

ITU/ITC Regional Seminar on Network Evolution to NGN
and Fixed Mobile Convergence

Session 3.3.1

Trends for Fixed and Mobile
users growth based on
statistics data for ICT Indicators



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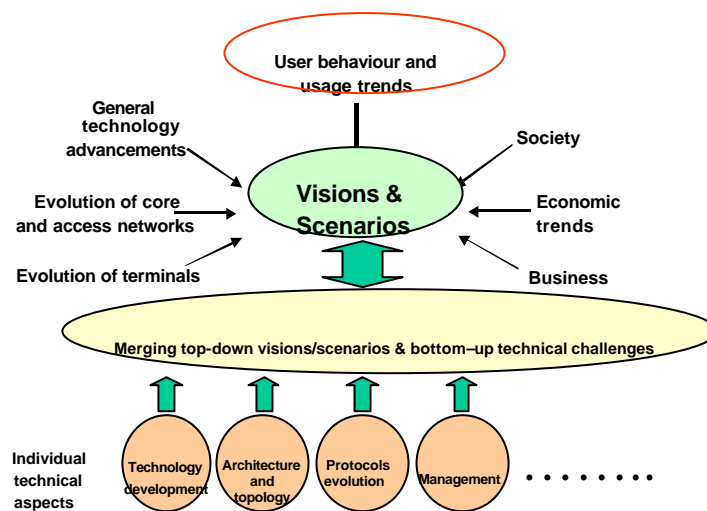


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Networks Evolution Factors

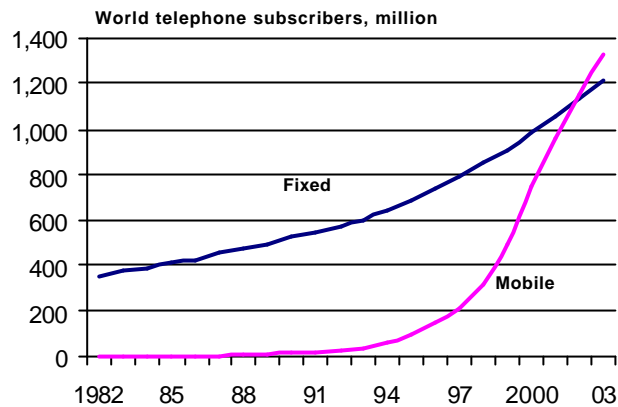


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Mobile and Fixed users



Worldwide GSM Subscribers as at end February 2004 = 1024.3 Million

GSM accounts for 72.5 % of the World's digital market and 72% of the World's wireless market (1.4 B)

Impact of Cellular mobile development on the Fixed network:

The impact of the Cellular mobile development on the fixed network is based on the statistics for:

- ❖ Fixed network teledensity
- ❖ Percentage of residential lines
- ❖ Cellular mobile teledensity

The compound annual network growth of the telephone lines and the mobile subscribers could also serve as indicator

Network growth (compound annual rate in %) :

Network growth (compound annual growth rate in %)	New telephone lines added 2000-2001	New mobile subscribers added 2000-2001
Low Income	8,3	72,4
Lower Middle Income	17,2	70,5
Upper Middle Income	7,4	27,8
High Income	0,3	14,8
Africa	7,6	51,0
Americas	2,1	21,2
Asia	12,4	38,4
Europe	2,4	20,0
Oceania	0,2	26,7
WORLD	6,0	26,7

