

Global and regional trends in telecom development

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Seminar in Prague, September 2003



The original document is elaborated by Dr Tim Kelly, ITU/SPU. It has completed by Saburo Tanaka. The views expressed in this presentation are those of the authors, and do not necessarily reflect the opinions of the ITU or its membership. Authors can be contacted by e-mail at: Tim.Kelly@itu.int saburo.tanaka@itu.int



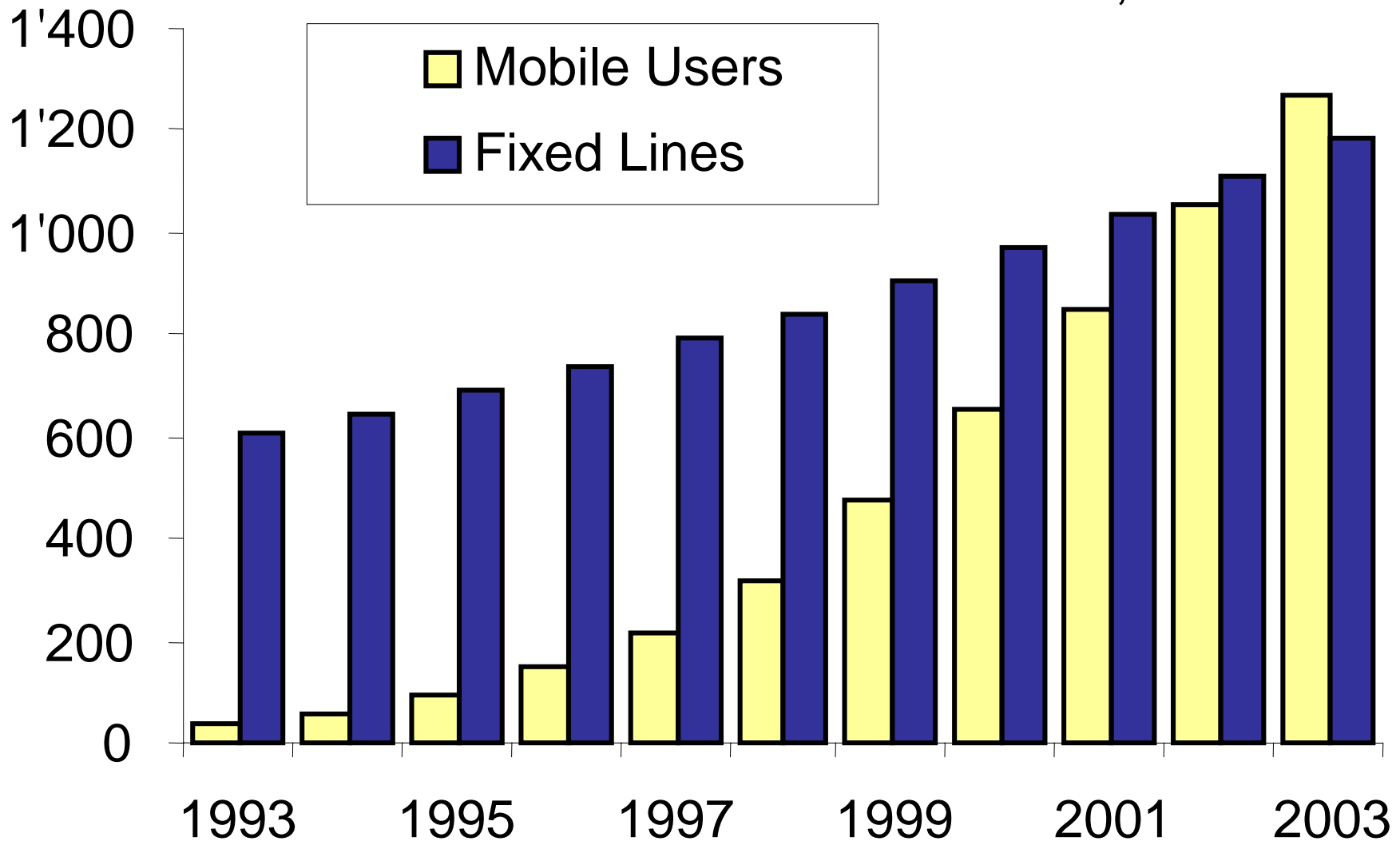
Agenda

- **Market situation**
 - In the world in general
 - In the CEE, CIS and Baltic countries (CCB)
- **Telephony (fixed-line)**
 - Future trends
 - What need to do in this region (USO)
- **Mobile phone**
 - General trends
 - What to do to be competitive
- **Internet**
 - Connectivity in Developing countries



A Mobile Revolution

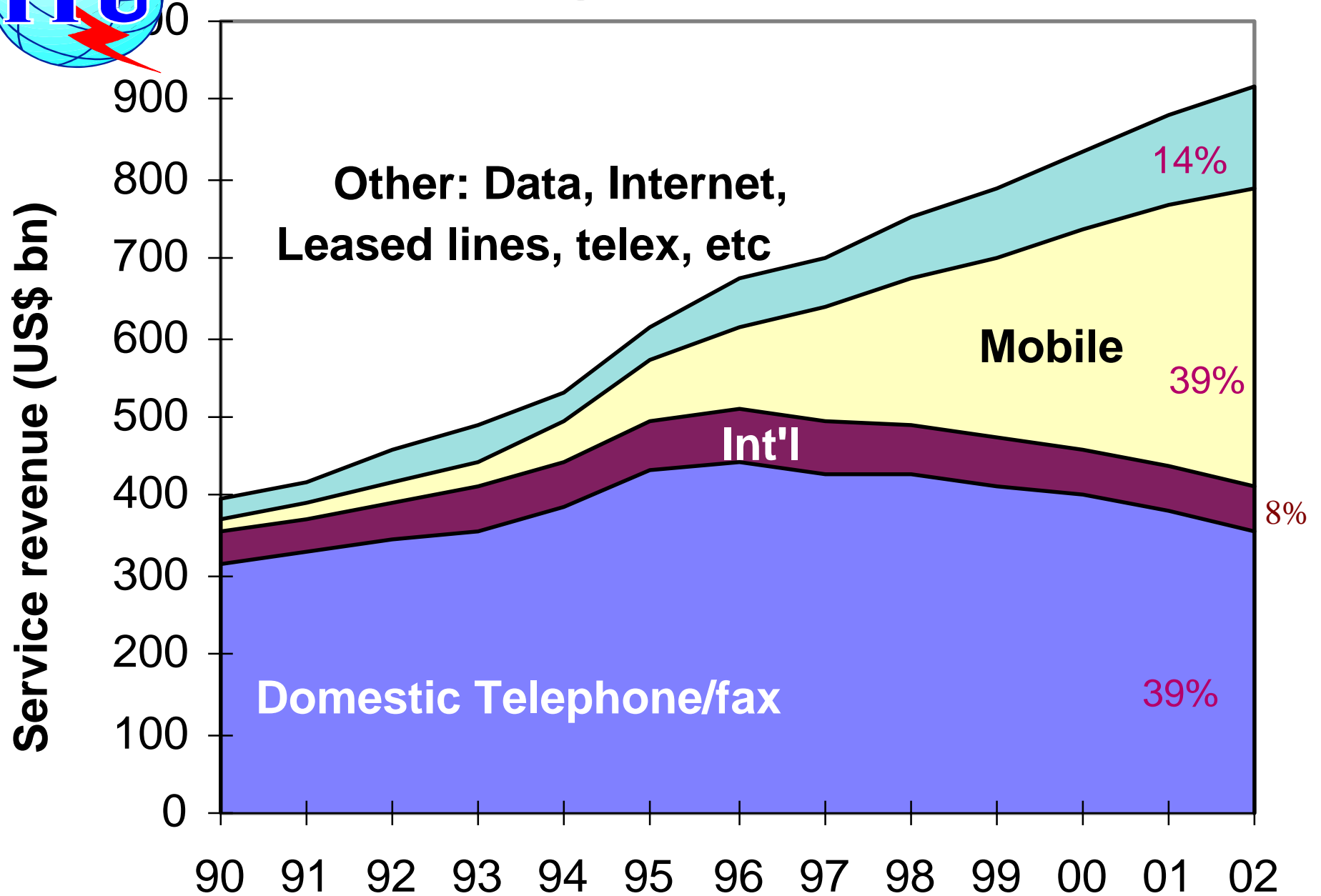
Fixed Lines vs. Mobile Users, worldwide, Million



Source: *ITU World Telecommunication Indicators Database.*



Revenue growth (US\$bn)

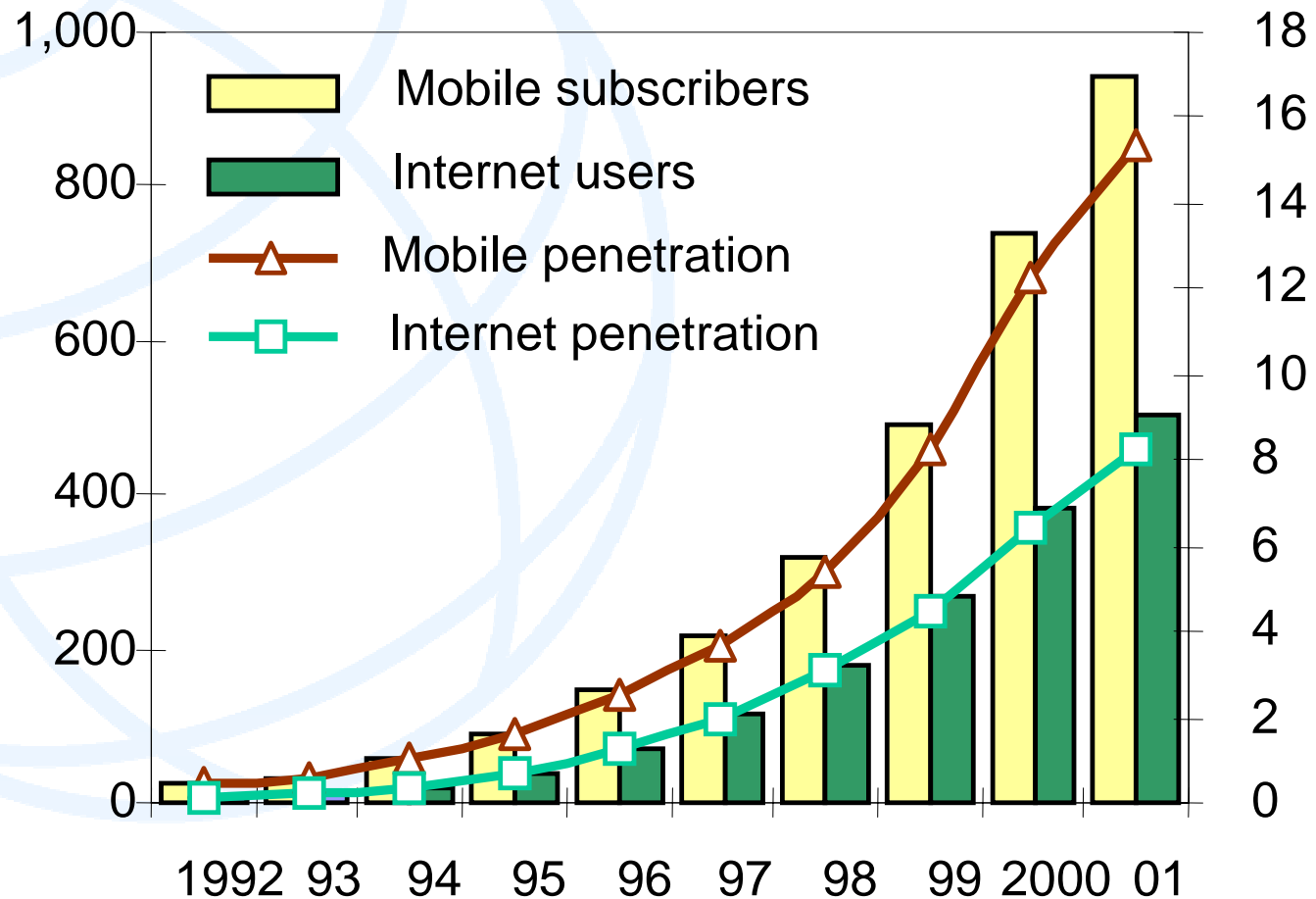


Source: ITU.



