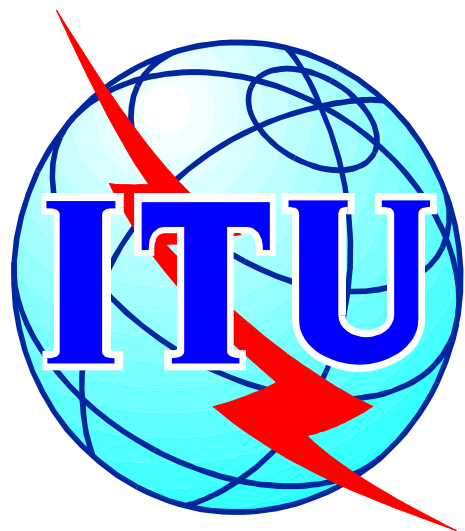


Global trends in Telecom Development

Saburo TANAKA
Councillor,



**Regional Seminar
on cost and tariffs,
Bamako, Mali
7-9 April 2003**



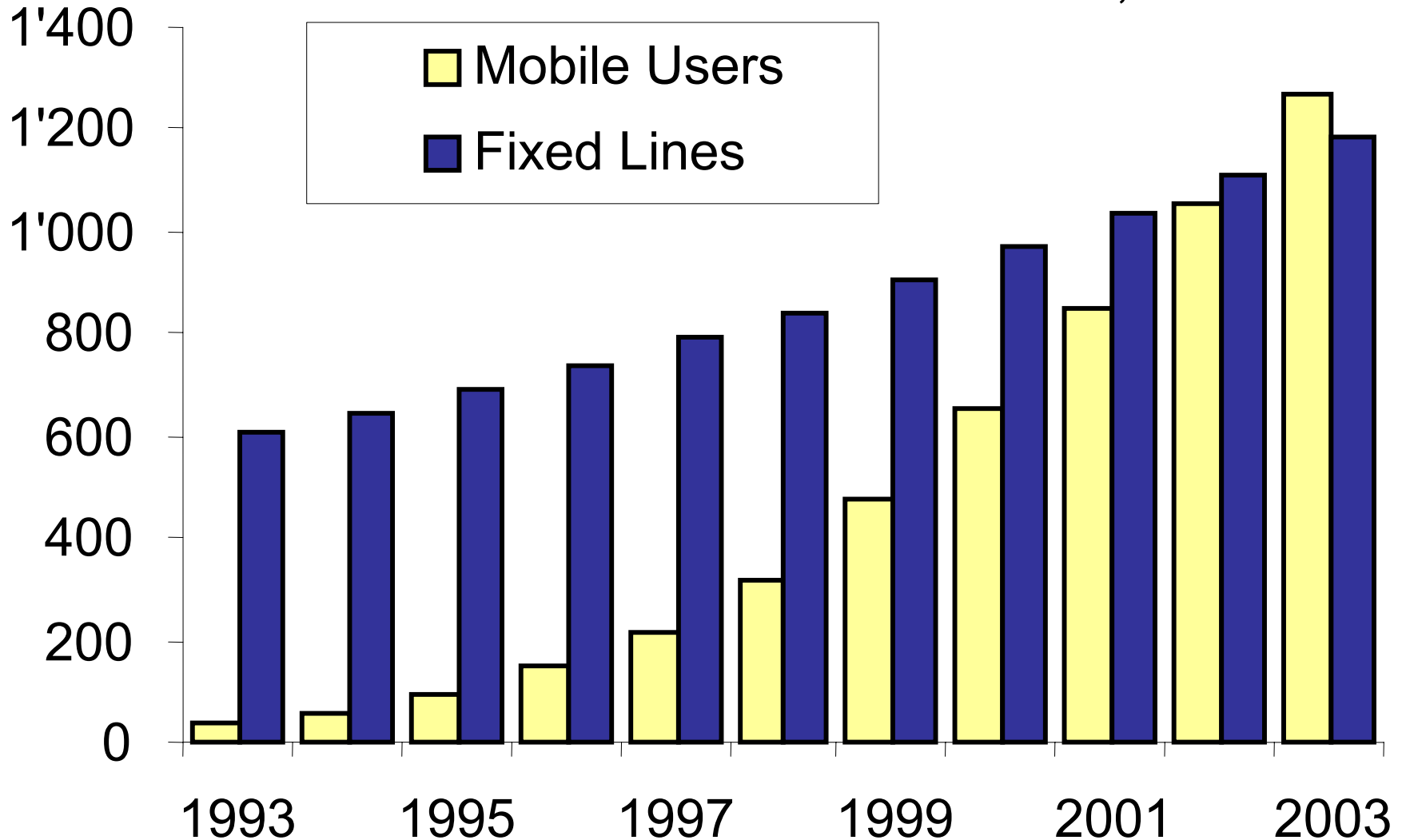
Agenda

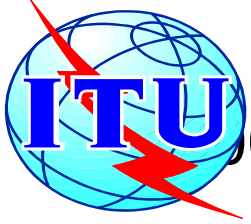
- **Market situation**
 - In the world in general
 - In Africa
- **Telephony (fixed-line)**
 - Future trends
 - What needs to be done in Africa (USO)
- **Mobile phone**
 - General trends
 - What to do to be competitive
- **Internet**
 - Connectivity in LDCs



A Mobile Revolution

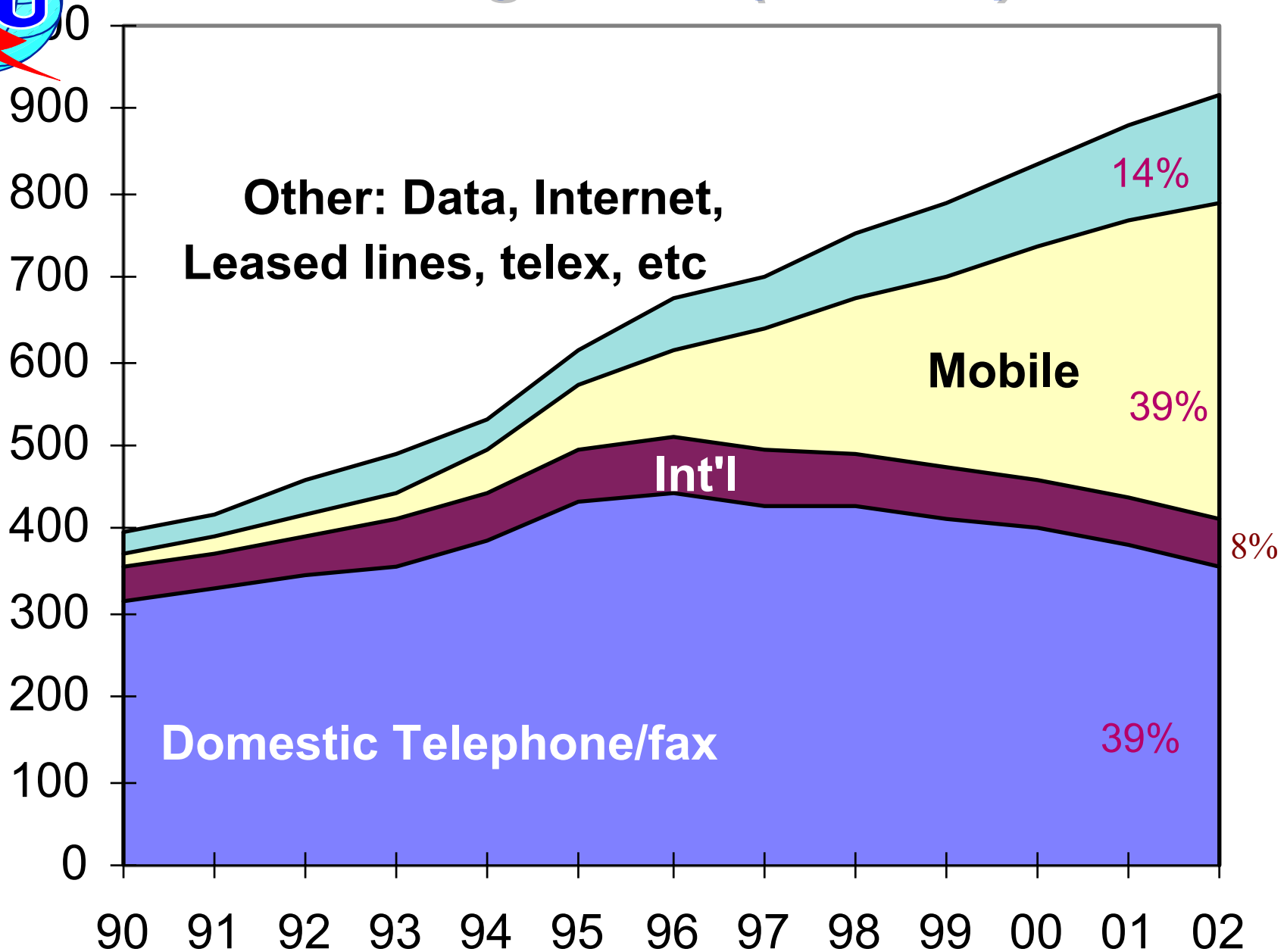
Fixed Lines vs. Mobile Users, worldwide, Million





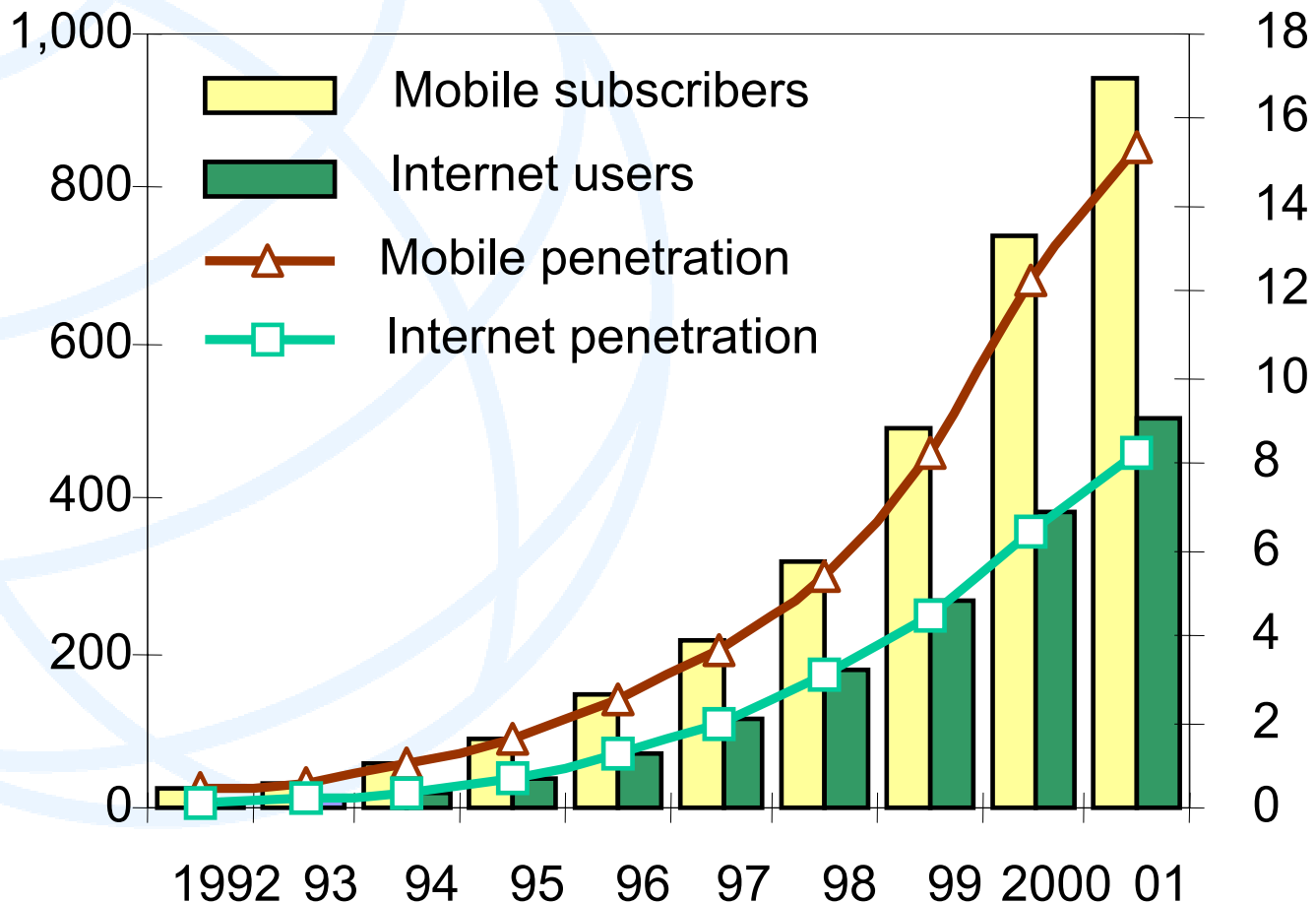
Revenue growth (US\$bn)