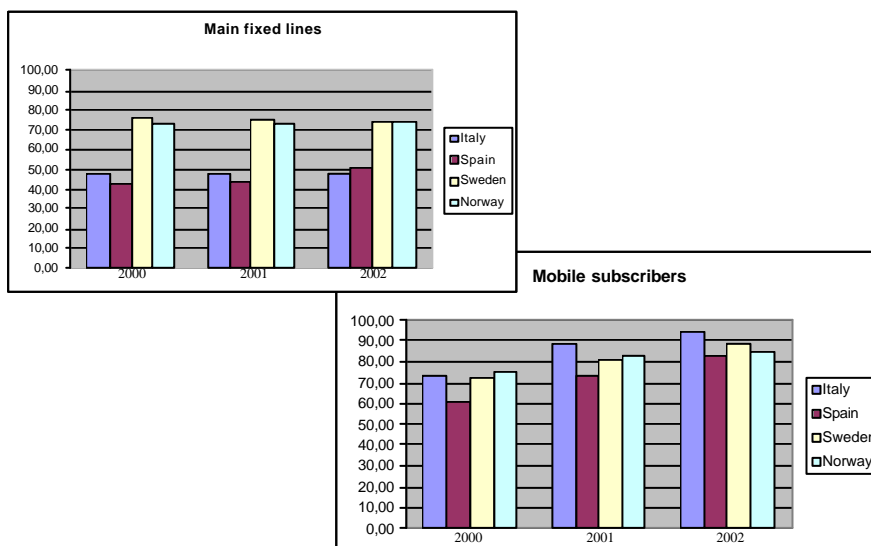
World
telecommunication/
ICT indicators
ITU Database

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Fixed and mobile users growth (high income) :



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Impact of Cellular mobile on Fixed teledensity:

Case of Italy:

Year 1997: fixed teledensity **44,8 %**, residential lines 76,5 %

cellular mobile teledensity 20,5 %

Year 2000: fixed teledensity **47,4 %**, residential lines 67,1 %

cellular mobile teledensity 73,7 %

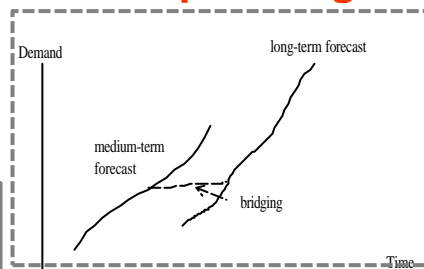
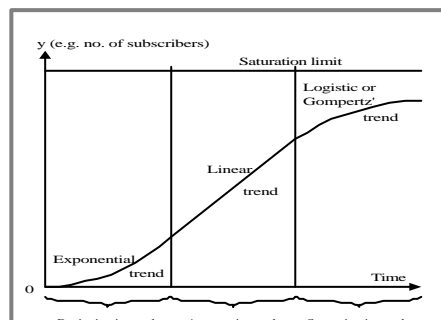
Year 2002: fixed teledensity **48,1 %**, residential lines 79,2*%

cellular mobile teledensity 93,9 %

* for 2001

Long term / strategic network planning :

Based on long-term forecasting - for urban, sub areas, populated places, etc.



Demand/service forecasting uses different methods, including trend methods based on saturation limit

Problem: how to define a saturation limit

Fixed network users potential

Highly developed countries (close to saturation):

Country	Population (in thousands)	Teledensity [%]	Average household size	Teledensity per household [%]	Percent of residential lines
Australia	19,157	53,86	2,64	101,2	75,0
Canada	30,750	63,45	2,65	98,2	63,9
France	58,892	56,89	2,46	94,0	69,2
Germany	82,260	65,08	2,16	95,5	77,0
Italy	57,298	48,07	2,71	96,9	79,2
Japan	126,919	55,83	2,70	116,8	75,8
New Zealand	3,831	44,81	2,91	103,0	78,5
Republic of Korea	47,300	48,86	3,04	105,5	74,1
Spain	40,600	50,62	3,25	100,8	83,5
Sweden	8,881	68,20	2,22	98,7	67,9
Switzerland	7,204	74,42	2,39	99,6	60,0
United Kingdom	59,766	59,086	2,38	93,0	71,0
United States of America	275,130	64,58	2,58	94,1	67,6

• *teledensity per household about 100%*

• *ratio residential to business from 2 / 1 to 3 / 1*

Simple method to evaluate fixed subscribers potential :

Assumptions:

- ❖ **Teledensity per household in the highly developed countries - around 100% (one connection per household)**
- ❖ **Ratio residential to business subscribers - in the range 2 to 1 - 3 to 1 , possibly depending on the strength of the economy**