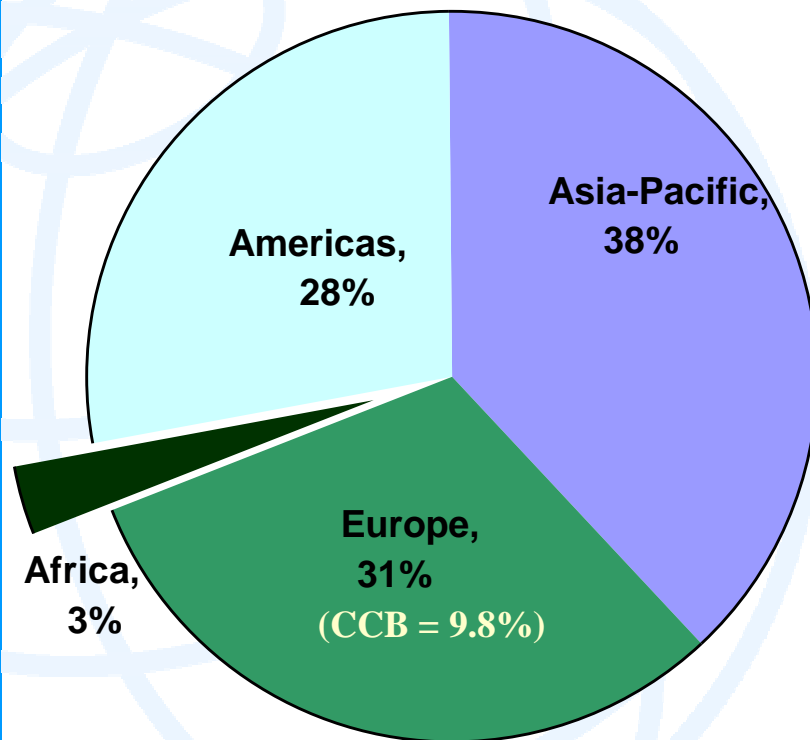
Mobile and Internet: Identical twins born two years apart?

Users (millions) and penetration per 100 pop.