Service revenue (US\$ bn)

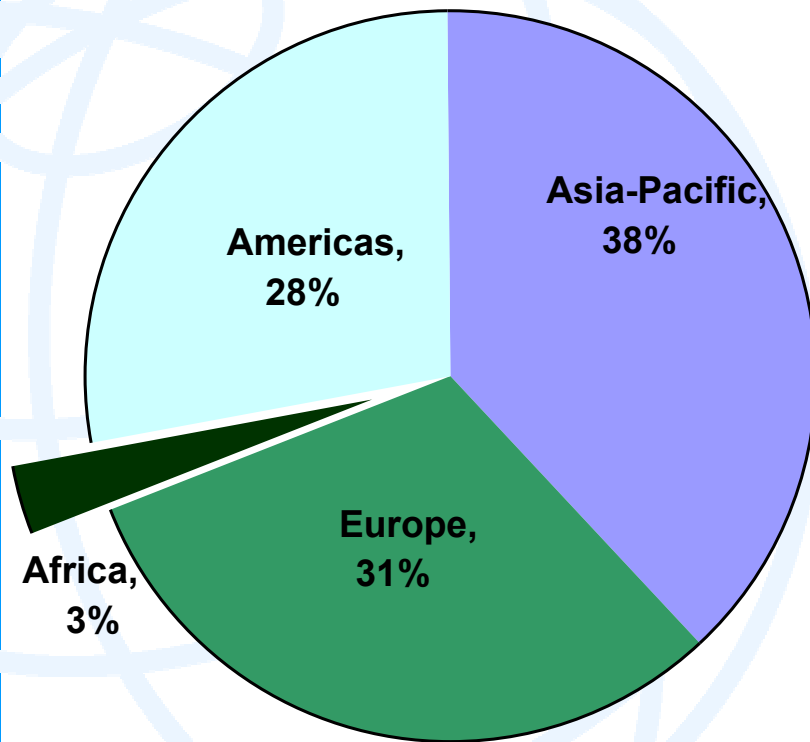


Mobile and Internet: Identical twins born two years apart?

Users (millions) and penetration per 100 pop.