Note: Average household size in the highly developed countries - between 2 and 3

Simple method:

- ❖ Fixed network subscribers potential is **number of households increased by 1/3** for high potential economies or by **1/4** for others

Application of the simple method for evaluating fixed subscribers potential :

Bulgaria :

2,9 Million households - 3,9 Million potential fixed subscribers (50 %) – now 36,7 % teledensity for 2,7 HH size

China :

347 Million households – 462 Million potential fixed subscribers (36 %) – now 16,7 % teledensity for 3,7 HH size

South Africa :

10,2 Million households – 13,6 Million potential fixed subscribers (30 %) – now 11,0 % teledensity for 4,5 HH size

Russia:

52 Million households – 78 Million potential fixed subscribers (53 %) – now 24,2 % teledensity for 2,8 HH size

Cellular mobile network users potential

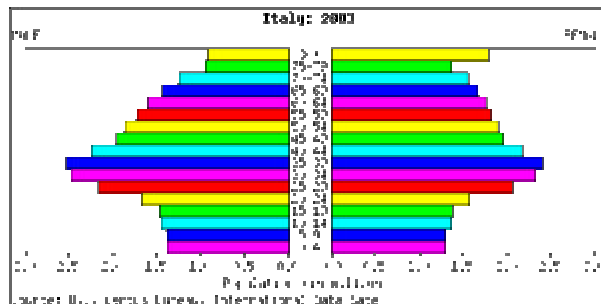
Case of Italy:

Cellular mobile teledensity from ITU database - 93,9 %

Correlation with population - brake down by age

4,5 % of population below 6

4 % of population above 80



- *user potential of about 92 % expected*

Cellular mobile network users potential

Highly developed countries:

Country	Population (in thousands)	Population below 6 [%]	Population above 80 [%]	Cellular mobile Teledensity [%]
Australia	19,662	-	-	63,98
Canada	31,414	-	-	37,71
France	59,637	-	-	64,70
Germany	82,537	-	-	72,75
Italy	56,464	4,5	4,0	93,87
Japan	127,440	-	-	63,66
New Zealand	3,939	-	-	62,17
Republic of Korea	47,600	-	-	67,95
Spain	40,683	4,6	3,7	82,42
Sweden	8,943	5,1	5,0	88,88
Switzerland	7,281	-	-	78,93
United Kingdom	59,088	-	-	84,07
United States	288,370	-	-	48,82

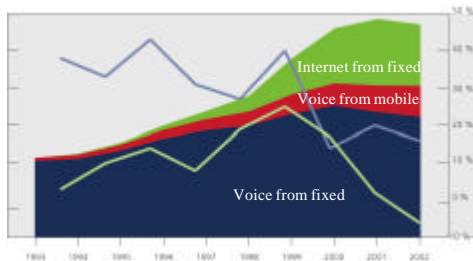
• user potential of 90% to 92 %

Comparison of traffic for fixed line telephony and mobile telephony

Case of Norway:

	Trafikk fordelt på trafikkategori Traffic split by traffic categories			Gjennomsnittlig varighet per samtale Average duration per call		
	Residential	Business	Total	Residential	Business	Total
Ordreansatte Ordinary numbers	45,5 %	61,2%	50,5%	5,8	3,5	4,6
Mobiltelefoner Mobile telephones	3,1 %	11,0%	8,3%	2,4	2,8	2,7
Utlandsk International	1,9 %	3,1%	2,3%	7,9	3,8	5,3
Ses. numre Premium services	30,7 %	16,9%	27,3%	13,2	7,3	11,1
Andre numre Other numbers	18,8 %	4,8%	11,6%	5,7	3,3	3,9
Total	100,0%	100,0%	100,0%	7,0	3,7	5,8

Traffic minutes for fixed line telephony



	Trafikk fordelt på trafikkategori Traffic split by traffic categories		Gjennomsnittlig varighet per samtale Average duration per call	
	2001	2002	2001	2002
Residential	55,5%	58,9%	1,37	1,38
Business	37,7%	34,1%	2,38	2,17
Other	3,7%	4,2%	2,37	2,19
Total	1,3%	1,4%	1,42	1,58
Nett	1,9%	1,5%	1,95	1,34
Total	100,0%	100,0%	1,83	1,62