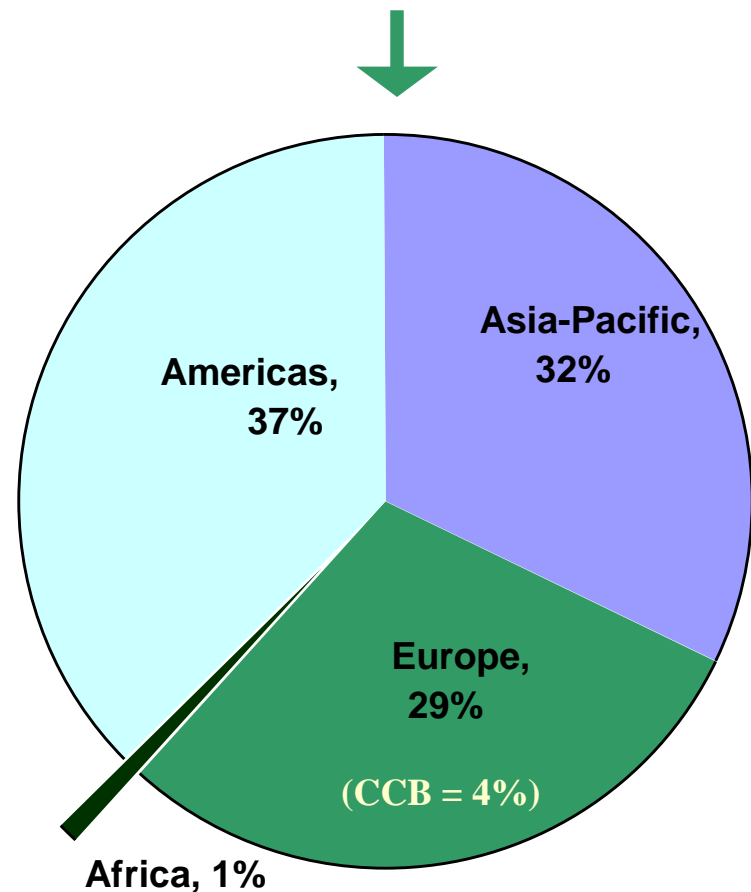


Distribution of mobile and Internet users by region, 2001



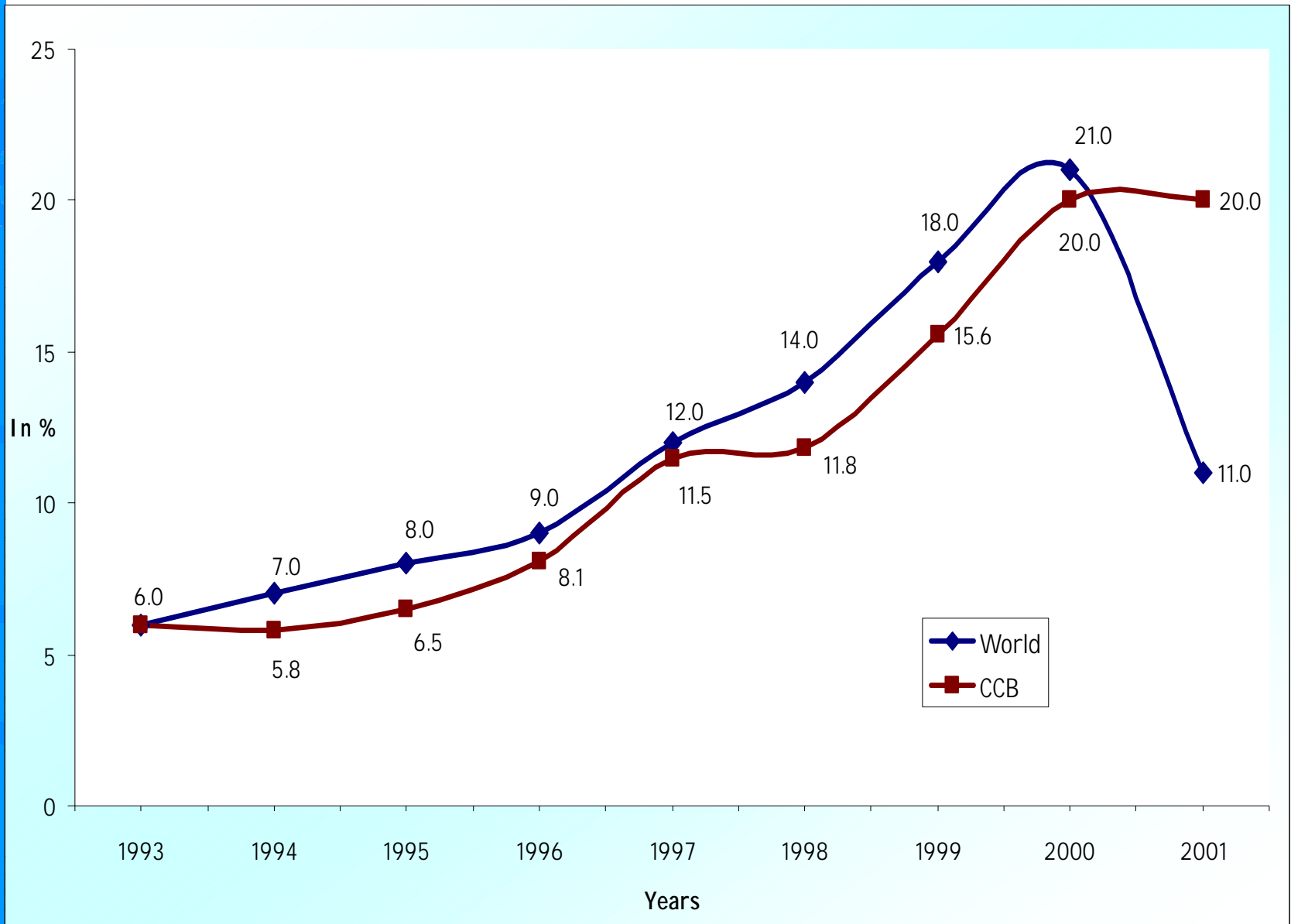
Mobile phone users
948 million

Estimated Internet users, 500 million



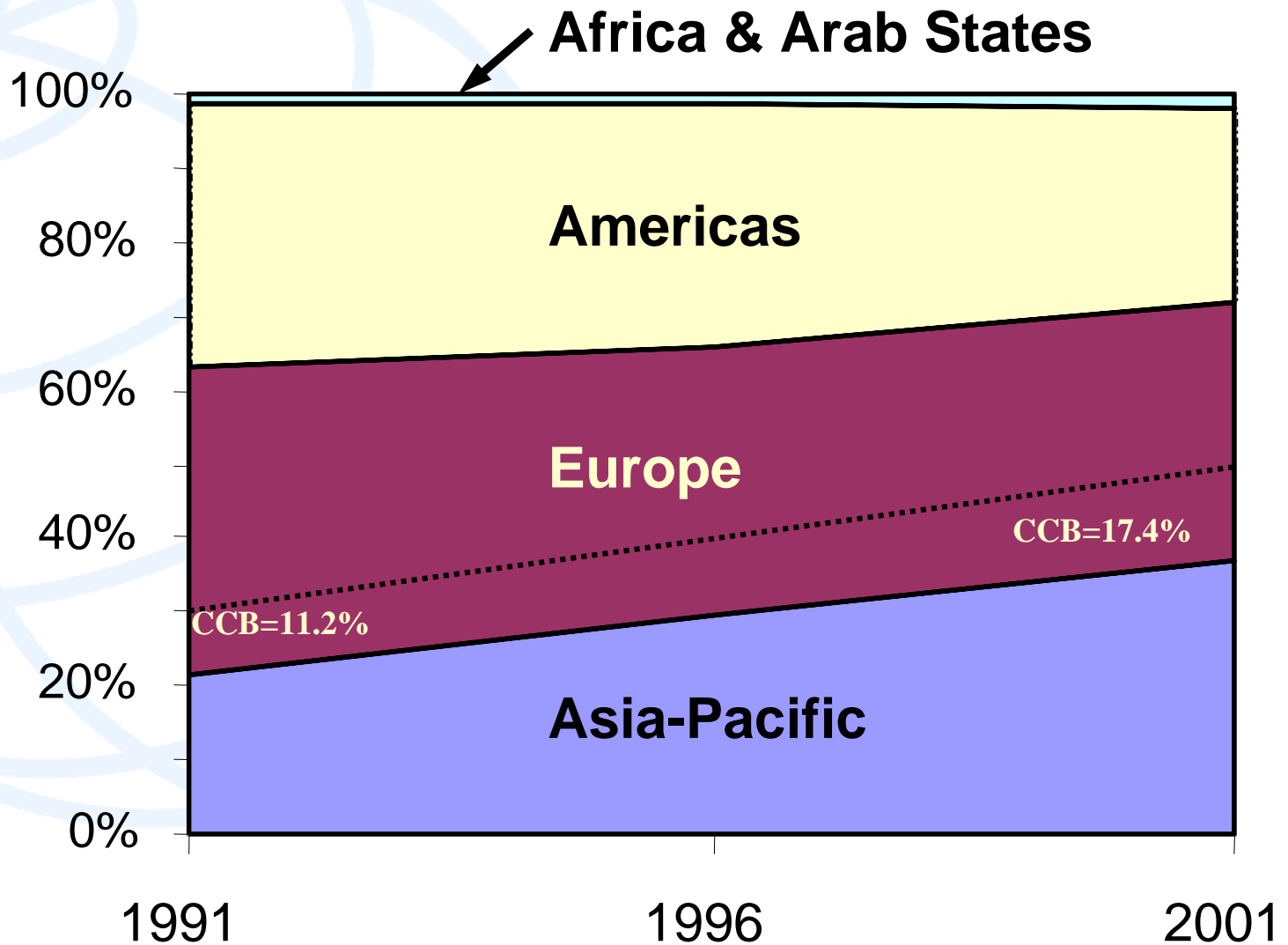


Growth rate in phone subscribers





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	9.2	1.77	2.62	6.7
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 (CCB)	263'183.7 (80'576)	324'484.0 (182'610)	3.6 (13.2)	33.27 (14.4)	40.54 (27.5)	3.3 (11.8)
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 (CCB)	27'800.7 (4'780)	46'739.8 (6'206,6)	10.9 (6%)	58.7 (9.8)	147.5 (40.72)	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 GDP 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 (CCB)	276'607.5 (35.780)	347.1 (56.5)	873 (267)	141'229 (35.439)	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

	Waiting list for telephone lines			Total demand	Satisfied demand	Waiting time (years)
	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 (CCB)	21'420.4 (20'904)	11'838.2 (11'616)	-11.2 (-11.0)	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

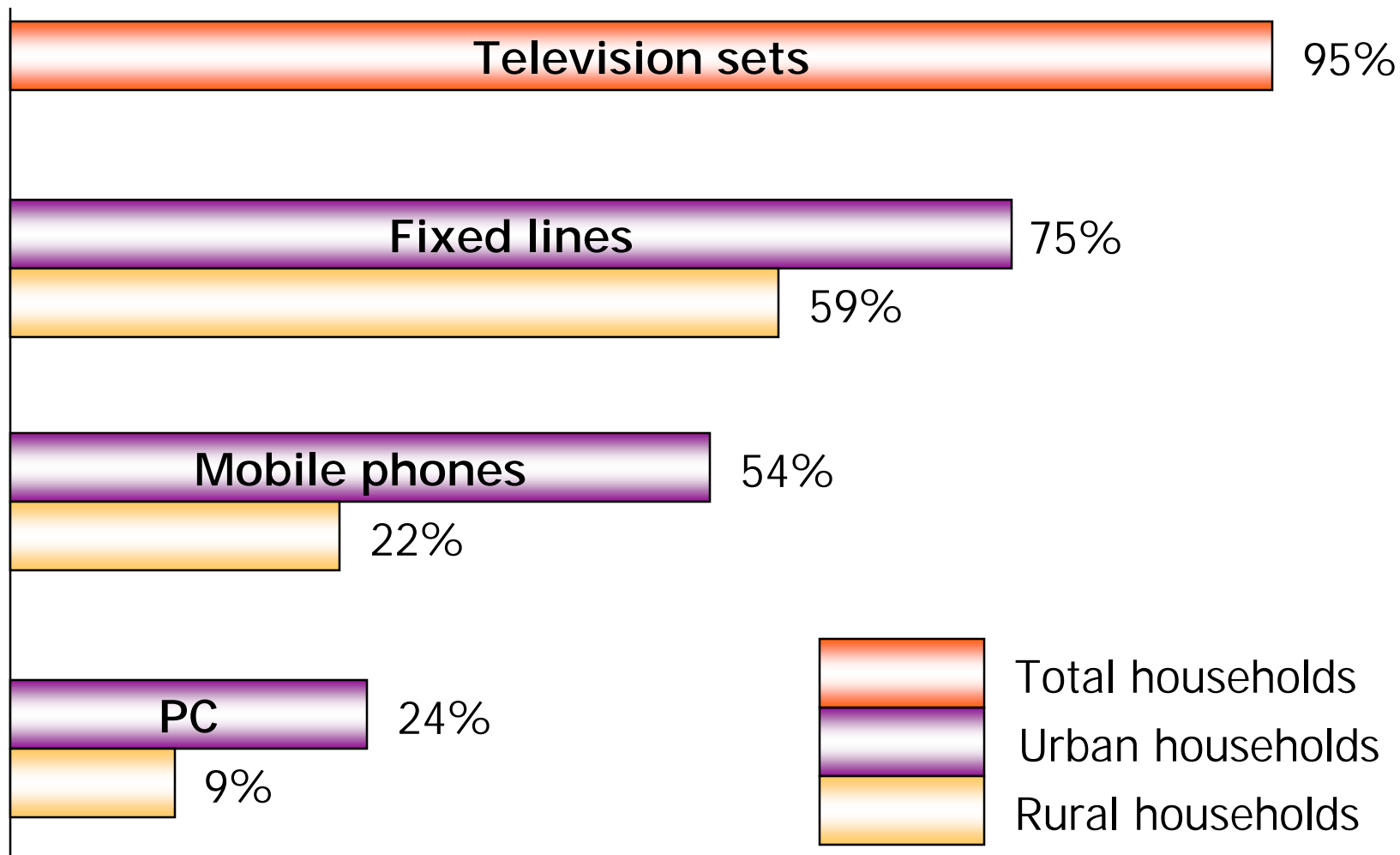


Telecommunications investment

	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 (CCB)	53'056.9 (6'408)	66.6 (10.2)	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

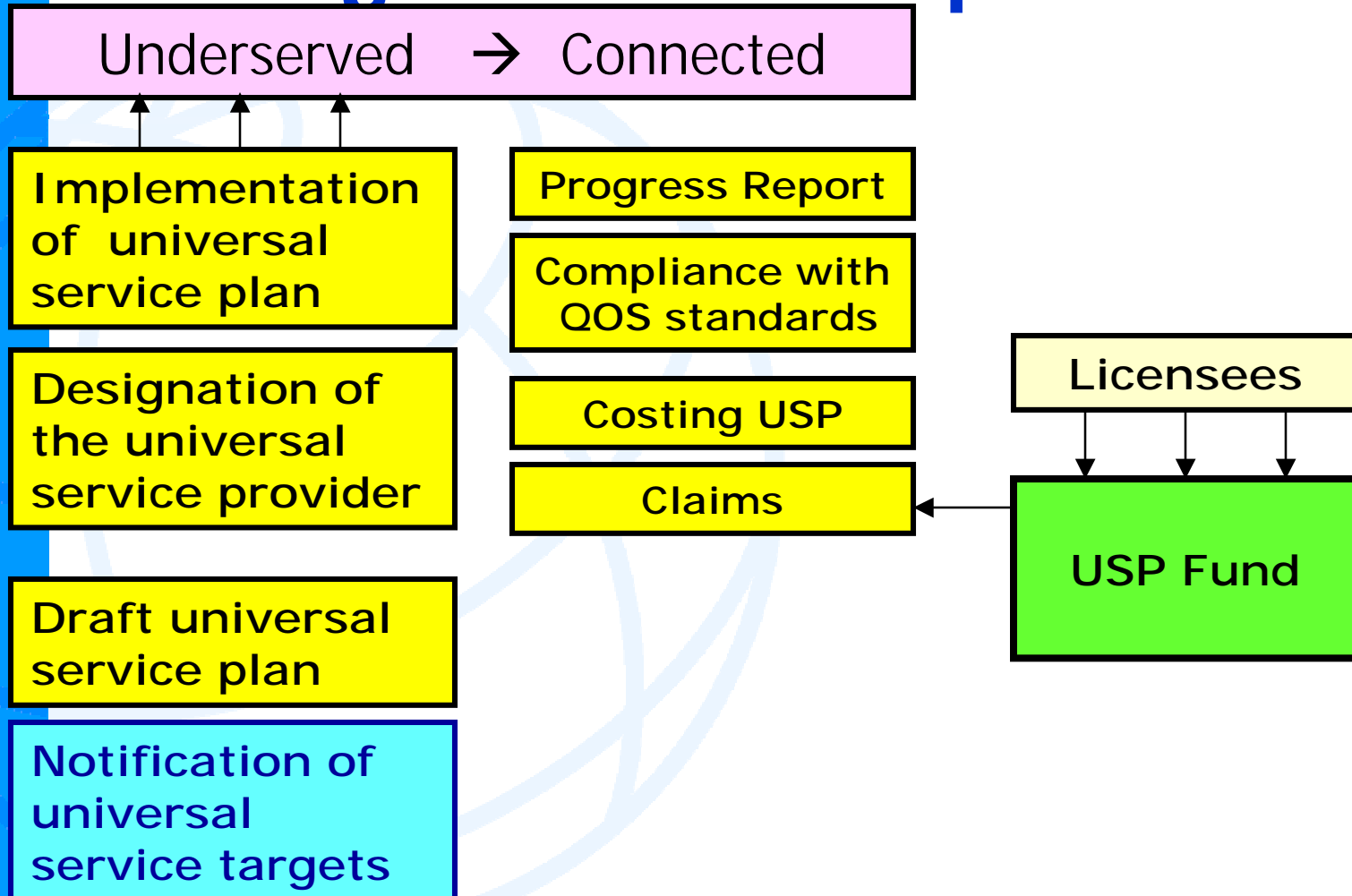
Objective 3:
Collective access to Internet access services