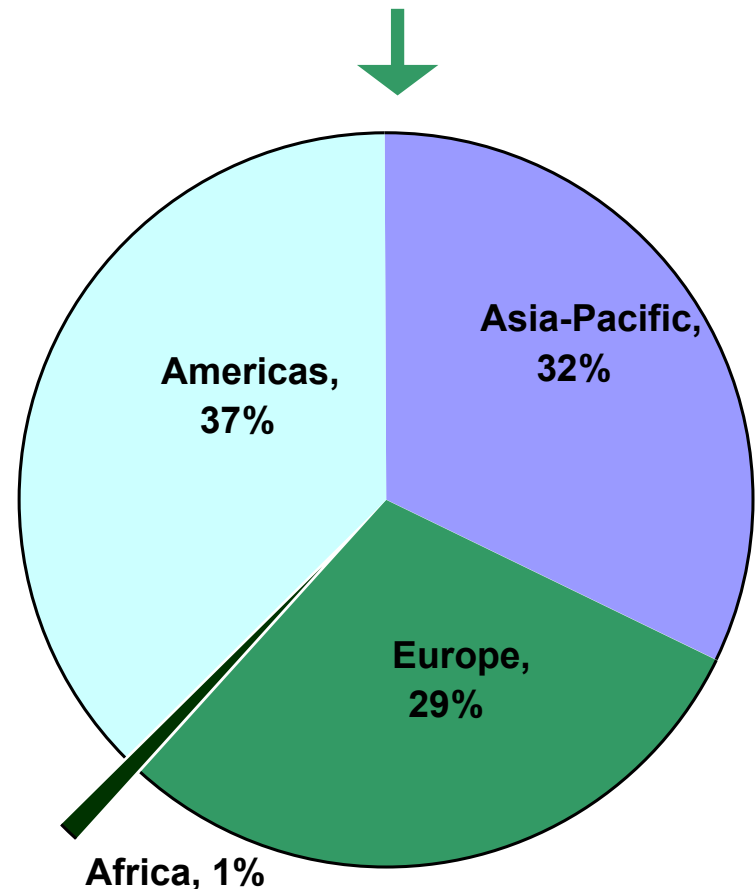


Distribution of mobile and Internet users by region, 2001

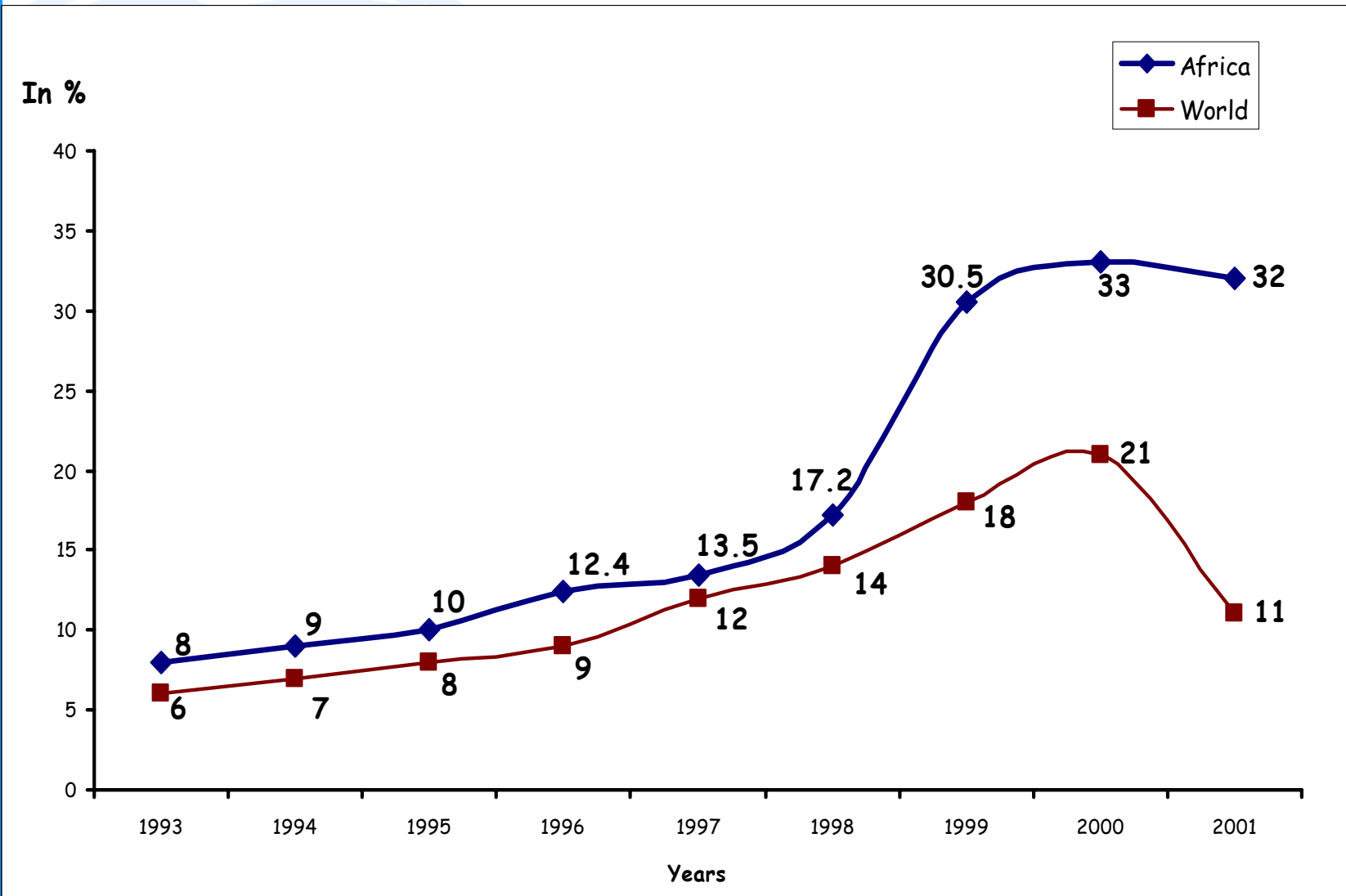


Mobile phone users
948 million

Estimated Internet
users, 500 million

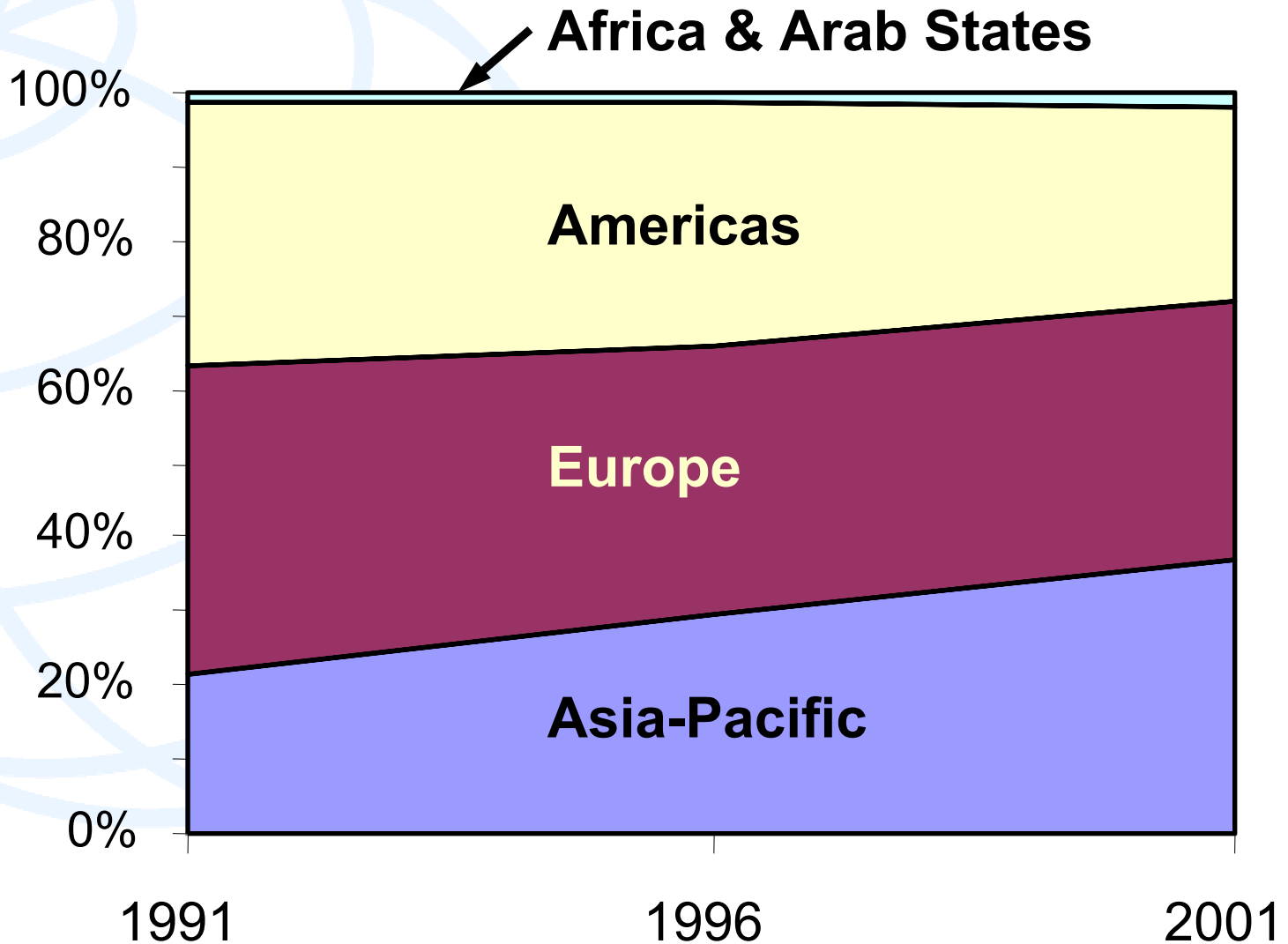


Growth rate in phone subscribers





Regional share of the world's phone subscribers



Source: ITU
Asia-Pacific
Telecom
Indicators



Main telephone Lines

	Main telephone lines			Main telephone lines per 100 inhabitants		
	1995 (k)	2001 (k)	CAGR (%) 1995-01	1995	2001	CAGR (%) 1995-01
Africa	12'549.6	21'261.8				
Americas	221'295.8	296'508.4	5.0	28.71	35.14	3.4
Asia	183'456.0	392'671.0	13.5	5.42	10.68	12.0
Europe	263'183.7	324'484.0	3.6	33.27	40.54	3.3
Oceania	10'942.7	12'310.9	2.0	38.81	40.04	0.5
WORLD	689'251.6	1'144'884.6	7.2	12.29	17.19	5.8



International telephone traffic

	Outgoing telephone traffic					Int'l telephone circuits
	M Minutes		CAGR (%) 95-00	Minutes per inhabitant 2000	Minutes per subscriber 2000	2000 (k)
	1995	2000				
Africa	1'340.6	2'147.2	9.7	3.0	110.2	58.7
Americas	22'343.8	47'191.5	16.9	57.5	163.4	499.3
Asia	10'612.0	17'756.2	10.7	4.9	51.2	420.2
Europe	27'800.7	46'739.8	10.9	58.7	147.5	459.9
Oceania	1'342.2	2'114.4	1.0	69.9	173.8	4.7
WORLD	63'362.8	115'847.5	13.1	19.5	117.8	1'442.5



Telecommunications revenue

	Total (M US\$) 2000	Per inhabitant (US\$) 2000	Per main line (US\$) 2000	Per employee (US\$) 2000	As a % of GPD 2000
Africa	16'391.9	23.0	868	68'880	2.4
Americas	379'521.4	470.7	1'315	239'818	2.9
Asia	235'089.8	65.9	679	163'131	2.6
Europe	276'607.5	347.1	873	141'229	2.8
Oceania	17'677.5	580.5	1'440	252'219	3.6
WORLD	925'074.0	156.5	942	176'824	2.8



Waiting list for telephone lines

	1995 (k)	2000 (k)	CAGR (%) 1995-00	2000 (k)	2000 (%)	2000
Africa	3'640.2	3'677.4	0.2	23'044.7	84.3	2.4
Americas	2'788.8	4'864.6	11.8	288'761.0	98.4	0.3
Asia	13'419.1	10'386.6	-5.0	192'228.4	97.1	0.9
Europe	21'420.4	11'838.2	-11.2	321'204.0	96.4	1.2
Oceania	12.2	9.9	-4.2	12'223.4	99.9	-
WORLD	41'277.6	30'772.5	-5.7	837'145.7	97.0	0.8

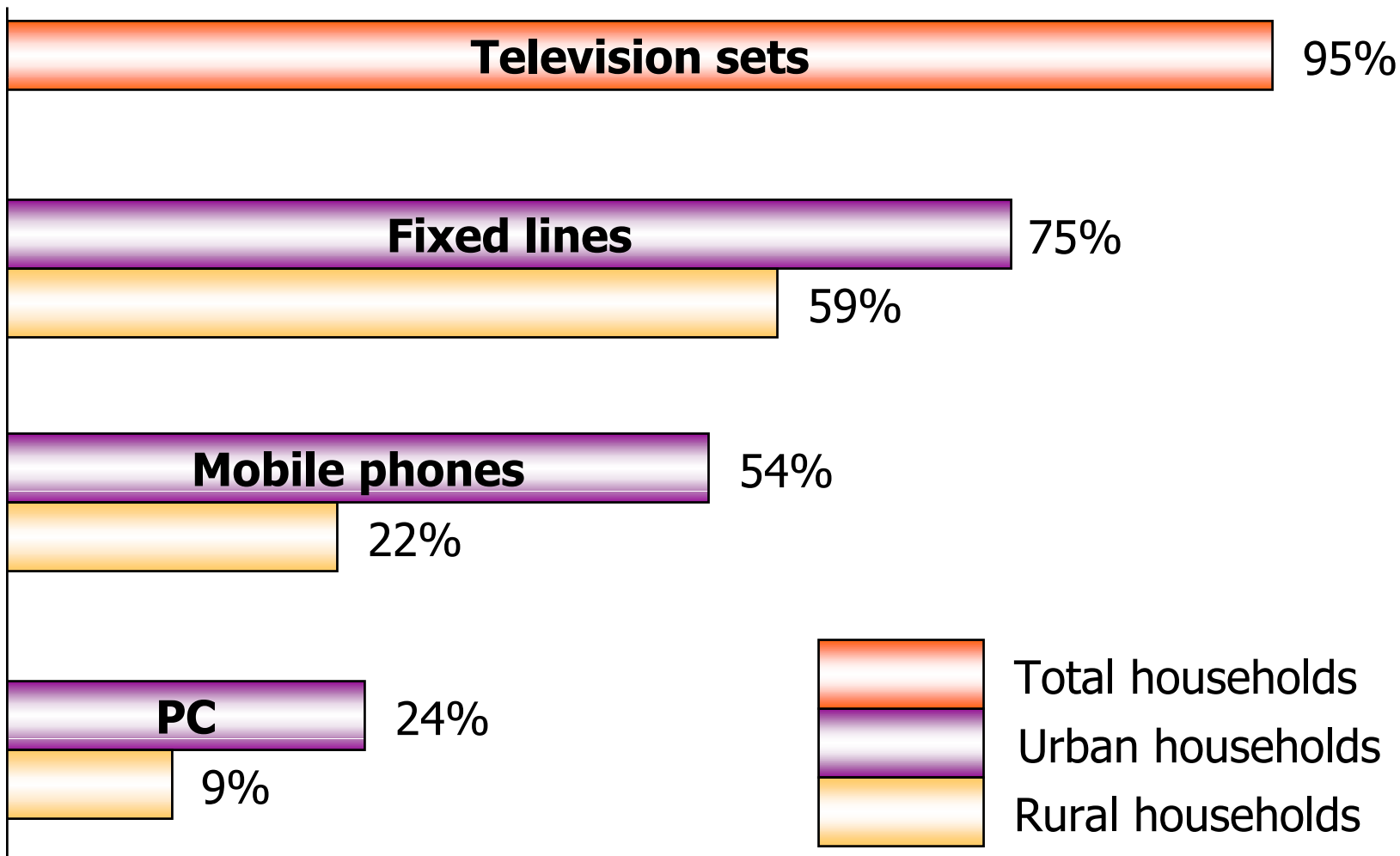


Telecommunications investment

	Total (M US\$) 2000	Per inhabitant (US\$) 2000	Per main line (US\$) 2000	As a % of revenue 2000	As a % of GFCF 1999
Africa	3'476.2	6.2	194	25.2	4.6
Americas	53'972.8	68.3	188	14.2	2.3
Asia	88'163.8	25.1	263	38.4	3.6
Europe	53'056.9	66.6	168	19.2	3.1
Oceania	4'113.2	137.7	338	23.5	3.6
WORLD	202'771.8	35.7	209	22.1	3.0



Household penetration rates of various services in Malaysia





Graphical representation of the Four USP objectives

SERVICES

TYPE OF ACCESS

Collective
access

Individual
access

Basic telephony

The Internet

Objective 1:

Collective access
to basic telephony
and public payphone
services

Objective 3:

Collective access
to Internet
access services

Objective 2:

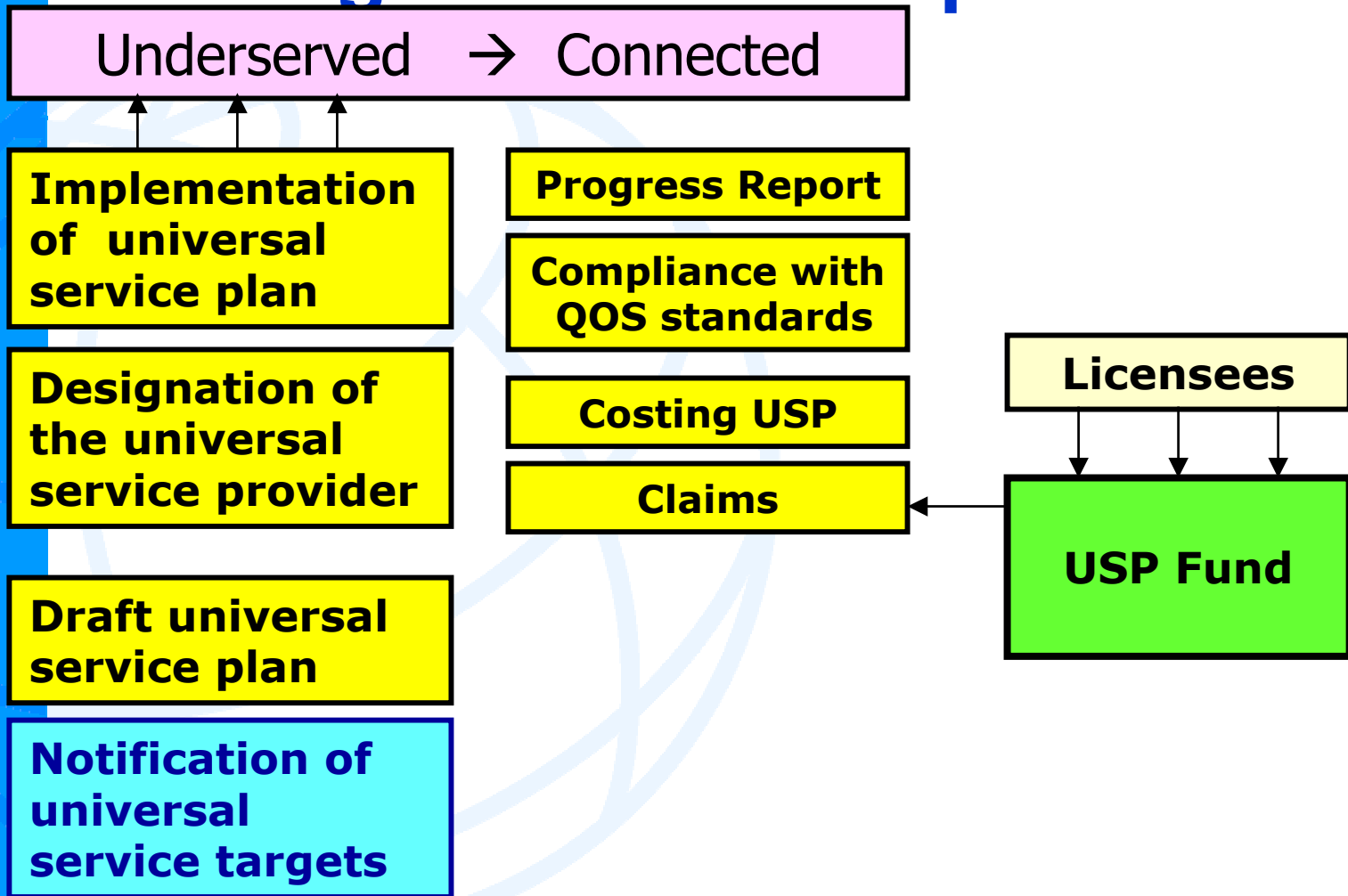
Individual access to
basic telephony
services