Traffic minutes for mobile telephones

• ratio fixed / mobile – above 3 / 1

User behaviour and usage trends

Findings of the United Nations :

- all growth in population will concentrate in urban areas, no growth in rural areas
- most of the growth will concentrate in urban areas of less developed regions

Users will concentrate in urban areas, as urban areas put higher pressure on the individual to "do what the others do" and from technical point it is easier to connect people in urban areas

Teledensity statistics for largest cities

	Population as % of total	Large city teledensity [%]	Rest of country teledensity [%]	Overall teledensity [%]	
Low Income	6,0	9,26	2,15	2,54	1 : 4,3
Lower Middle Income	5,8	24,84	7,30	8,77	1 : 3,4
Upper Middle Income	16,1	38,77	21,10	22,94	1 : 1,5
High Income	10,8	57,49	54,83	55,21	1 : 1,05
Africa	12	6,42	1,39	1,99	
Americas	13,6	34,8	21,72	11,39	
Asia	4,8	25,97	6,94	7,84	
Europe	10,9	48,24	30,19	31,98	
Oceania	17,8	45,97	36,77	38,38	
WORLD	7,7	17,4	25,25	9,20	

IT density as bases for new services requiring more bandwidth

Density statistics for Information technology :

	Internet hosts per 10 000 inhabitants	Internet users per 10 000 inhabitants	PCs per 100 inhabitants
Low Income	0,98	62,21	0,59
Lower Middle Income	4,32	264,94	2,45
Upper Middle Income	78,69	992,66	8,24
High Income	1 484,20	3 992,87	37,31
Africa	3,38	84,89	1,06
Americas	1 332,97	2 164,28	26,57
Asia	28,73	433,97	2,18
Europe	191,47	1 804,54	17,94
Oceania	885,26	2 771,59	39,91
WORLD	232,66	820,81	7,74

} CIS^m
} CEE^m

Ratio Low Income/High Income : 1 : 64 1 : 15 1 : 63 1 : 15

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IT penetration in EEC and CIS countries:

Country	Total Population (M)	Internet Users (10'000)	PCs (100)
Armenia	3,79	142,05	0,79
Azerbaijan	7,78	32,13	-
Moldova	4,39	136,67	1,59
Tajikistan	6,13	5,22	-
Ukraine	50,30	119,29	1,83
Uzbekistan	25,26	108,73	-
Albania	3,97	25,19	0,76
White Russia	10,25	411,87	-
Bosnia	4,07	110,65	-
Bulgaria	8,11	807,69	5,19
Kazakhstan	16,09	61,64	-
Latvia	2,35	723,10	15,31
Lithuania	3,68	679,16	7,06
Rumania	22,39	446,63	3,57
Russia	146,76	293,00	4,97
Macedonia	2,04	342,47	-
Turkmenistan	4,84	16,55	-
Yugoslavia	10,68	561,80	2,34
Croatia	4,66	558,91	8,59
Czech Republic	10,14	2564,10	17,75
Estonia	1,43	3 004,59	17,48
Hungary	9,97	1 484,01	10,03
Poland	38,63	983,72	8,54
Slovak Republic	5,40	1 203,26	14,81

High Income:
3 003

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Telecom Indicators for CEE and CIS countries :

- ❖ **Subscribers potential-
very high for many of the countries**
- ❖ **Information technology -
below 10 % for most countries -
about 40 % for high income countries**

**Note: Still plenty of analogue equipment in the fixed
network mostly in rural areas**

Conclusion for user behaviour and usage trends

- **There is still considerable potential of
telecom users in the world, most of all in
the developing countries**
- **Users in the developing countries are
concentrated and will continue to
concentrate in urban areas**
- **Traditional voice service is expected to
dominate in the developing countries for
the low density of Information technology**