Objective 2:
Individual access to basic telephony services

Objective 4:
Individual access to Internet access services



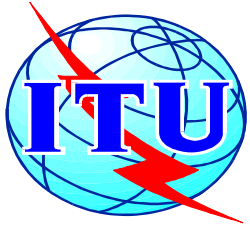
USP Regulations - Graphical Points



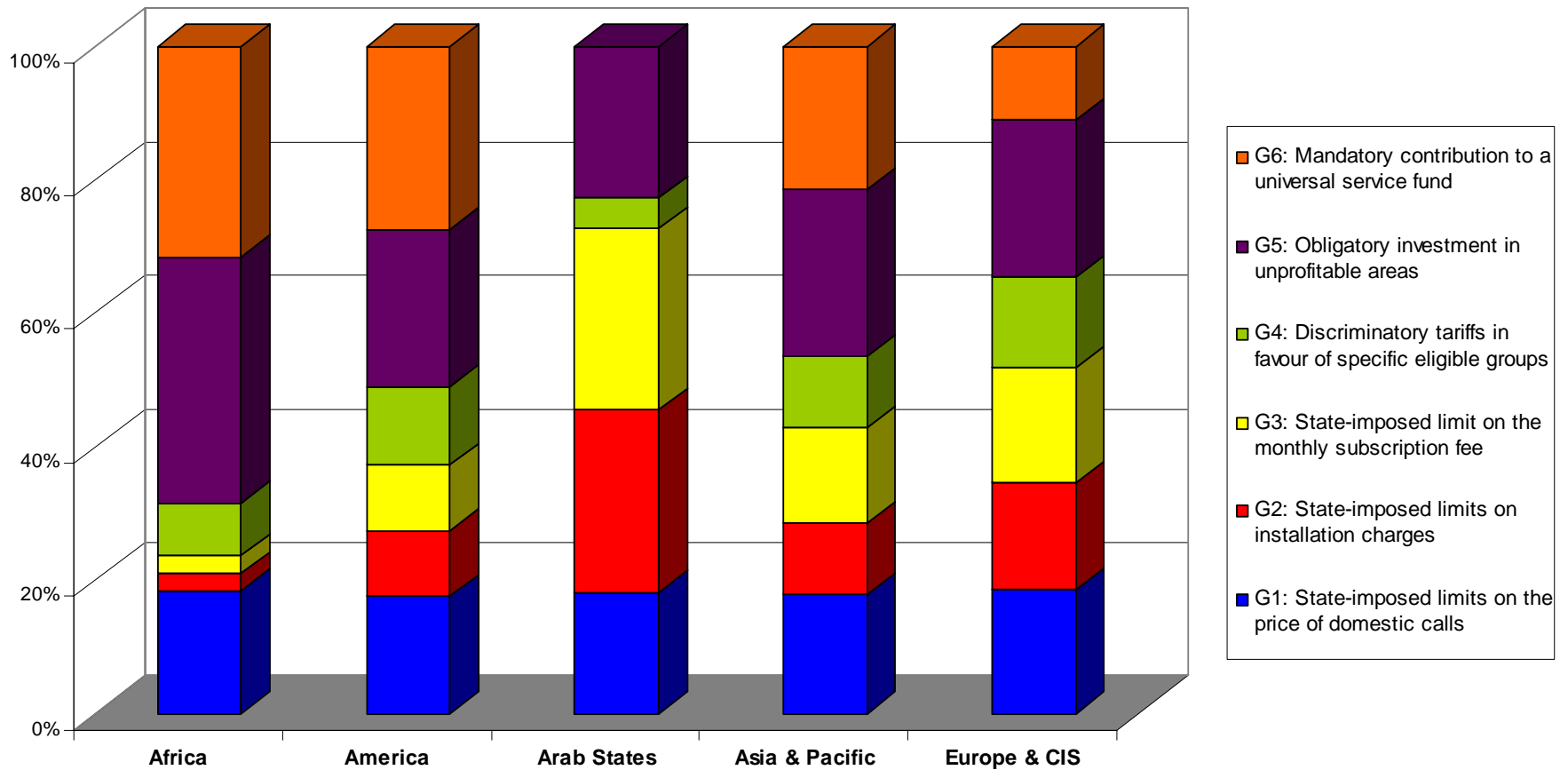


Selected Highlights

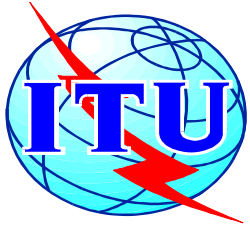
- Costing of universal service provision
 - Commission shall pay the designated universal service provider from the USP Fund the cost incurred in implementing the approved universal service plan in a universal service target
 - The net cost in implementing the approved universal service plan is computed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



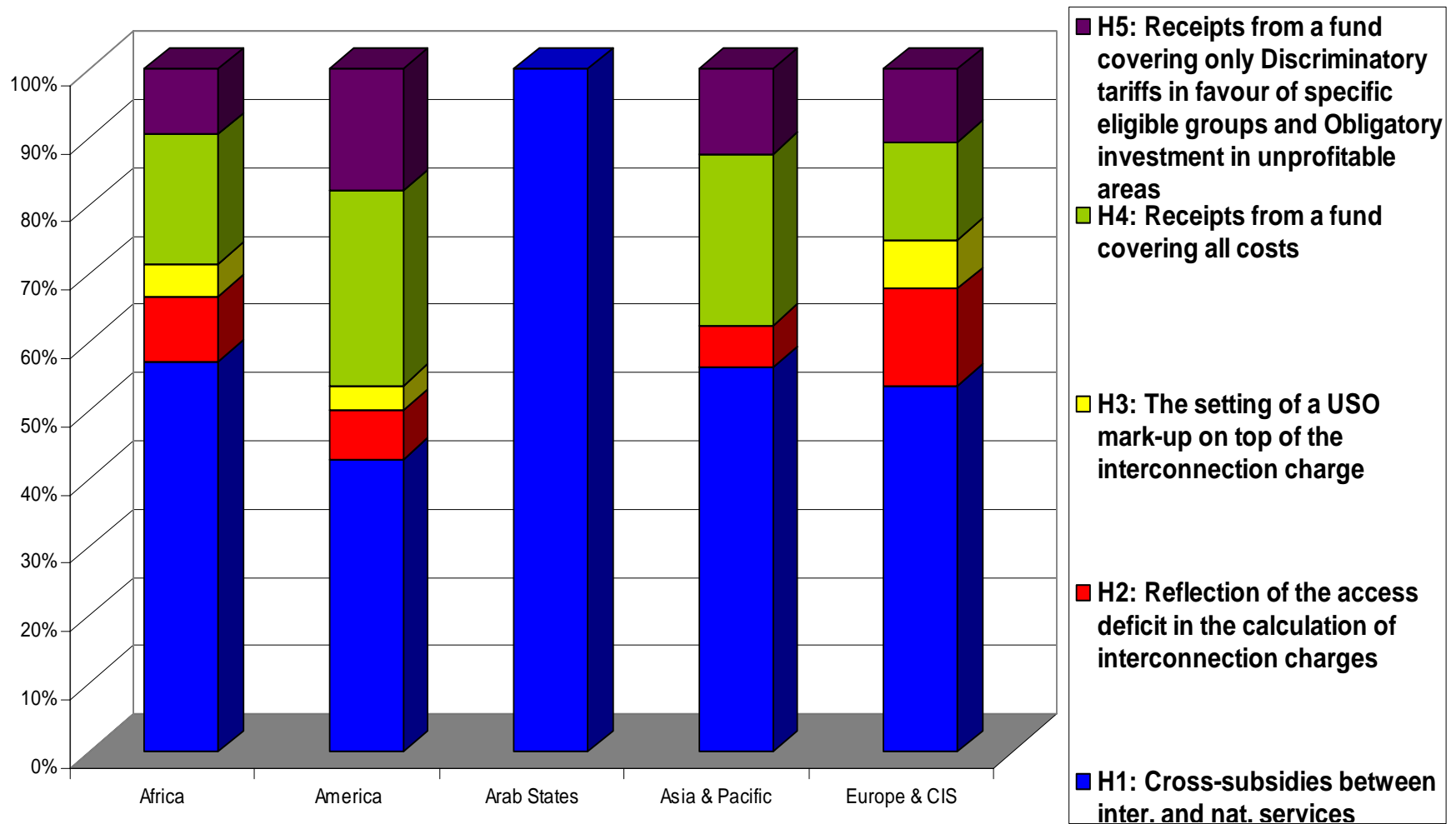
Universal service policy implementation in domestic market



Source: ITU/BDT Tariffs Policies Database



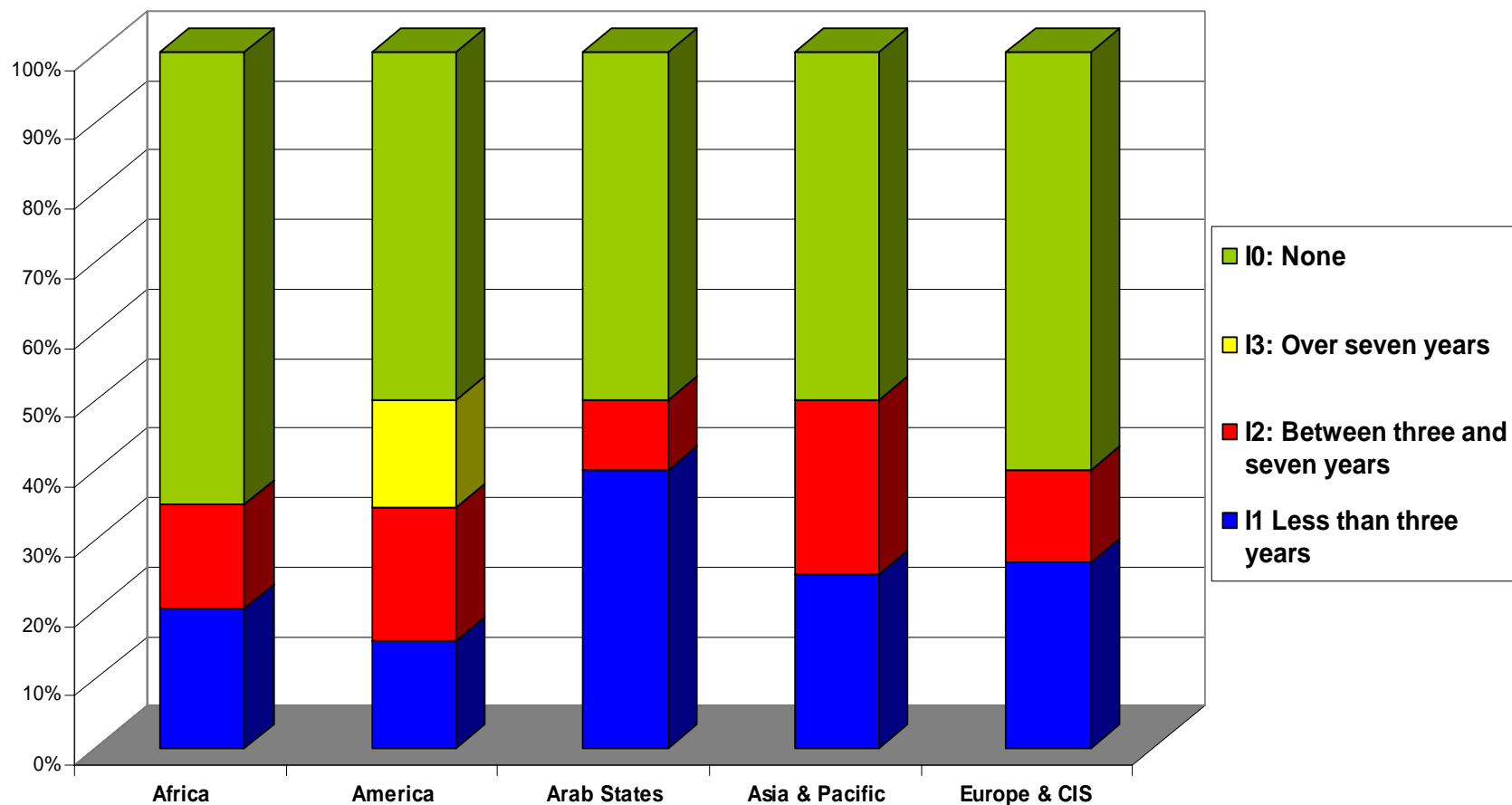
How are your universal service costs financed