Objective 4:

Individual access to
Internet
access services



USP Regulations - Graphical Points



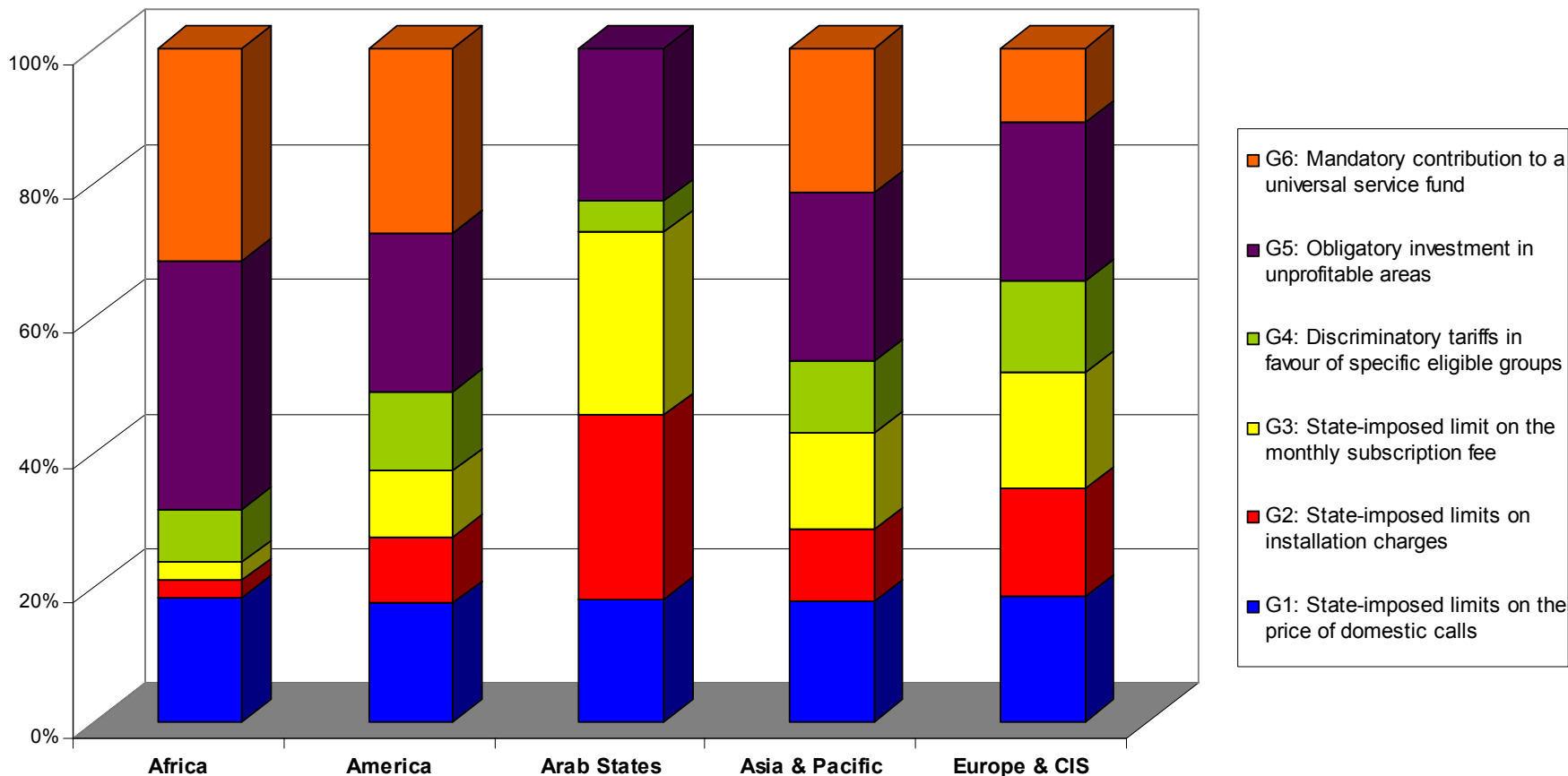
Selected Highlights

- Costing of universal service provision
 - Commission shall pay the designated universal service provider from the USP Fund the cost incurred in implementing the approved universal service plan in a universal service target
 - The net cost in implementing the approved universal service plan is computed as:

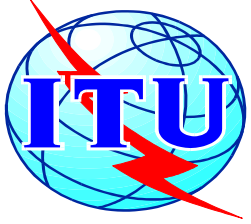
$$\text{Net USP cost} = \text{avoidable cost} - \text{revenue forgone}$$
- USP Fund
 - Contribution - By licensee of 6% of its weighted net revenue. Only by those whose net revenue > RM500,000.
 - Commission shall maintain proper accounts of the USP Fund - Annual report and statement of accounts



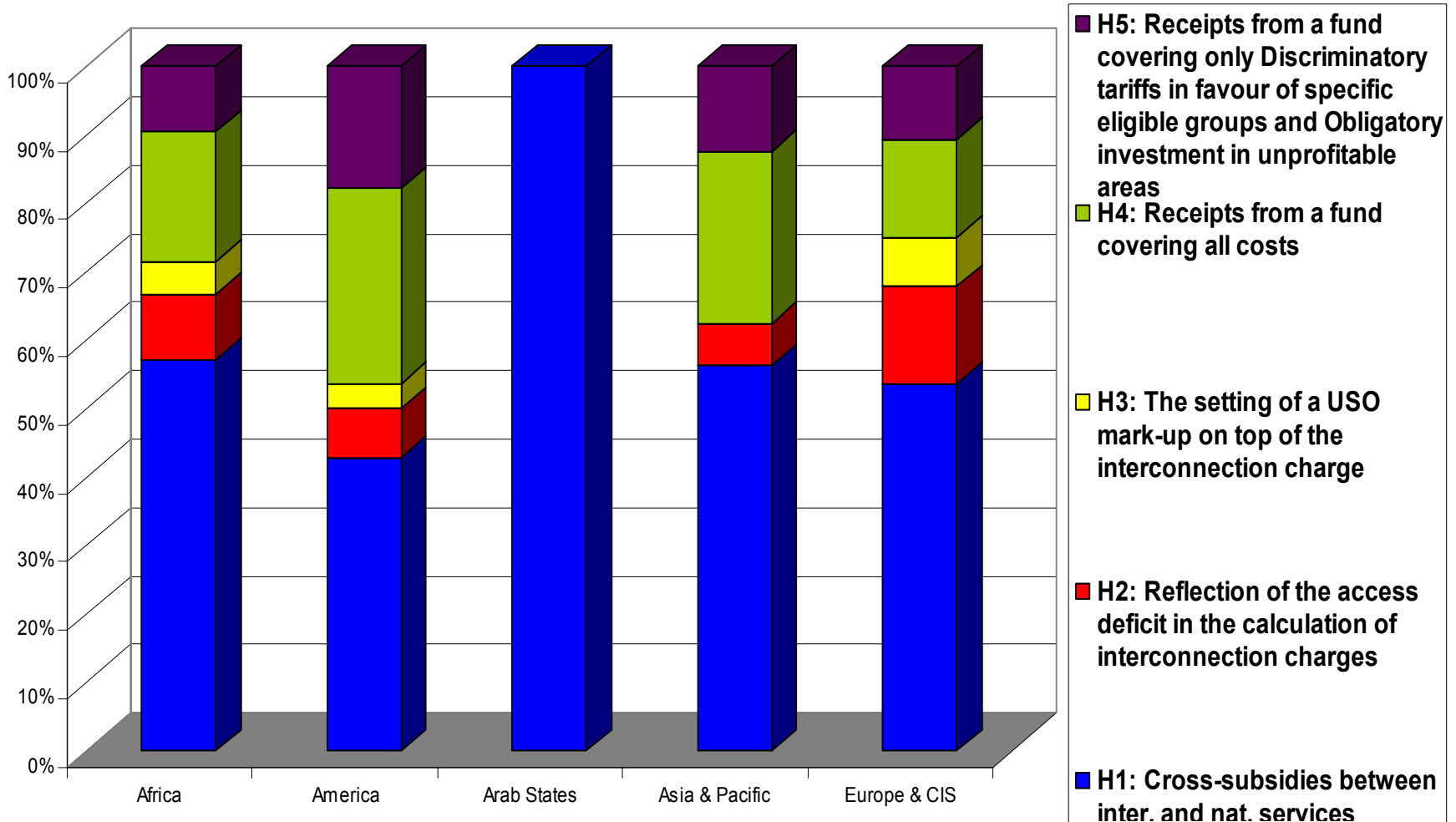
Universal service policy implementation in domestic market



Source: ITU/BDT Tariffs Policies Database



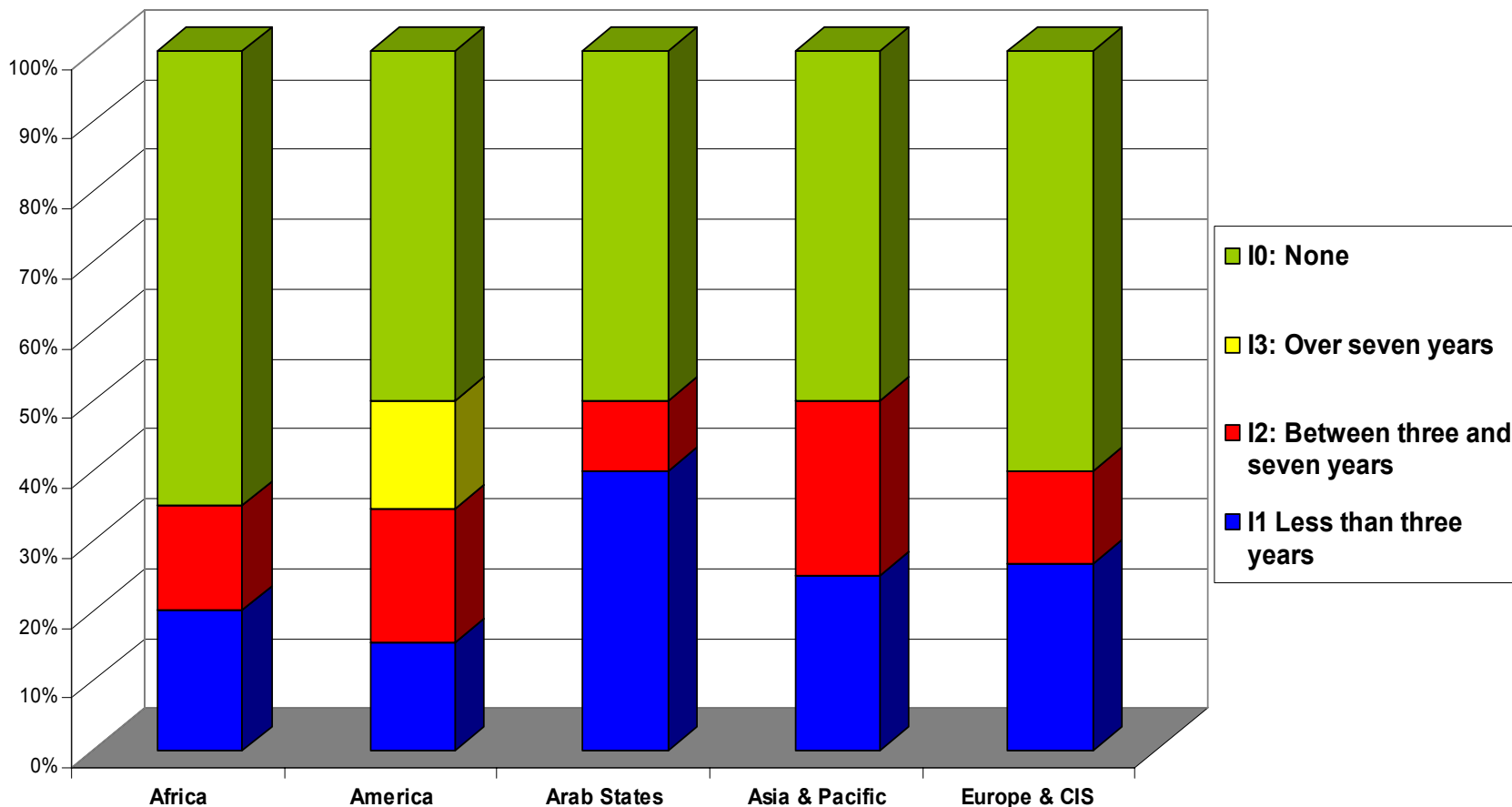
How are your universal service costs financed



Source: ITU/BDT Tariffs Policies Database



Time-frame for absorbing the access deficit (Tariffs Rebalancing)



The secret of mobile success

- Why is mobile currently **growing ten times faster** (~55% p.a.) worldwide than fixed lines networks (~5.5% p.a.)?
- Why is the average mobile user **much younger** than the average fixed-line user?
- Why do users **make calls using a mobilephone** even when a fixed-line telephone is available and cheaper?
- What is the **secret** of the success of mobile?

Price Options

A selection of price options

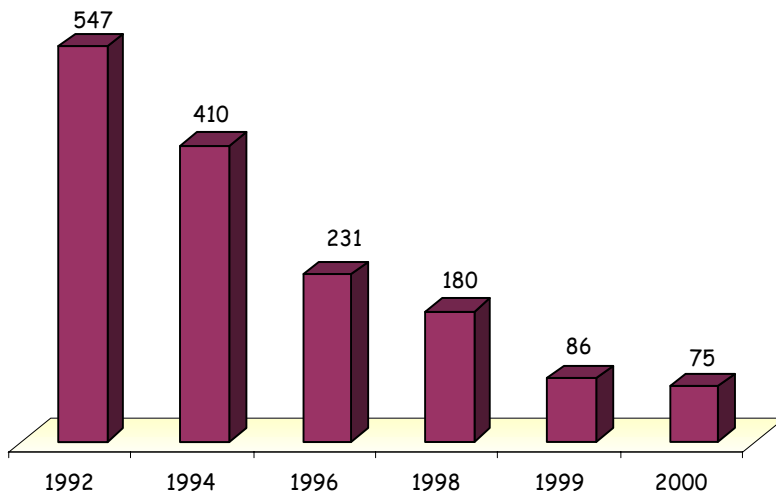
From Orange (UK)

Plan name	Monthly charge for single phone	Standard talk time included (per month)	Peak time call charges (per minute)	Off-peak call charges (per minute)
Chat 60	£17.63	60 off-peak minutes	40p	5p
Talk 30	£17.50	30 minutes	30p	5p
Talk 120	£25.00	120 minutes	24p	5p
Talk 400	£58.75	400 minutes	22p	5p
Talk 1300	£176.25	1'300 minutes	17p	5p
Talk 3700	£470.00	3'700 minutes	15p	5p
Talk 7500	£940.00	7'500 minutes	15p	5p
Everyday 50	50p/day	50 minutes/day	40p	1p

Declining prices for mobile access, global average, in US\$, 1992-2000

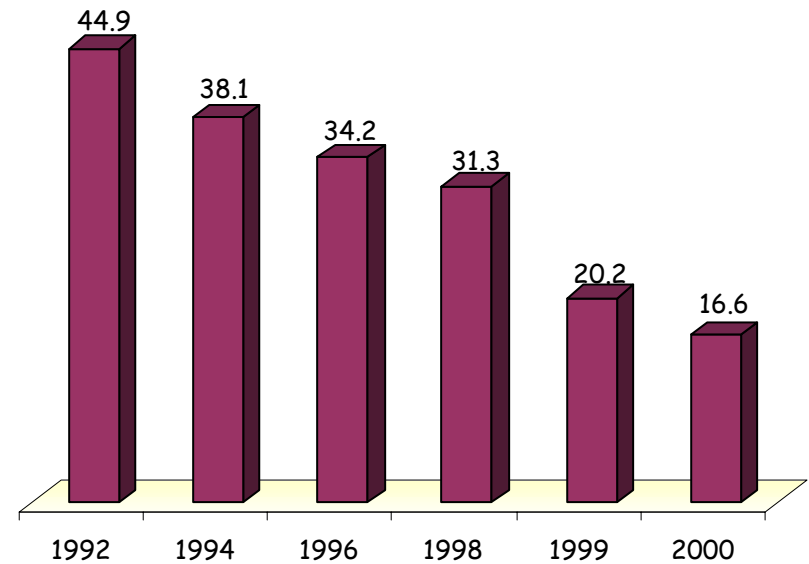
Connection charge, in US\$

CAGR, 1992-2000 = -32.1% p.a.



Monthly subscription, in US\$

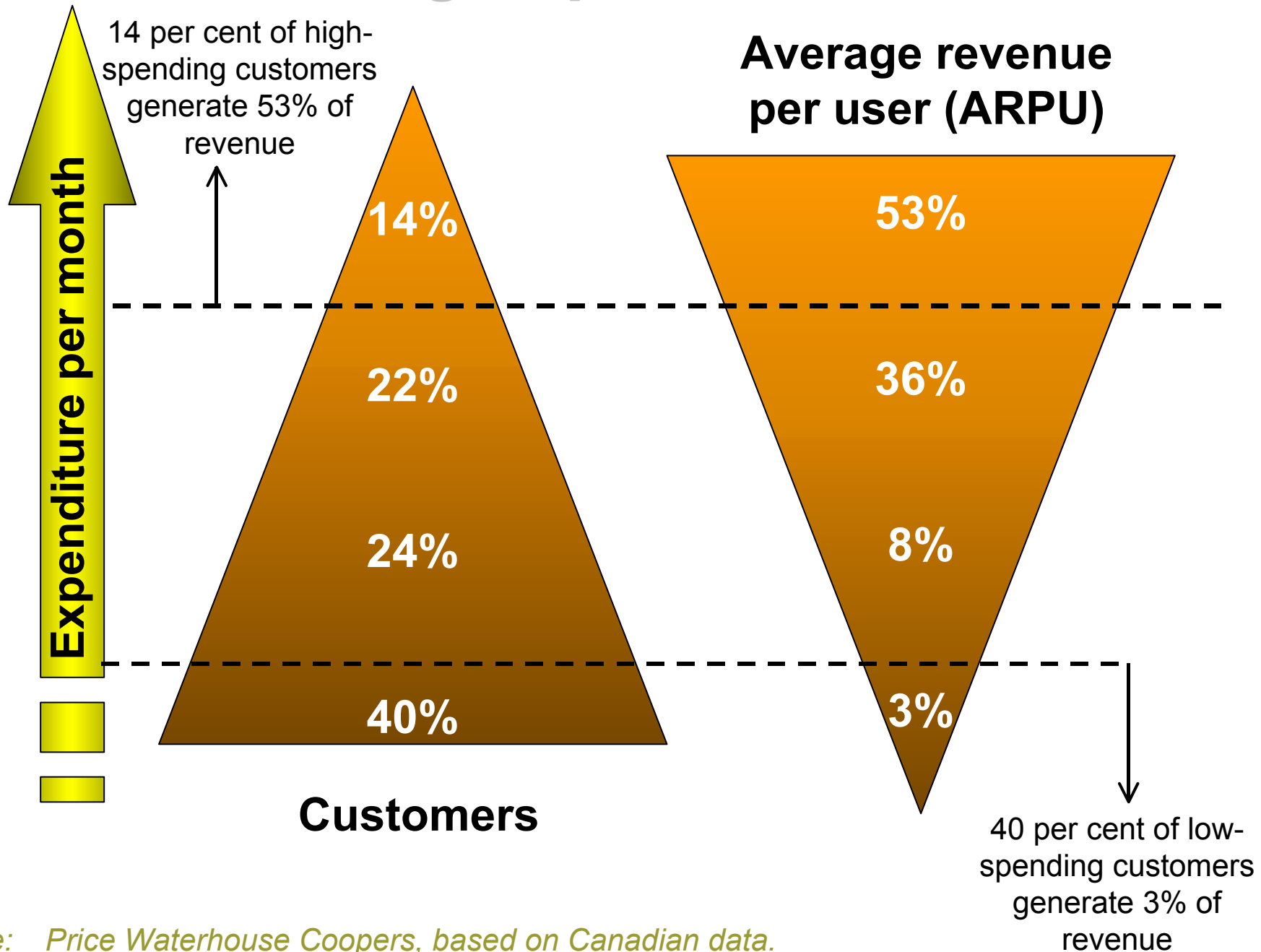
CAGR, 1992-2000 = -9.2% p.a.



Note: CAGR = Compound Annual Growth rate.