Source: ITU/BDT Tariffs Policies Database



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



Source: ITU/BDT Tariffs Policies Database



BDT Study on USO

ITU-D Study Group 1, Question 7/1

Universal access/service

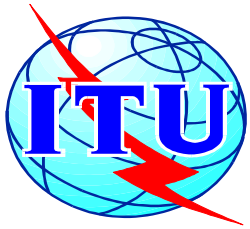
http://www.itu.int/ITU-D/study_groups

Regulatory profile:

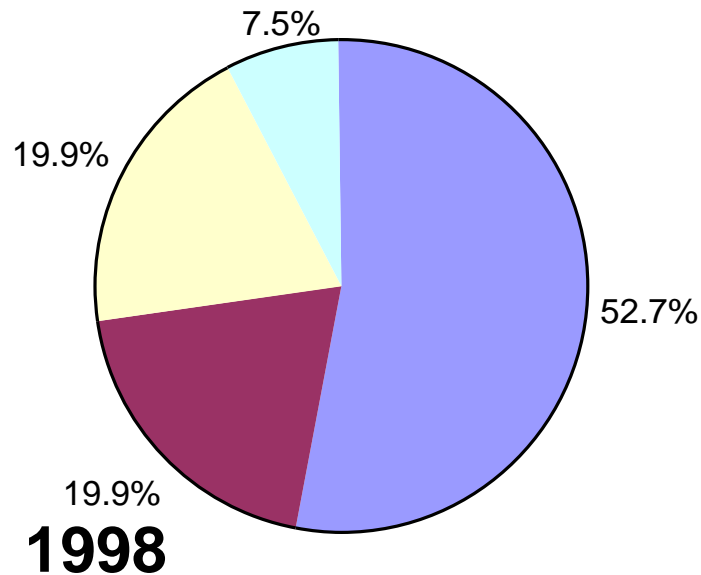
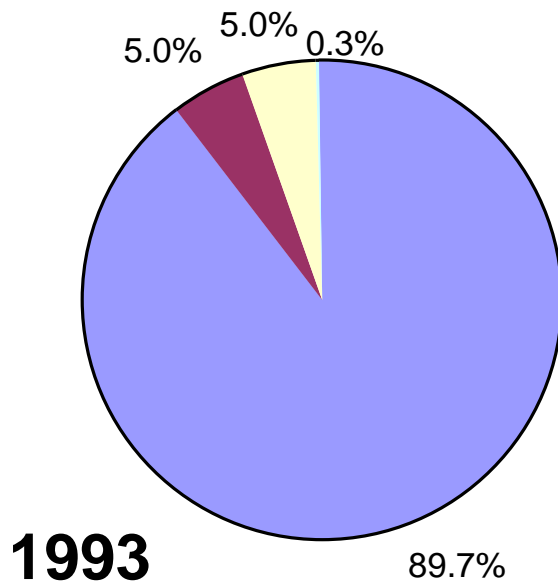
<http://www.itu.int/ITU-D/treg/>

Tariff Policies database

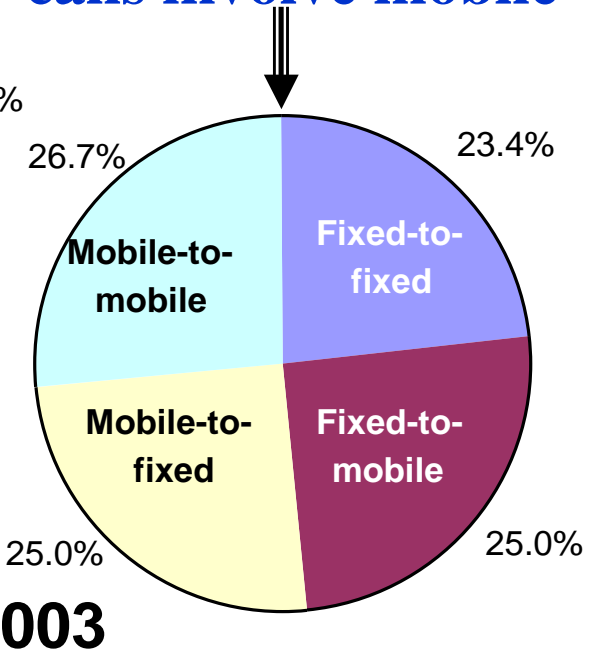
<http://www.itu.int/ITU-D/finance/work-cost-tariffs/sq1/>



Calling opportunity in the world



More than 75% of calls involve mobile



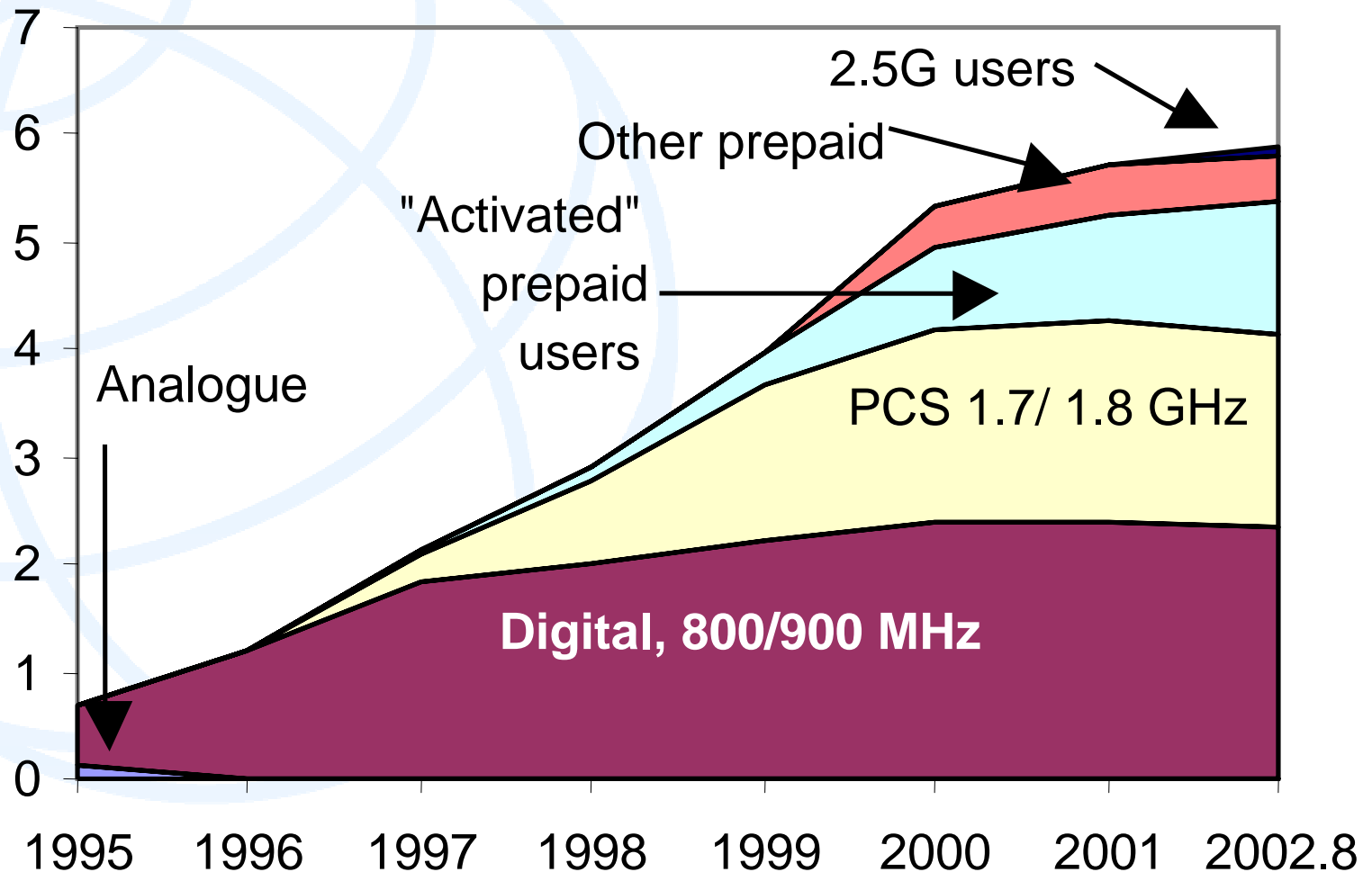


Mobile subscribers

	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 (TAL)	40'257.1 (3'881.6)	223'366.0 (7'127.0)	32.7 (11.6)	2.0 (0.1)	20.8 (7.4)	41.7 (112.3)
Asia	23'104.7	335'767.4	74.7	3.0	20.2	63.0
Europe	24'084.1	349'563.8	56.2	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



Mobile generations: Hong Kong, China (million users)



Source: ITU
Asia-Pacific
Telecom
Indicators.