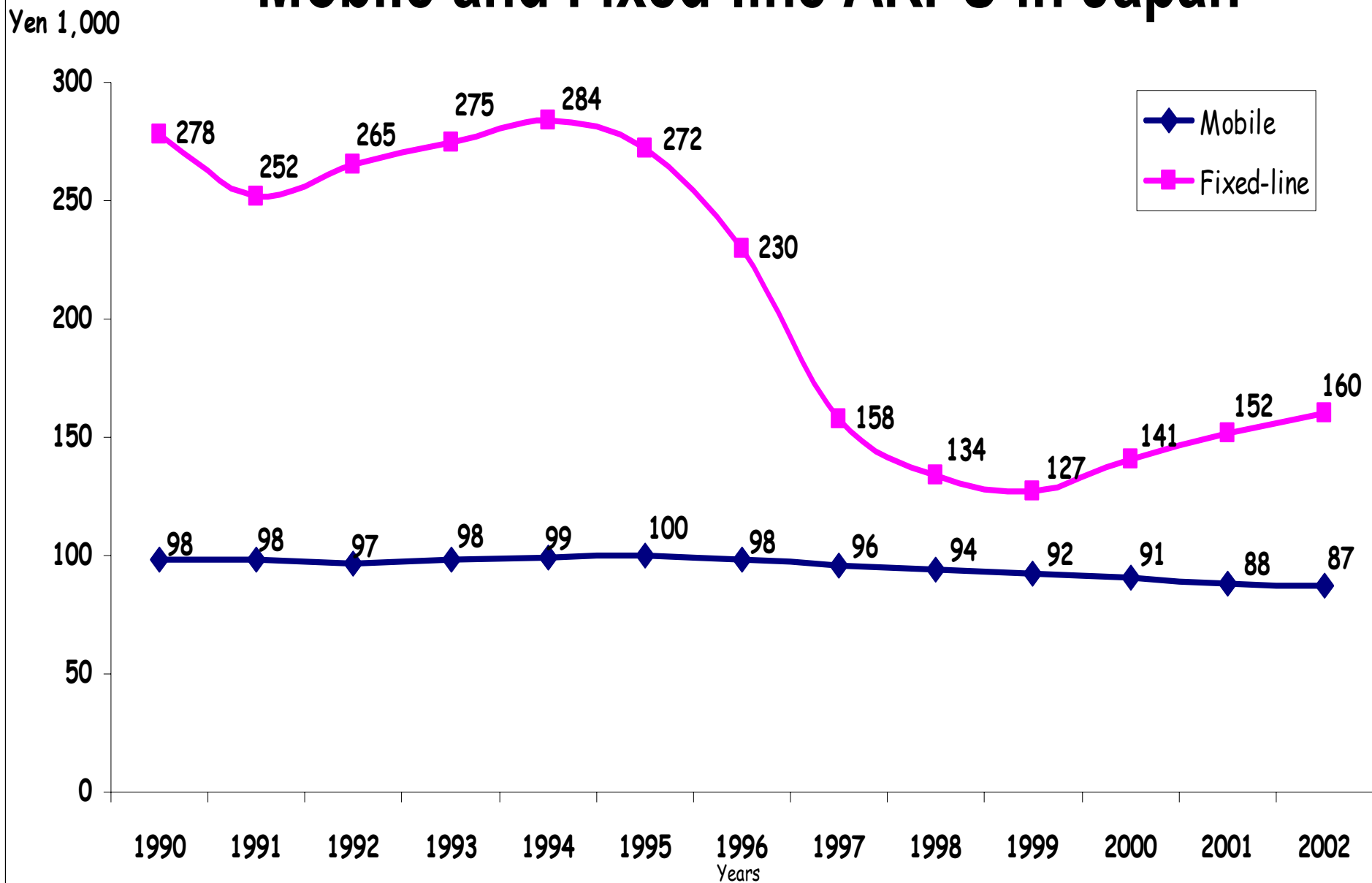
Source: ITU "World Telecommunication Development Report 1999: Mobile cellular"

Cultivate the high-spenders

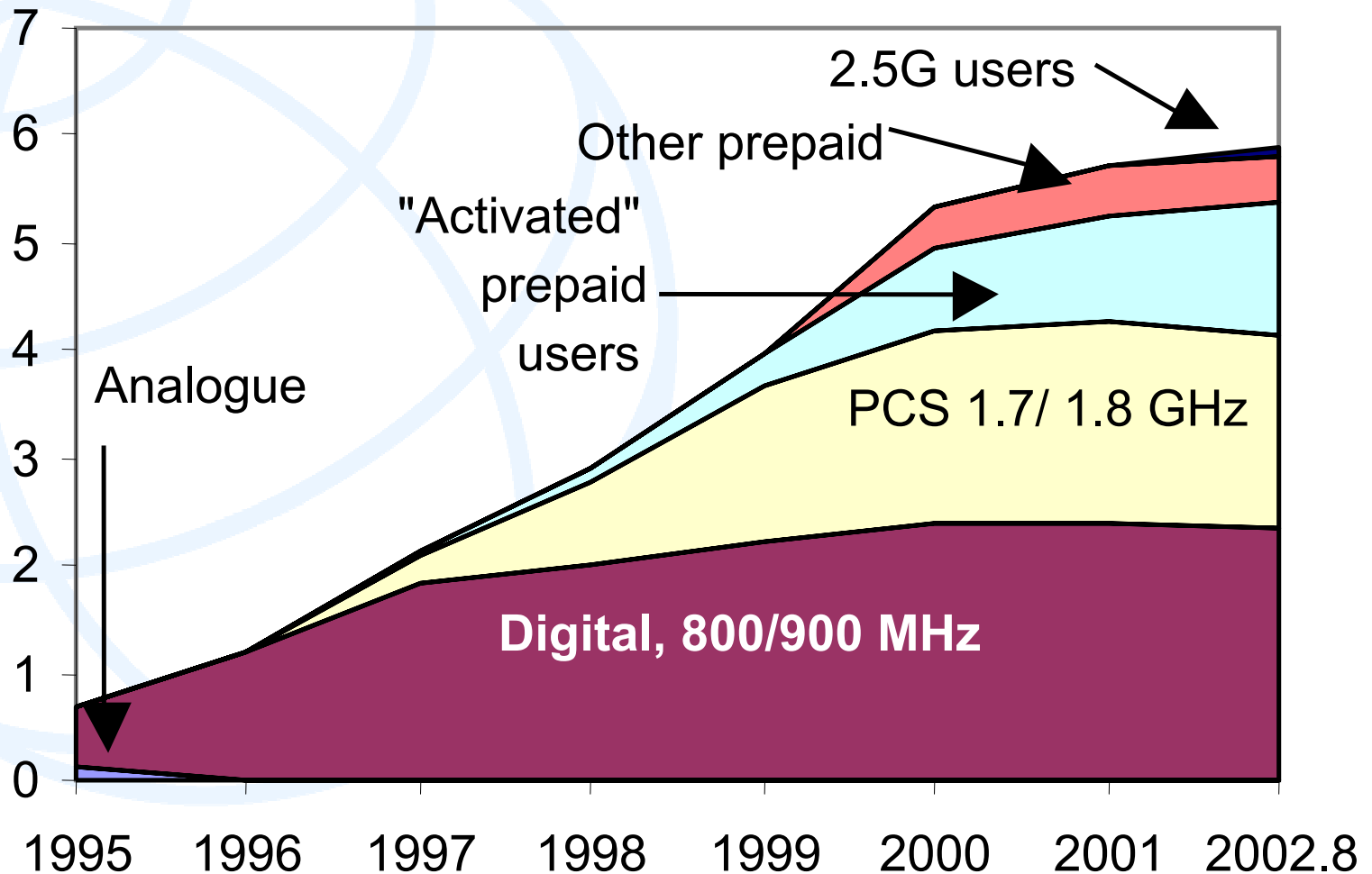


Source: Price Waterhouse Coopers, based on Canadian data.

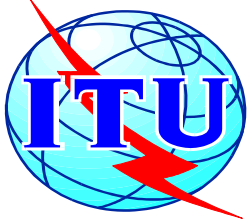
Mobile and Fixed-line ARPU in Japan



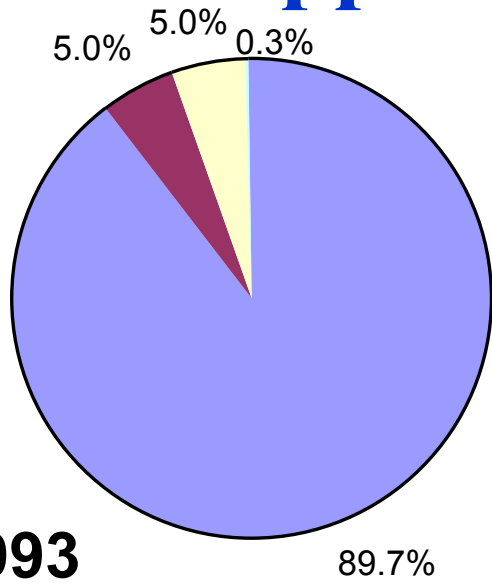
Mobile generations: Hong Kong, China (million users)



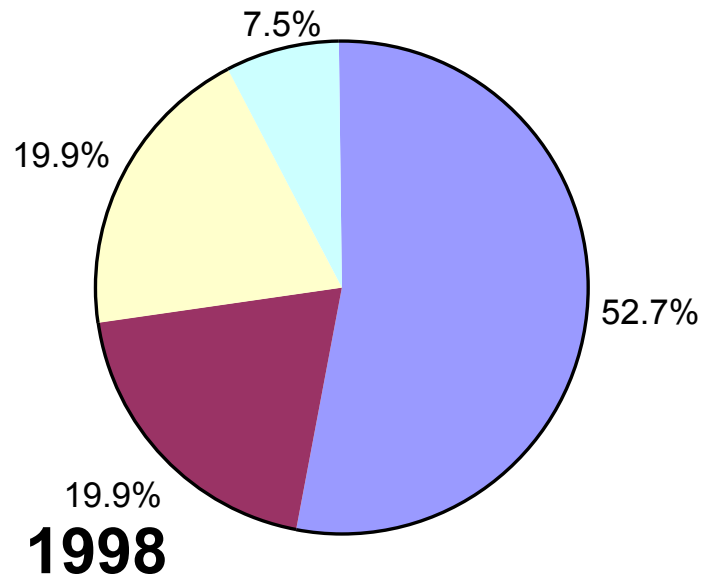
Source: ITU
Asia-Pacific
Telecom
Indicators.
OFTA