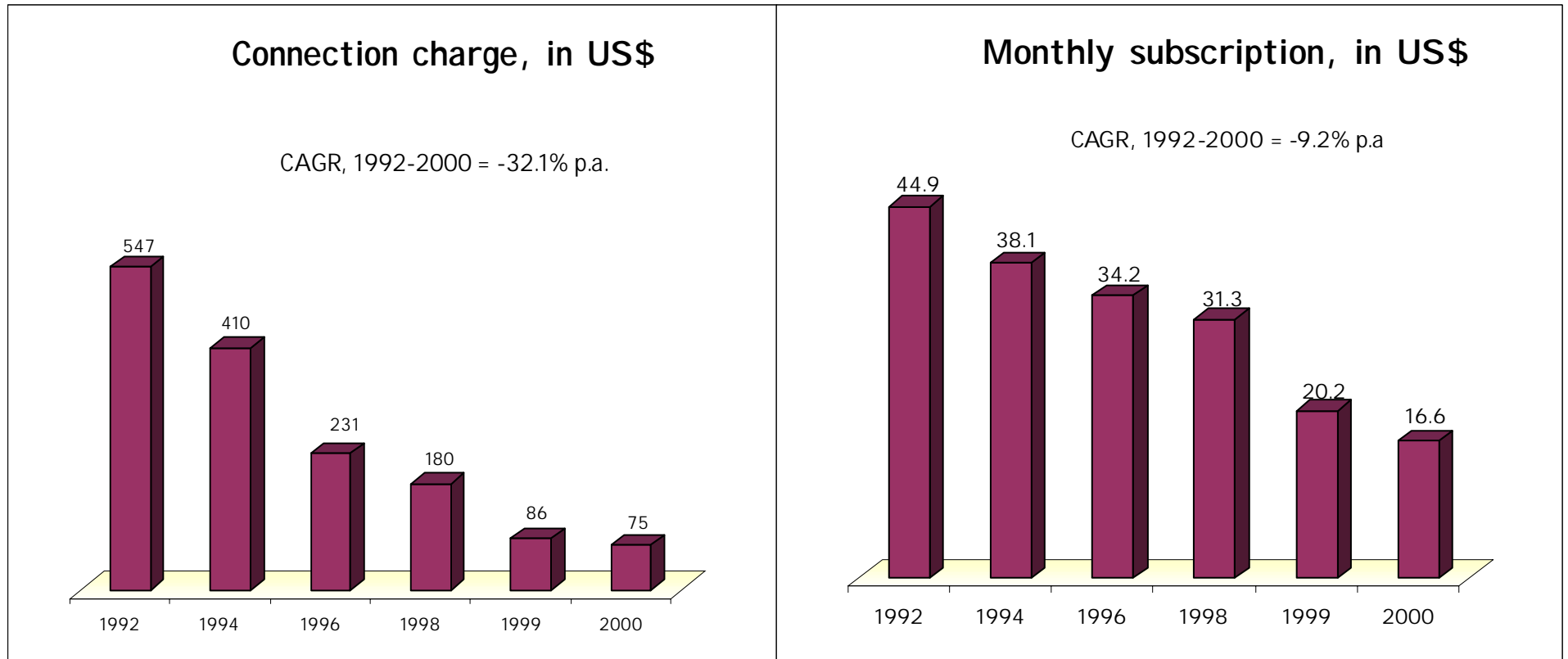
OFTA

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

Source: <http://www.uk.orange.net/kit/index.html>.

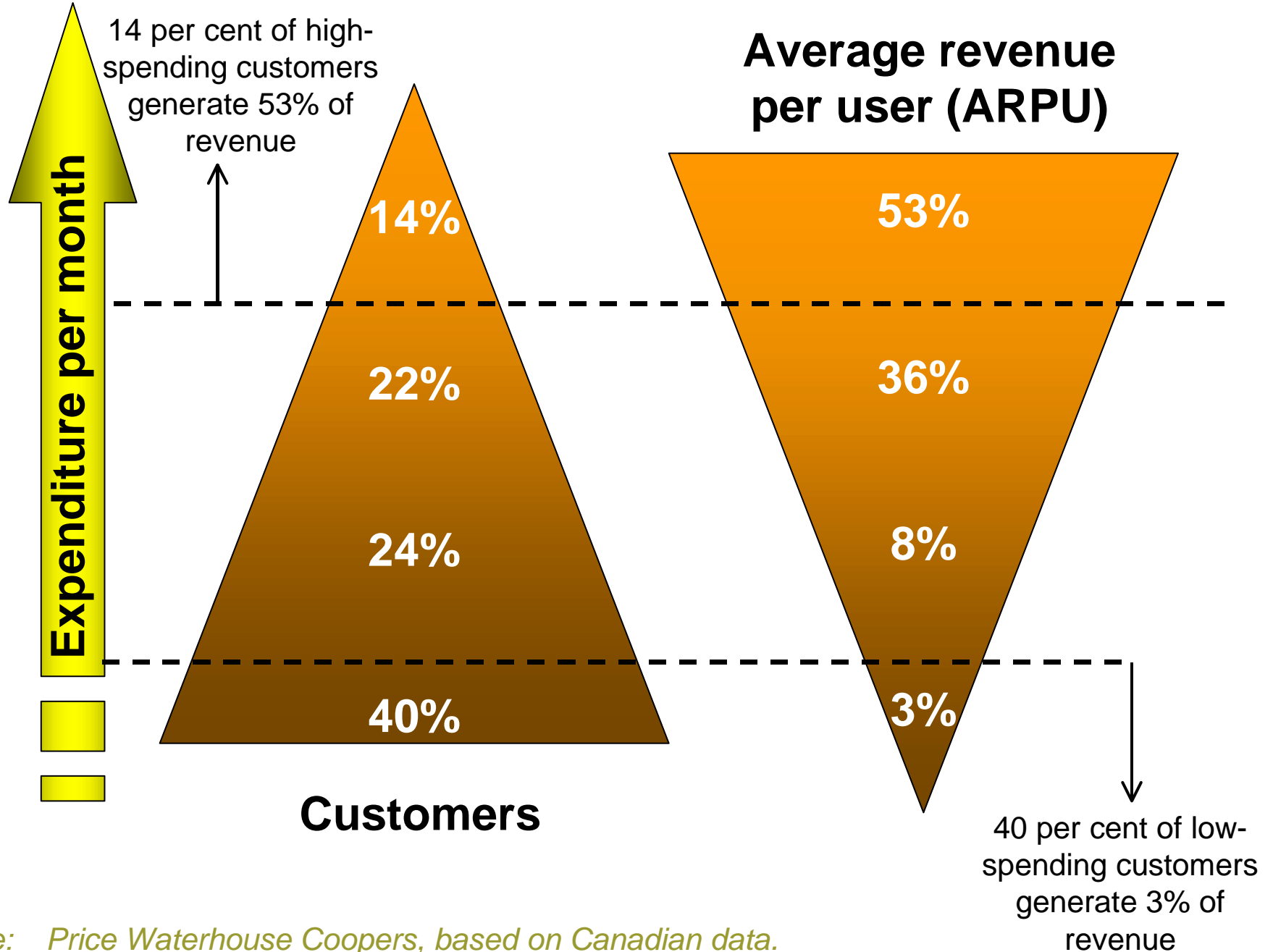
Declining prices for mobile access, global average, in US\$, 1992-2000



Note: CAGR = Compound Annual Growth rate.

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

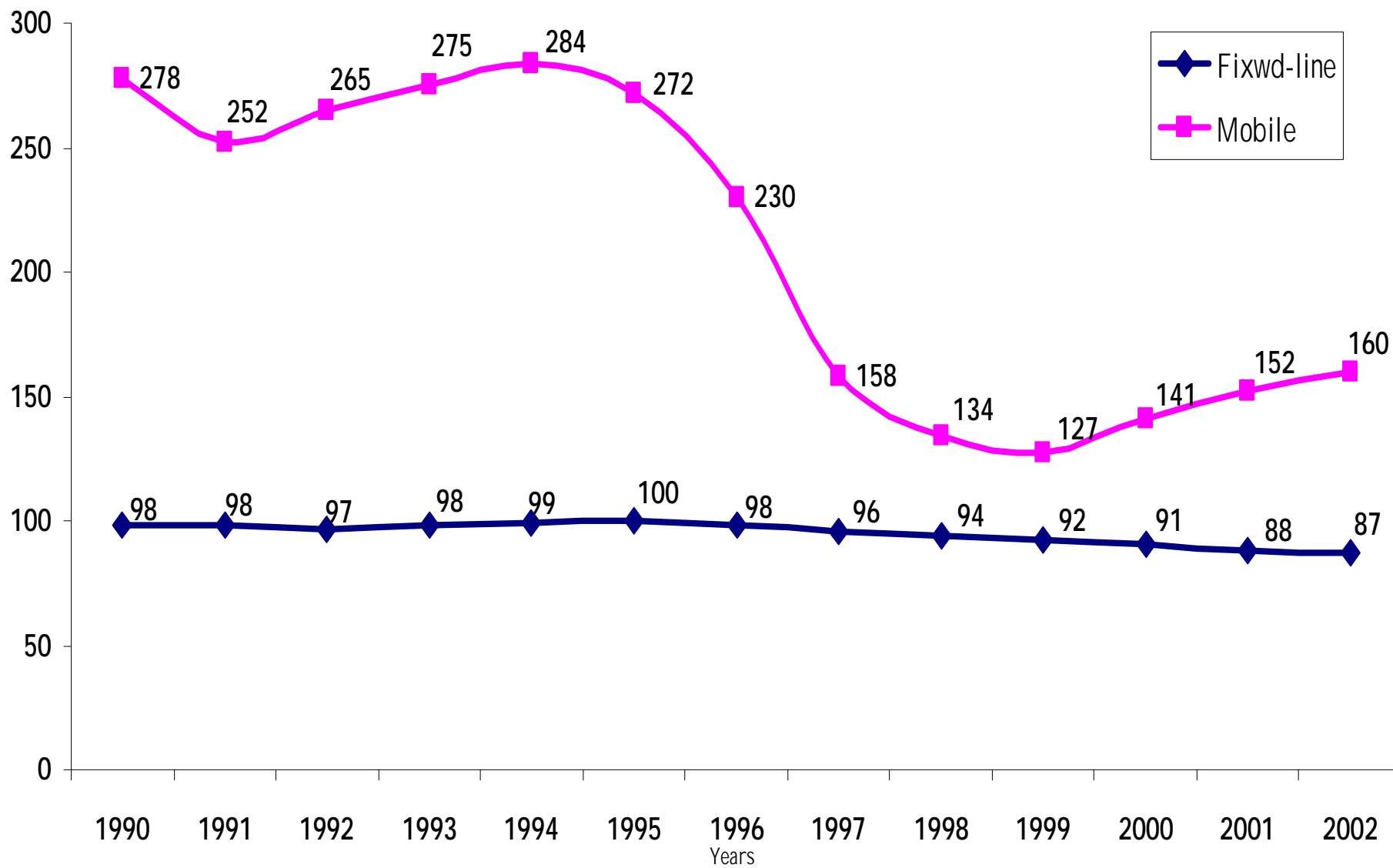
Cultivate the high-spenders



Source: Price Waterhouse Coopers, based on Canadian data.