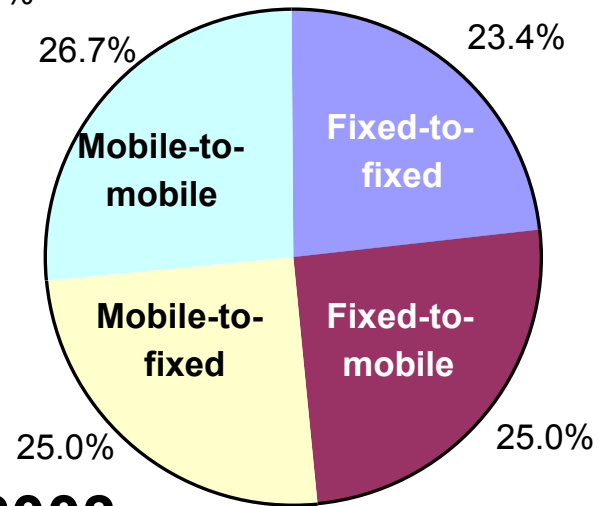
Opportunités d'appel dans le monde



1993



1998



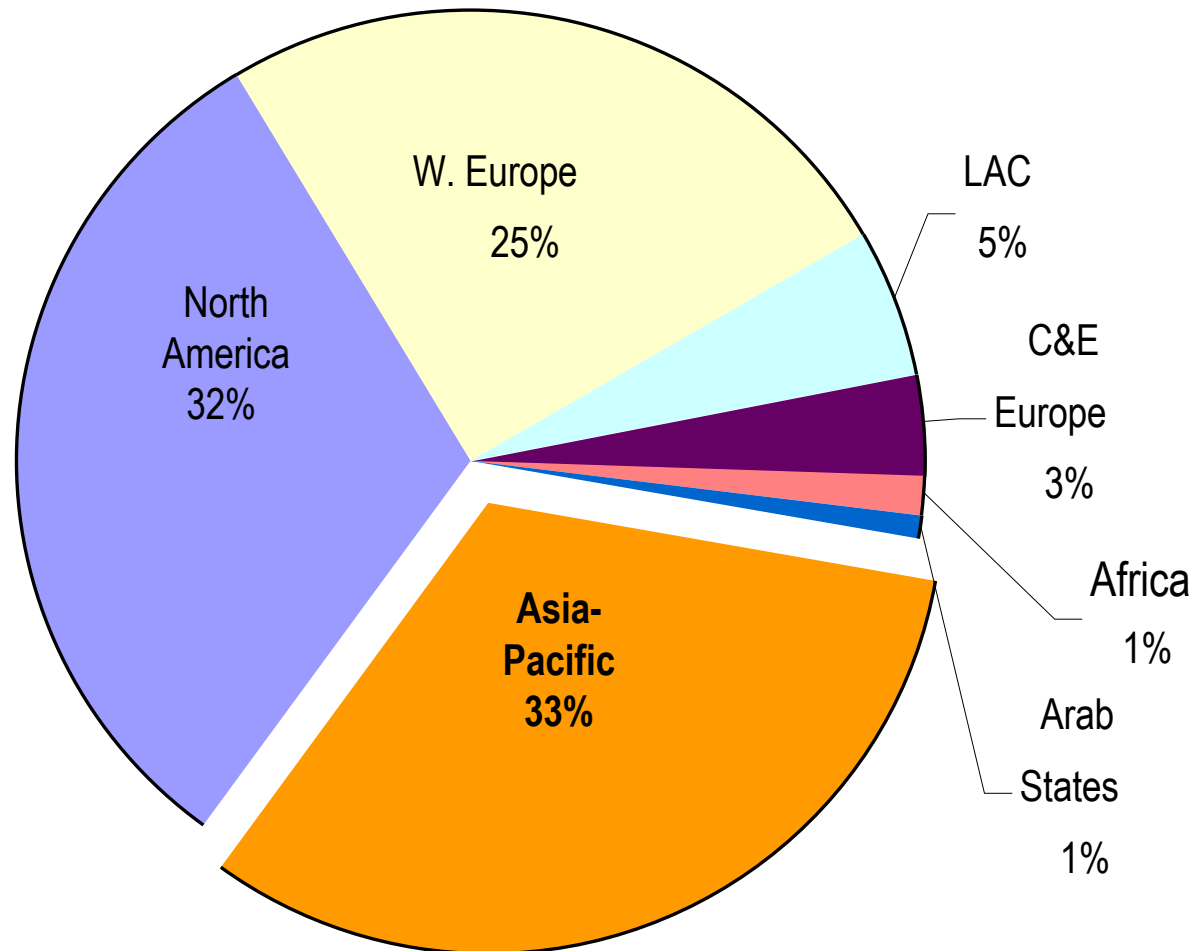
2003

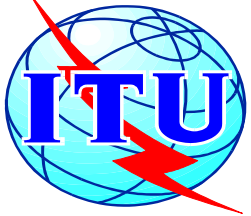


Mobile subscribers

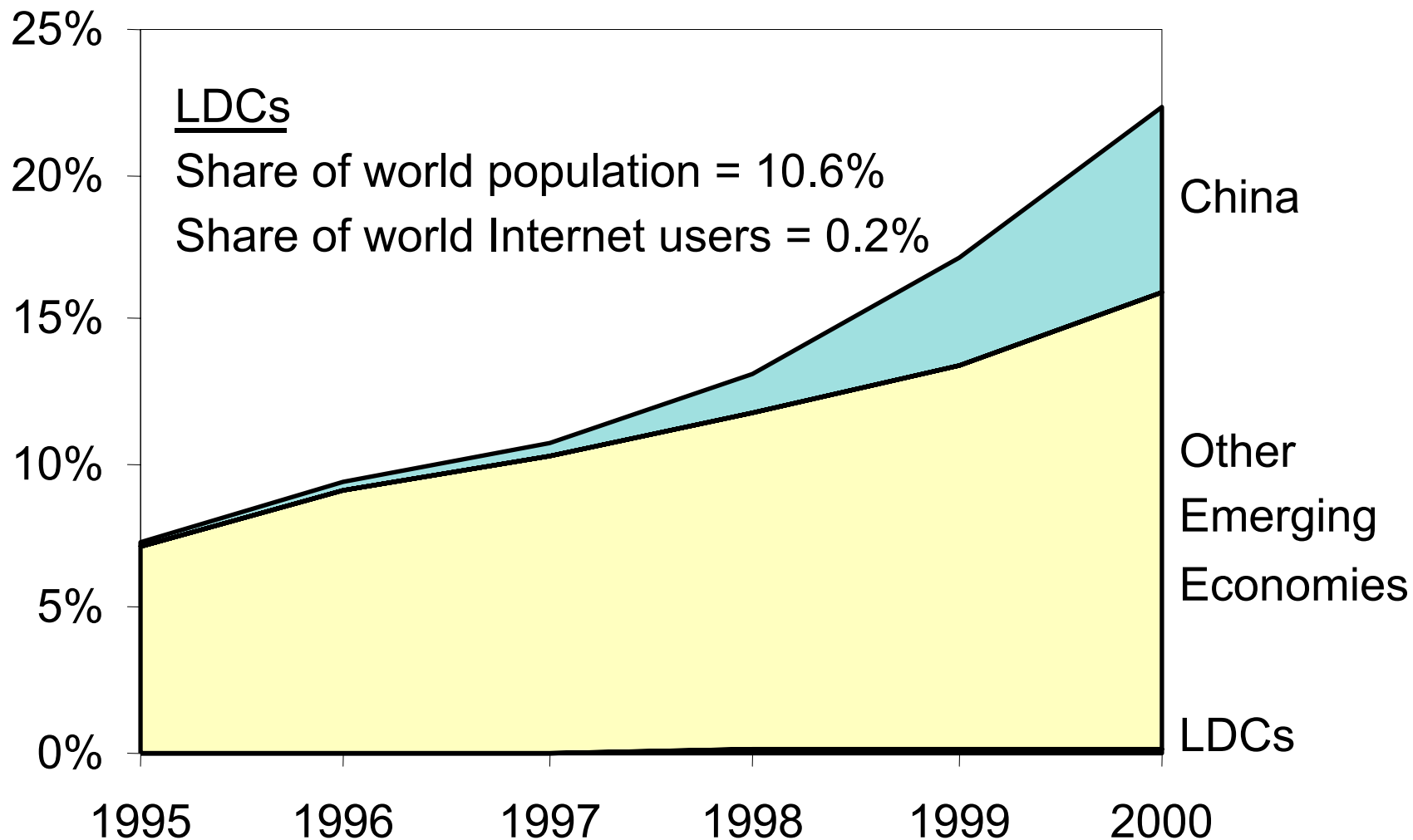
	Mobile subscribers			Mobile subscribers per 100 inhabitants		
	1995	2001	CAGR (%) 1995-01	1995	2001	CAGR (%) 1995-01
Africa	652.0	25'504.2	114.9	0.2	5.9	100.8
Americas	40'257.1	223'366.0	64.6	2.0	20.8	61.7
Asia	23'104.7	335'767.4	74.7	3.0	20.2	63.0
Europe	24'084.1	349'563.8	0.0	4.7	48.3	71.3
Oceania	2'618.0	13'732.8	45.9	3.0	22.8	43.5
WORLD	90'715.91	947'934.2	80.80	2.81	23.58	71.26

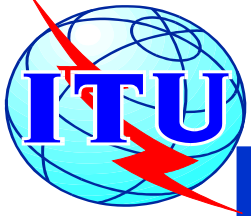
Distribution of Internet users, 2001





LDCs falling further behind: Share of worldwide Internet Users





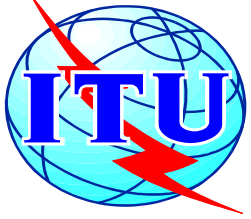
Barriers to connectivity in LDCs

- **Regulatory barriers**

- Many LDCs retain a monopoly telecom carrier, including for data and Internet traffic
- Some LDCs restrict market entry by ISPs

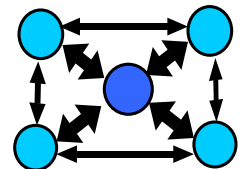
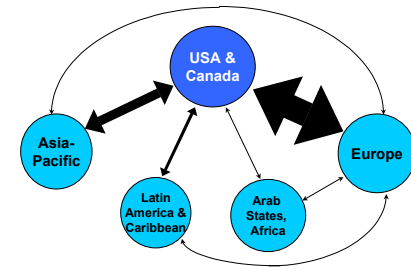
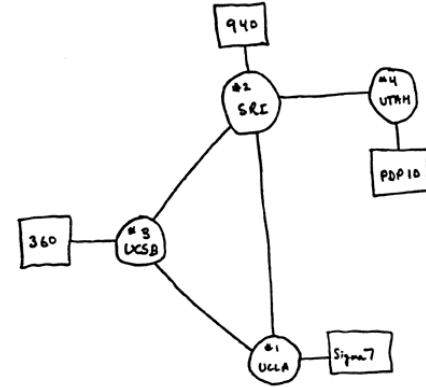
- **Economic barriers**

- High costs for int'l leased lines in some markets, esp. those without infrastructure competition
- For LDCs with only low levels of IP demand, unit bandwidth costs are higher than for countries with higher levels of demand (economies of scale)
- Many countries are not served by international cables (e.g., landlocked countries, small islands)



The “Internet latecomer” problem

- In the beginning, the Internet was:
 - North American
 - Not-for-profit
 - Used primarily for email & file transfer
- By the mid-1990s, the Internet had:
 - ⇒ Spread to the OECD countries
 - ⇒ Begun “privatisation” of the backbone
 - ⇒ Become primarily a channel for the Web
- By 2005, the Internet may be:
 - ⇒ Available throughout the world
 - ⇒ A fully commercial undertaking
 - ⇒ Used primarily for multimedia streaming