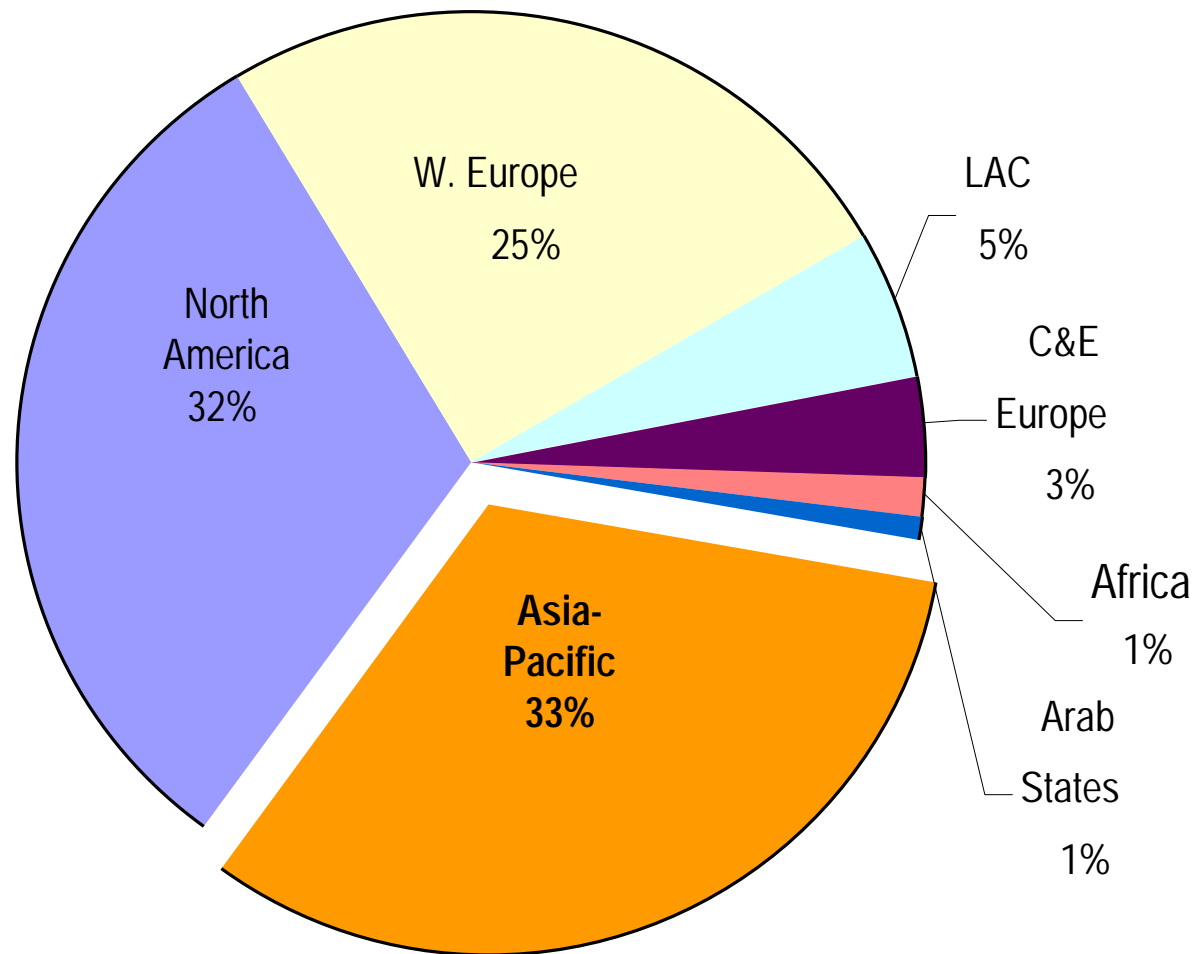
Mobile and Fixed-line ARPU in Japan

Yen 1,000



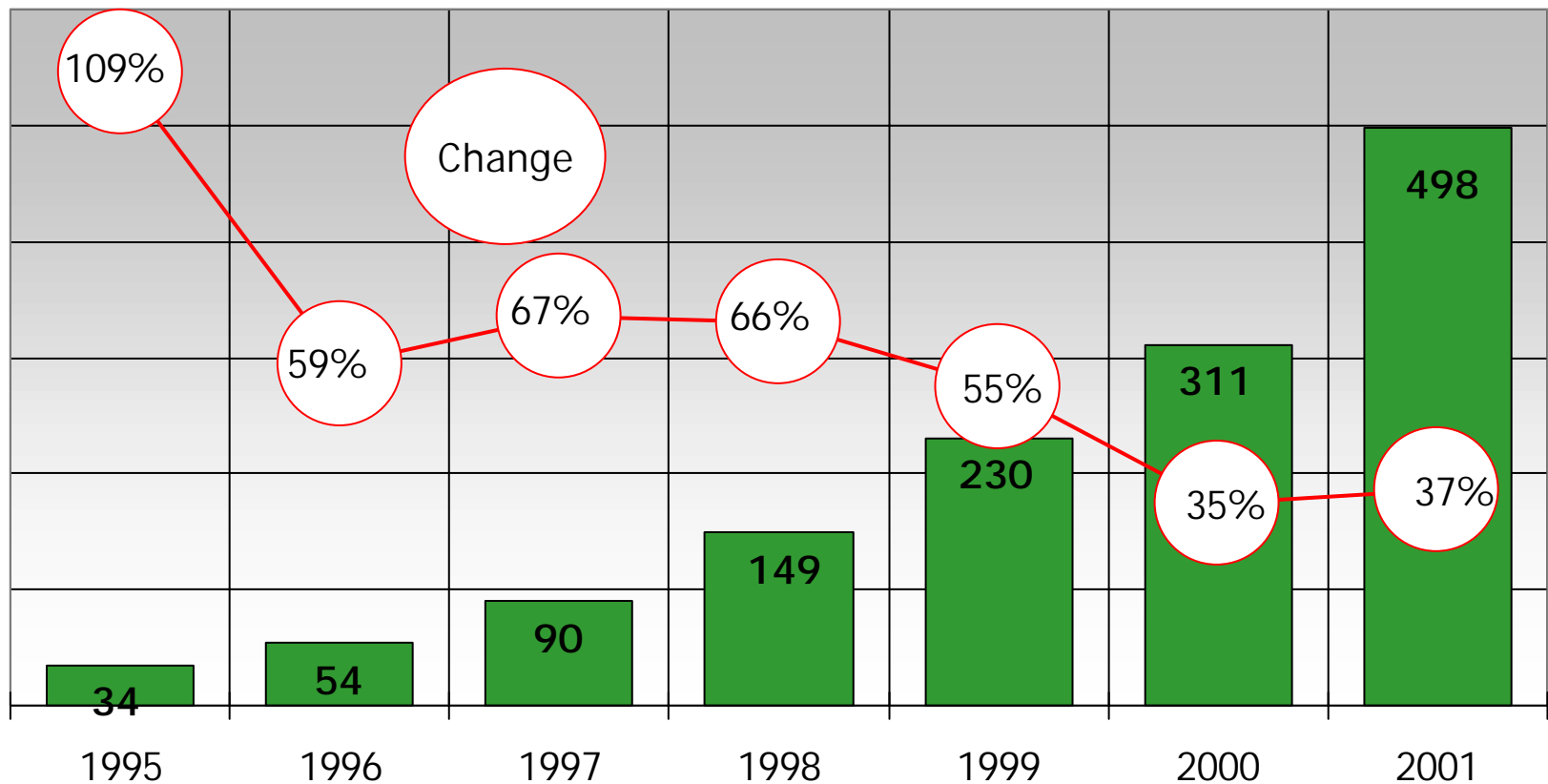


Distribution of Internet users, 2001



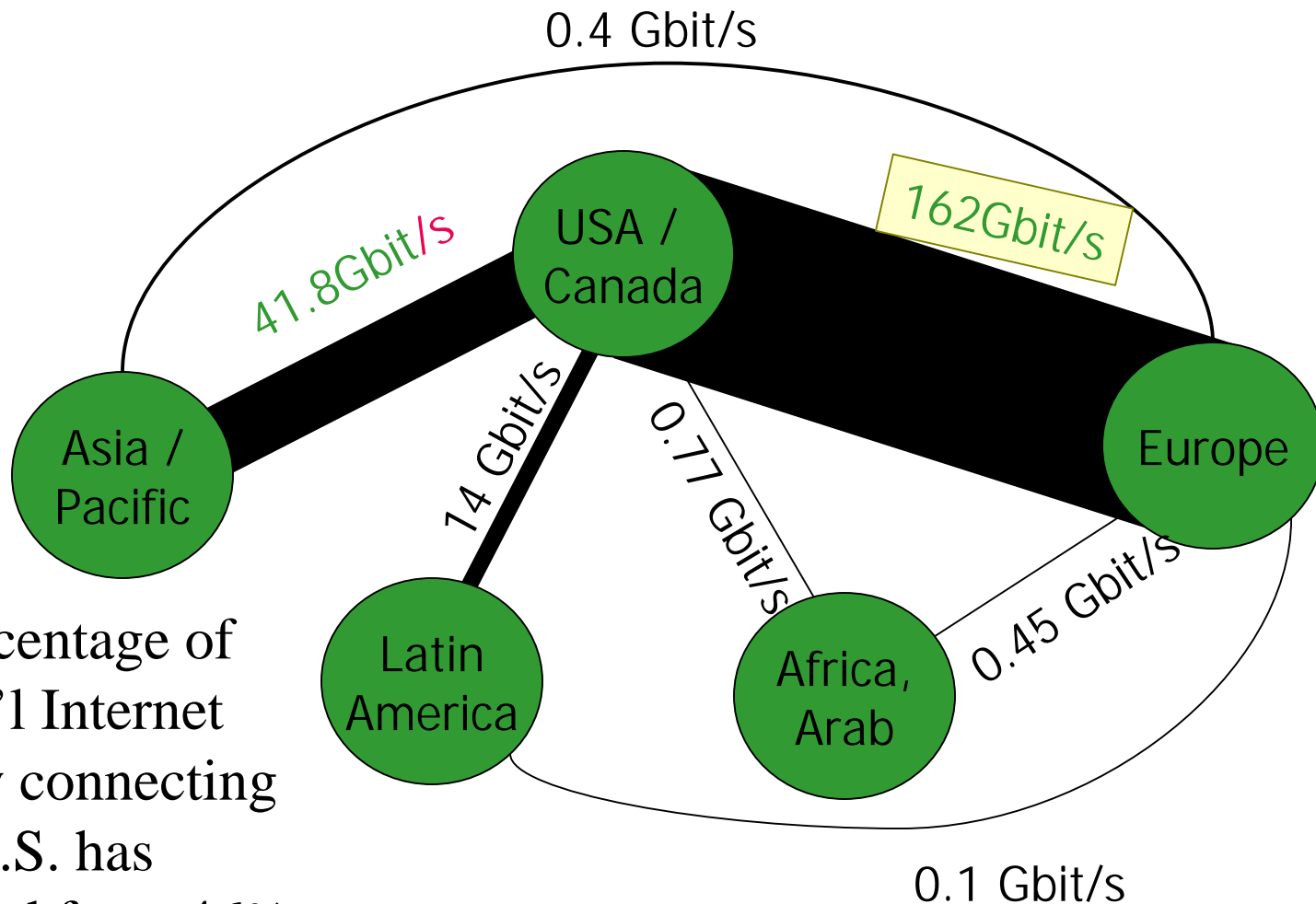
The Internet continues to grow...

Internet users, million, and growth rate in %



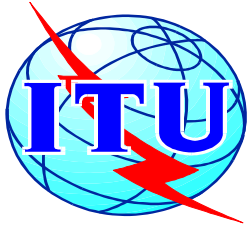
Source: ITU.