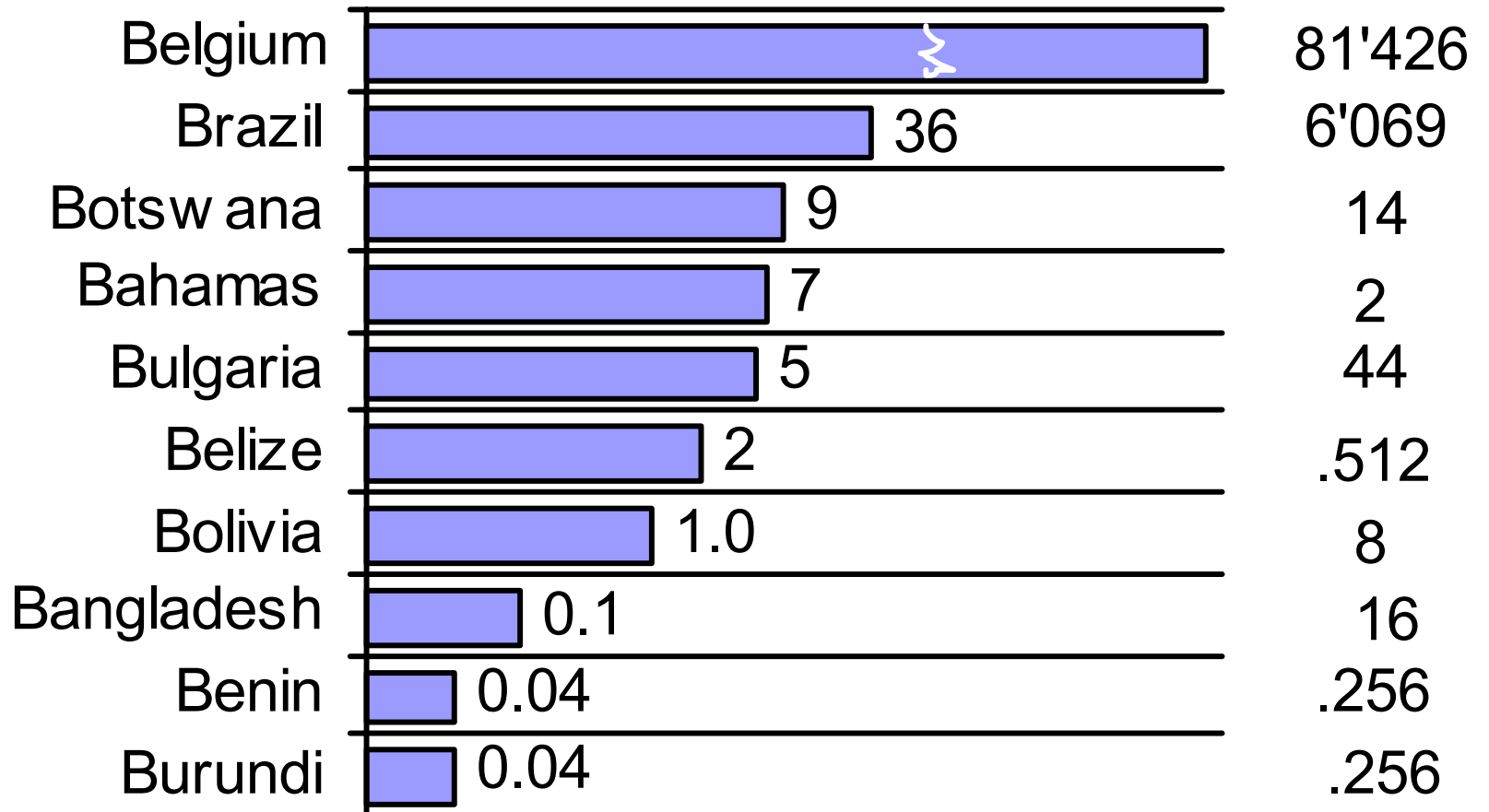


Bandwidth begins with “B”

International Internet

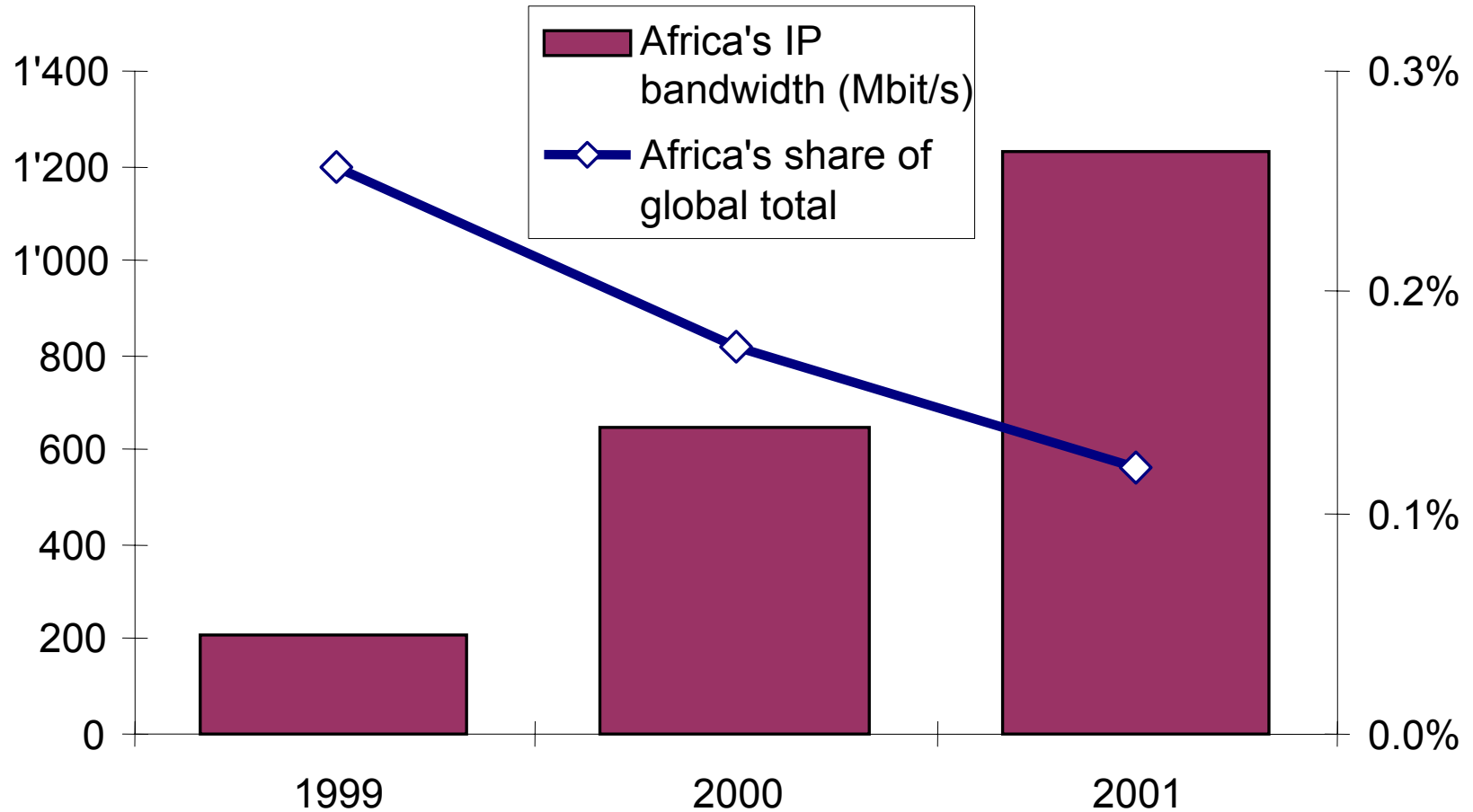
Bandwidth per capita (bit/s)

Total (Mbps)





760 million Africans share less IP connectivity than 400'000 Luxemburgers



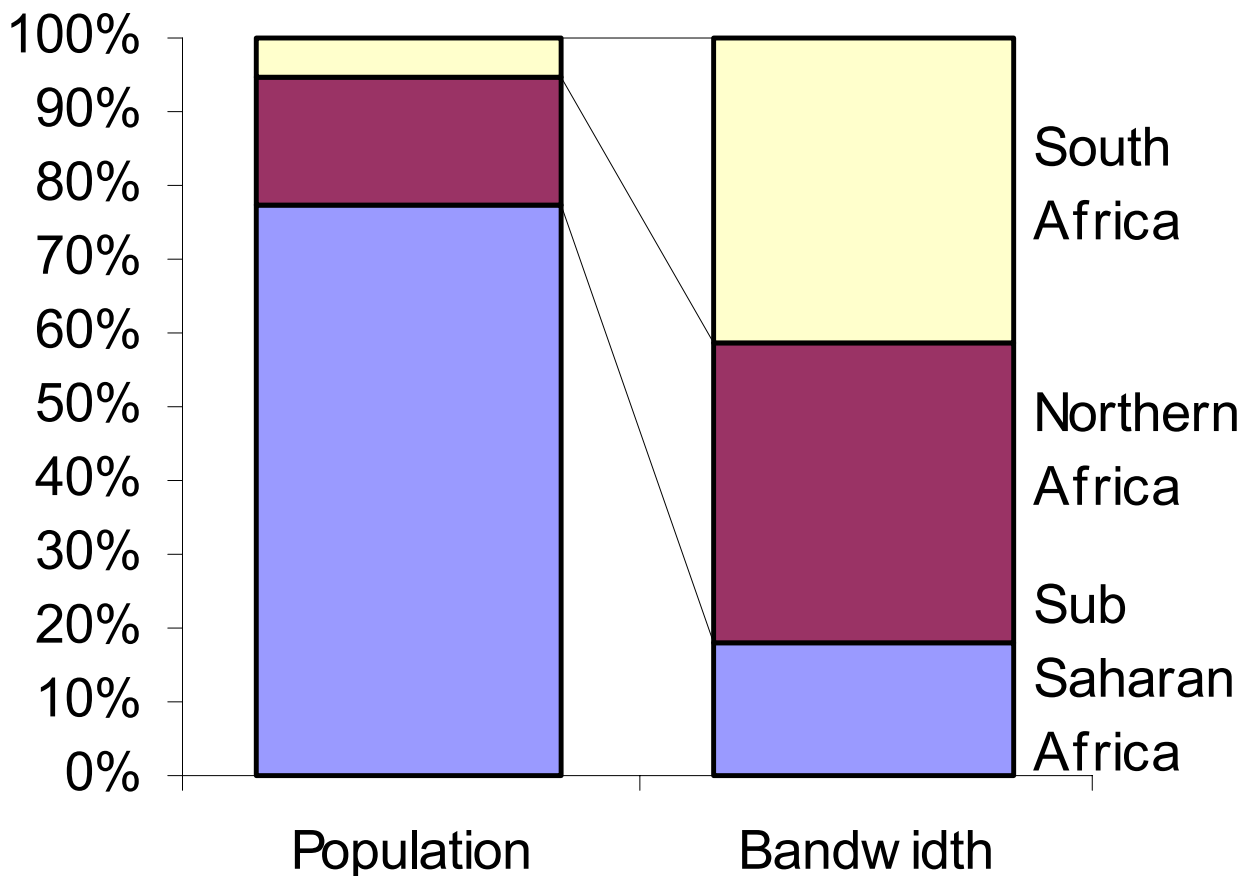
Source: ITU African Telecom Indicators, adapted from TeleGeography Inc. "Packet Geography, 2002".

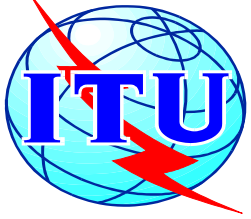
Note: Figures are for mid-year.



Even within Africa, large disparities are evident

Distribution of international Internet bandwidth in Africa, 2001





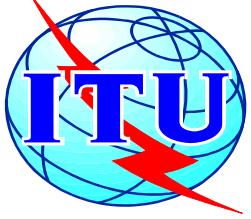
Two LDC “success stories”

● Nepal

- 16-fold increase in IP connectivity in 8 months following liberalisation of VSAT market in 1999
- Lowest IP access prices in South Asia
- **BUT**, opening up VSAT market has lead to a drastic fall in incoming telephone traffic and settlements

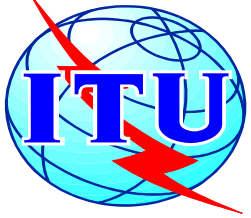
● Uganda

- Rapid increase in network growth following introduction of second national operator, MTN Uganda and VSAT liberalization
- Nine separate ISPs own international gateways
- **BUT**, entire national capacity is less than 20 Mbit/s



Something should be done

- **Feasibility study to look at an international project to increase IP connectivity in LDCs**
- **Look at regulatory, economic and commercial issues and examine evidence for market failure**
- **Could VSATs provide a solution?**
 - **Evidence from Uganda and Nepal suggests opening VSAT market could make big difference**
 - **But, VSATs are expensive**
- **How could such a solution be delivered?**
 - **Providing a “subsidy” without interfering with the operation of market forces (avoiding creating dependency on foreign donors)**
 - **Working with ISPs rather than end-users**



Issues for discussion

- **Is there a problem?**

- Is IP connectivity more expensive and more scarce in LDCs?
- Do higher connectivity prices feed into higher access prices?

- **Can it be solved?**

- What can be done by LDCs? (e.g., liberalizing VSAT markets, liberalizing ISP markets)
- What can be done by the international community?

- **How to structure the project?**

- Which donors, which agencies, which players?
- How to involve DOT Force, UN ICT Task Force etc?