Inter-regional Internet connectivity



The percentage of total int'l Internet capacity connecting to the U.S. has decreased from 46% in 1999 to 34% in 2002

Note: Gbit/s = Gigabits (1'000 Mb) per second.
Source: ITU adapted from TeleGeography.

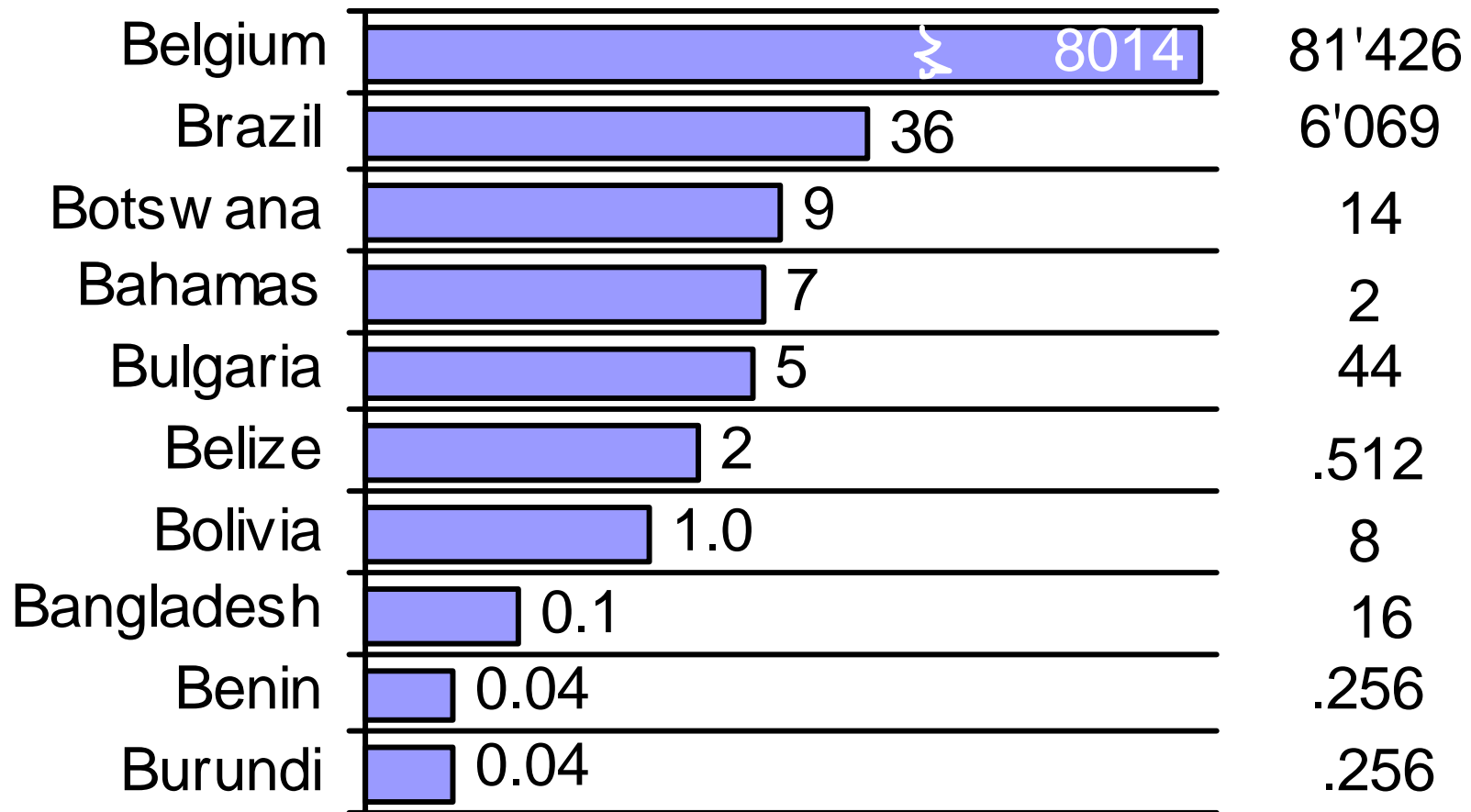


Bandwidth begins with “B”

International Internet

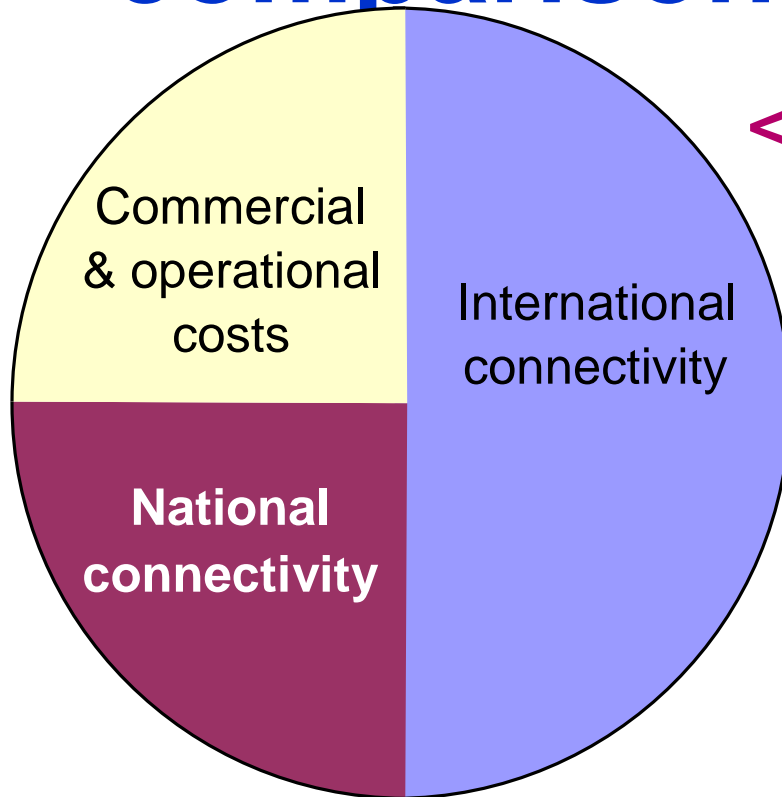
Bandwidth per capita (bit/s)

Total (Mbps)



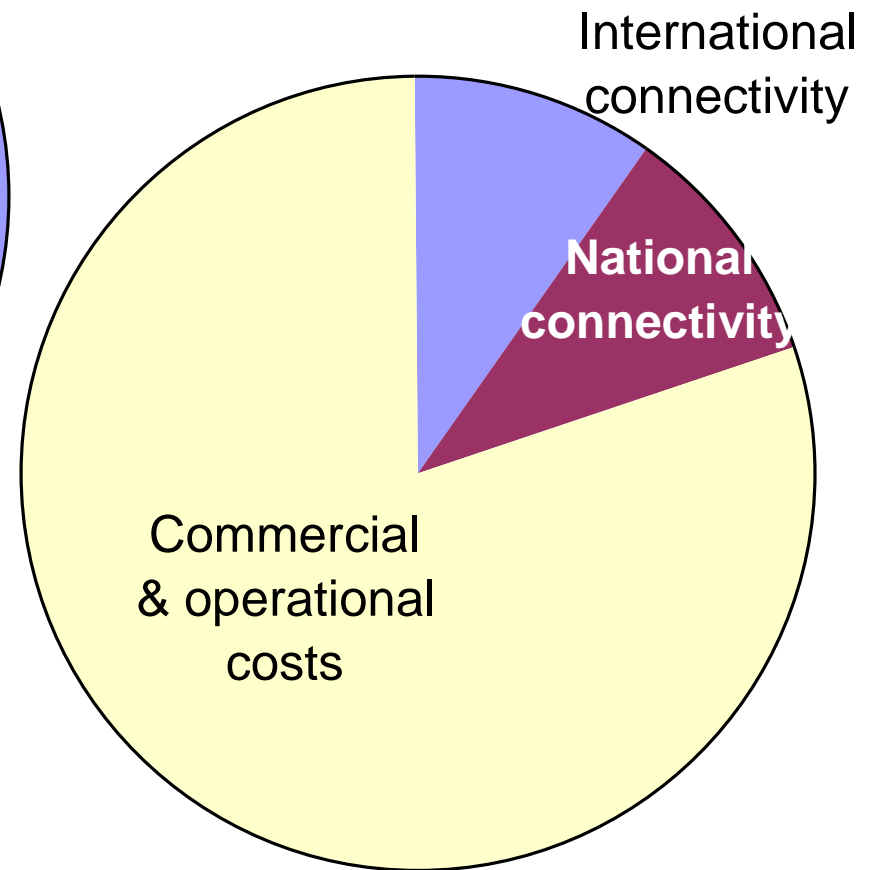
Source: ITU World Telecommunication Development Report, 2002: Reinventing Telecoms

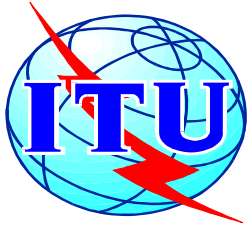
Typical ISP cost comparisons



OECD countries >>>

<<<Developing countries





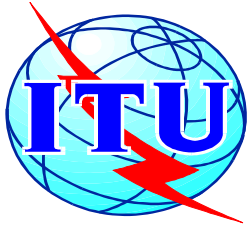
Two LDC “success stories”

● 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**

ITU-T Recommendation D.50

International Internet Connection

**The World Telecommunication Standardization Assembly (Montreal, 2000),
*recognizing***

**the sovereign right of each State to regulate its telecommunications, as
reflected in the Preamble to the Constitution,**

noting

- a) the rapid growth of Internet and Internet protocol-based international services;**
- b) that international Internet connections remain subject to commercial agreements between the parties concerned; and**
- c) that continuing technical and economic developments require ongoing studies in this area,**

recommends

that Administrations involved in the provision of international Internet connections negotiate and agree to bilateral commercial arrangements enabling direct international Internet connections that take into account the possible need for compensation between them for the value of elements such as traffic flow, number of routes, geographical coverage and cost of international transmission amongst others.

Greece and the United States of America have expressed reservations and will not apply this Recommendation.



Rapporteur Groups meeting in Brussels (28 – 30 April 2003) and (20-21 October 2003)

- ① study of the effects of peering
- ② Self-help by smaller networks with limited traffic
- ③ development of general principles in Recommendation D.50

ANNEX A to Recommendation D.50

GUIDELINES FOR INTERNATIONAL INTERNET INTERCONNECTION NEGOTIATIONS

When Parties involved in the provision of international Internet connections negotiate interconnection between their respective networks, interconnect prices and other commercial arrangements between two correspondent Parties should take account of the following:

- 1) Network connectivity:
- 2) Traffic flows and peak link capacity:
- 3) Cost of international link capacity and its apportionment:
- 4) Additional customer revenues:
- 5) Service support commitment:
- 6) Service performance:
- 7) Interconnect and other fees:
- 8) Legal liability: